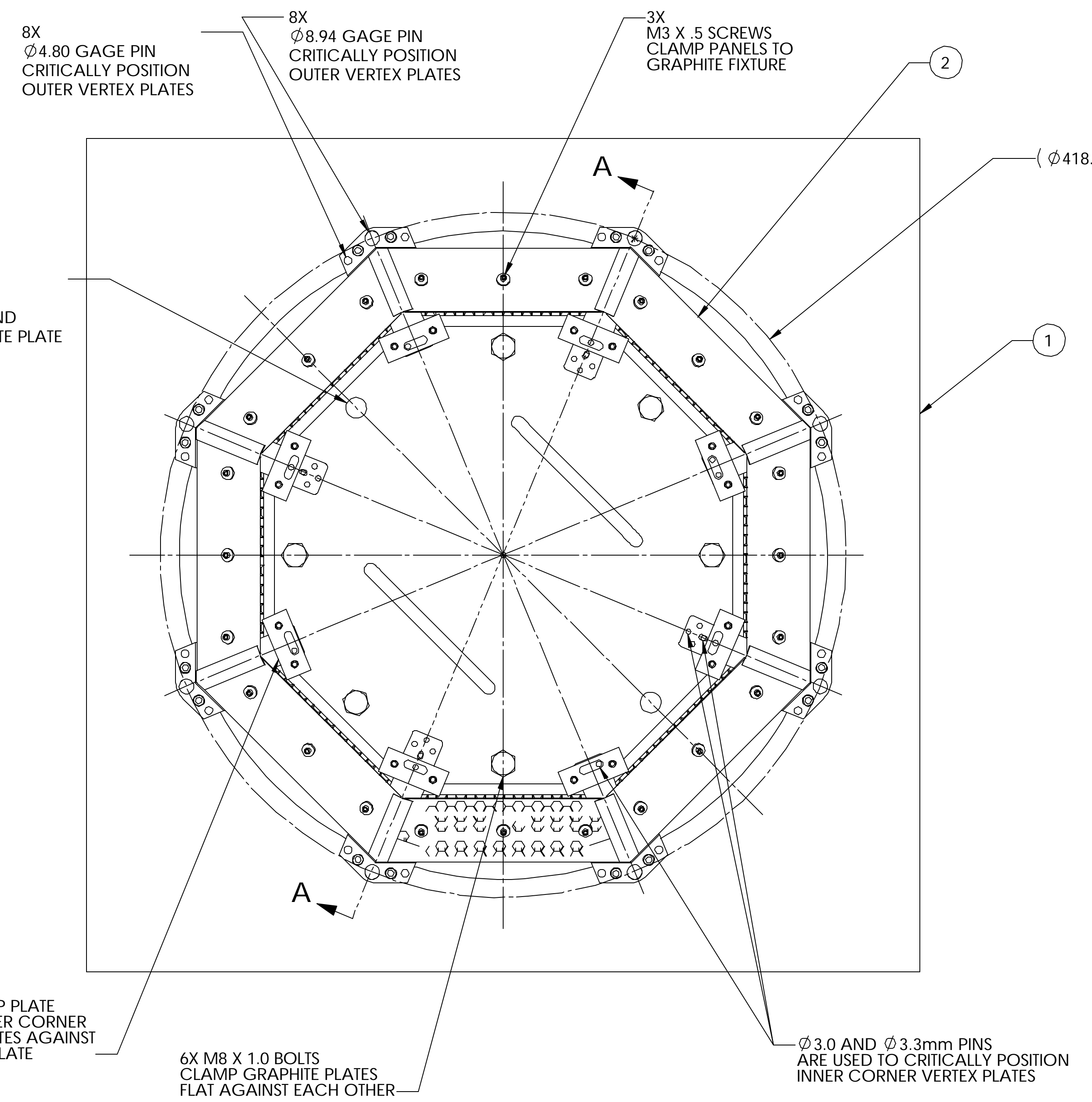
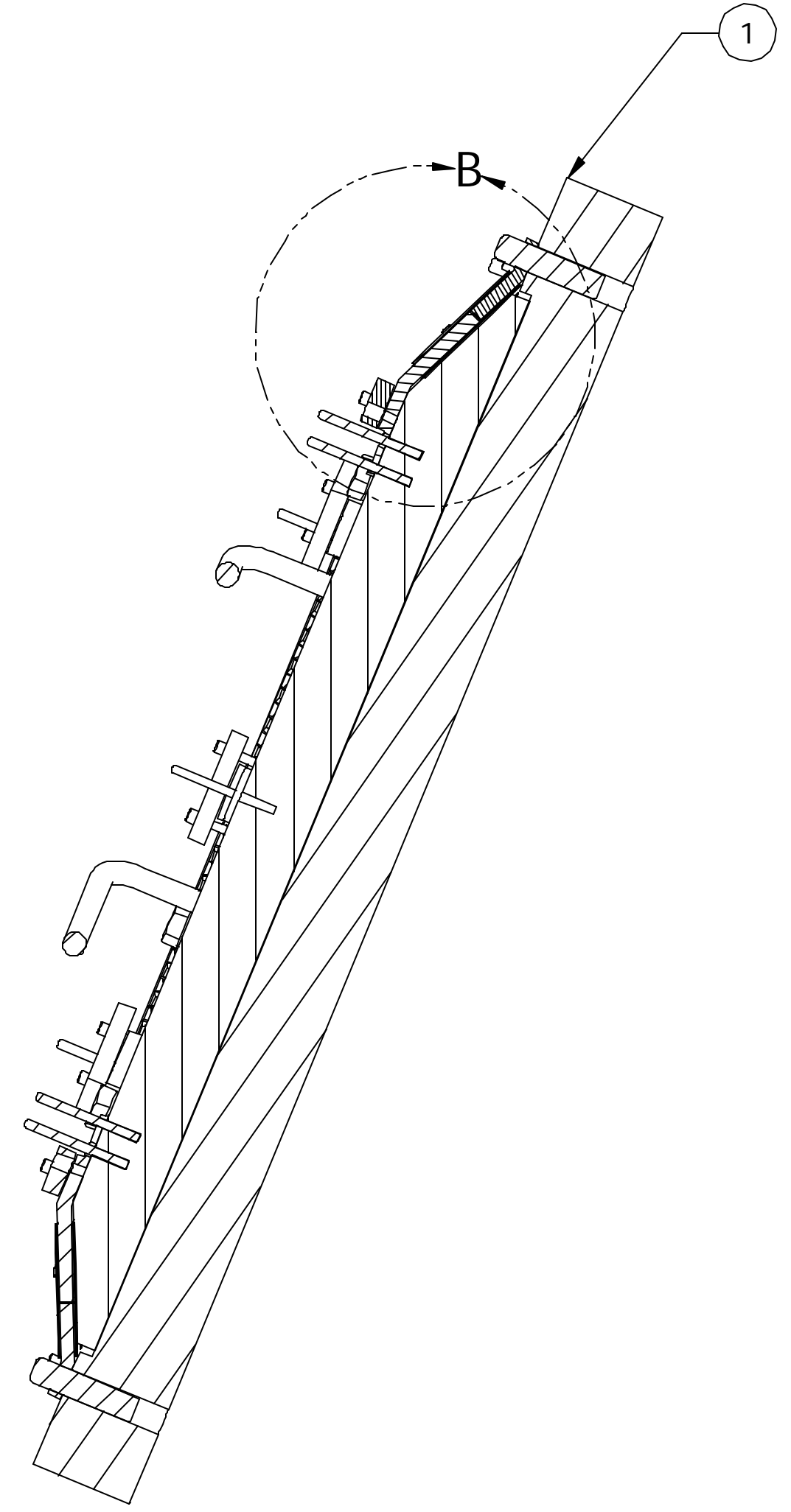


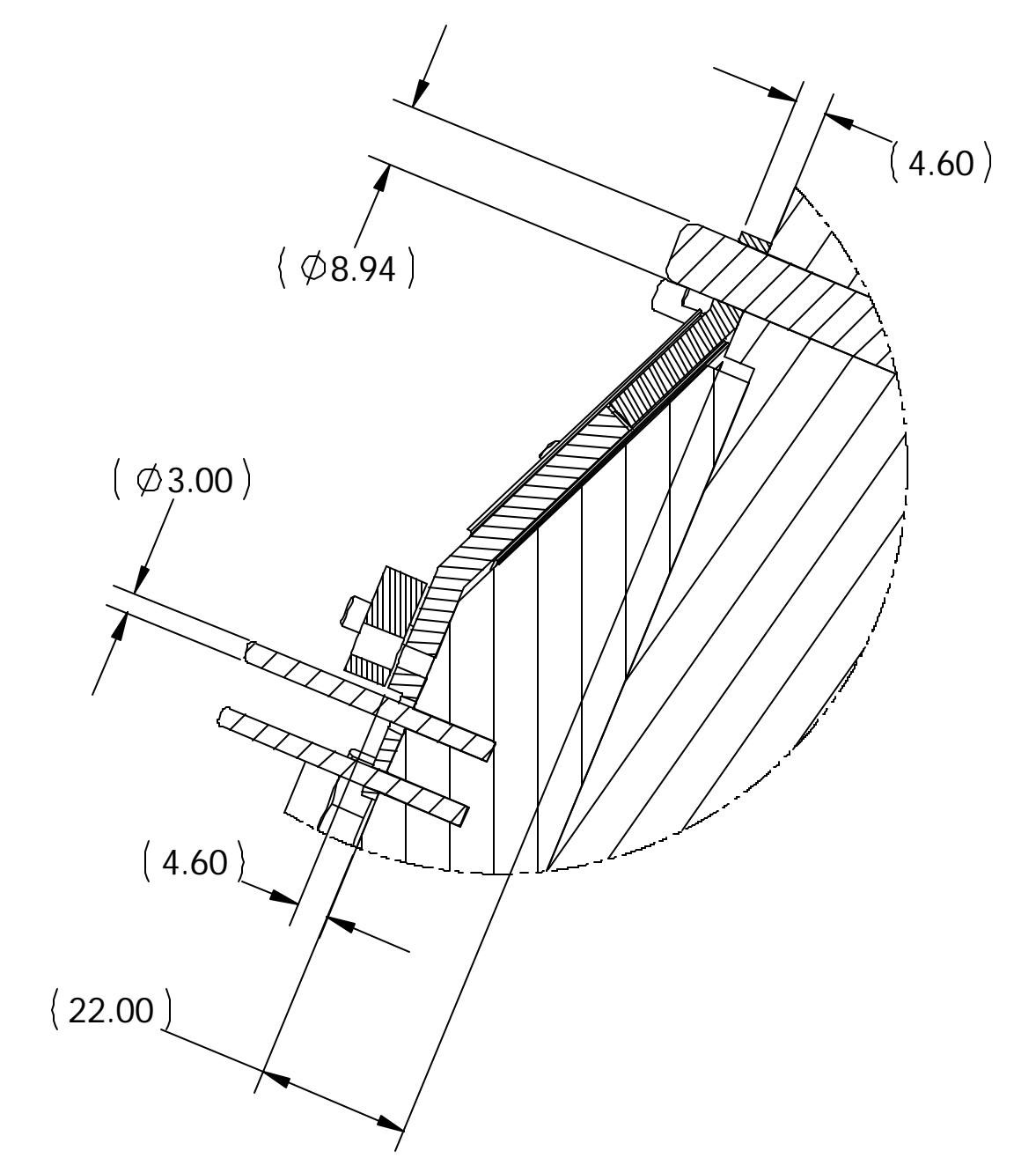
ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
2	21F720	1	"A" SIDE ENDCONE ASSEMBLY	
1	21F745	1	"A" AND "C" SIDE ENDCONE BOND FIXTURE	



"A" SIDE BOND FABRICATION SHOWN



SECTION A-A SCALE 1:2



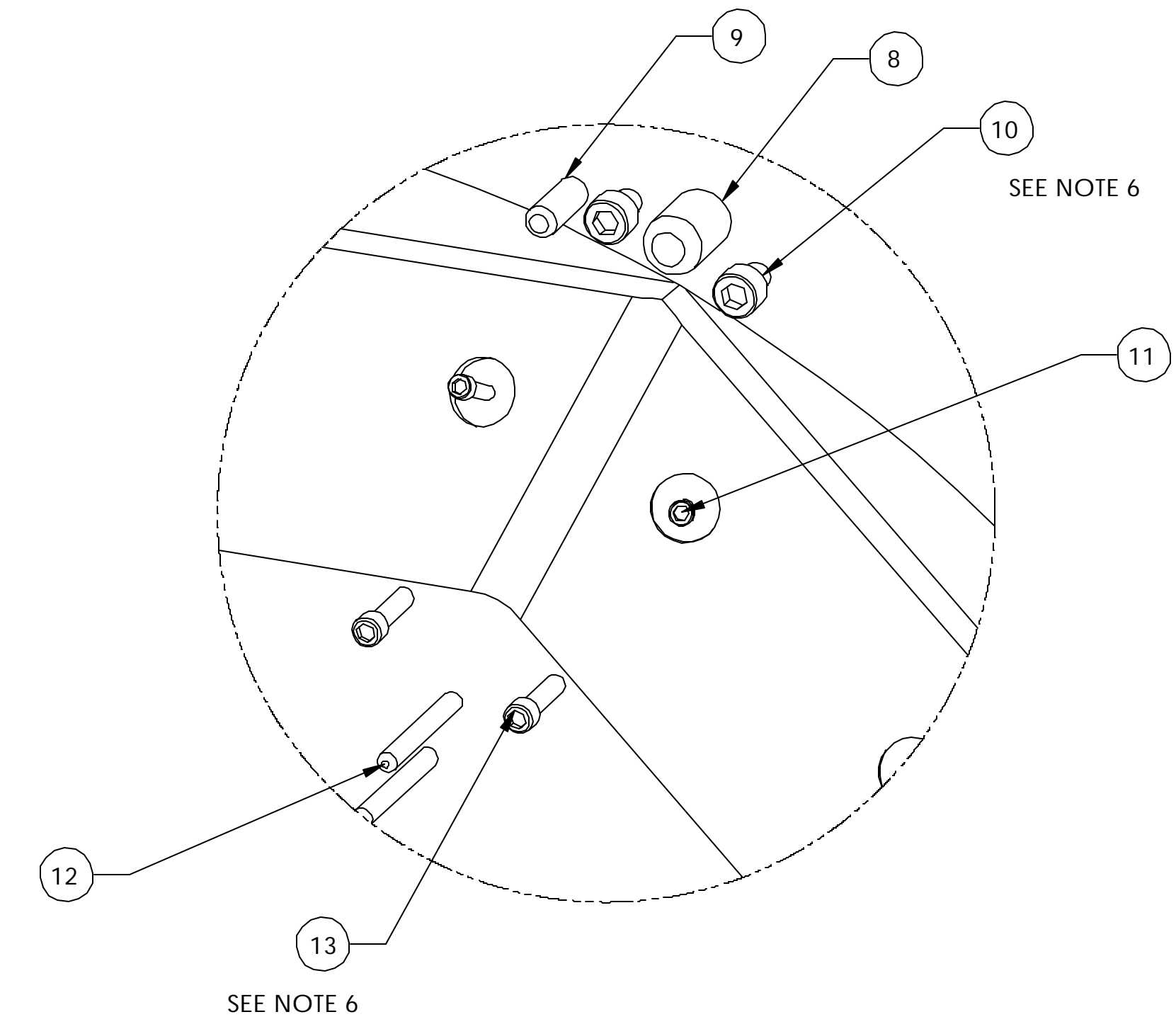
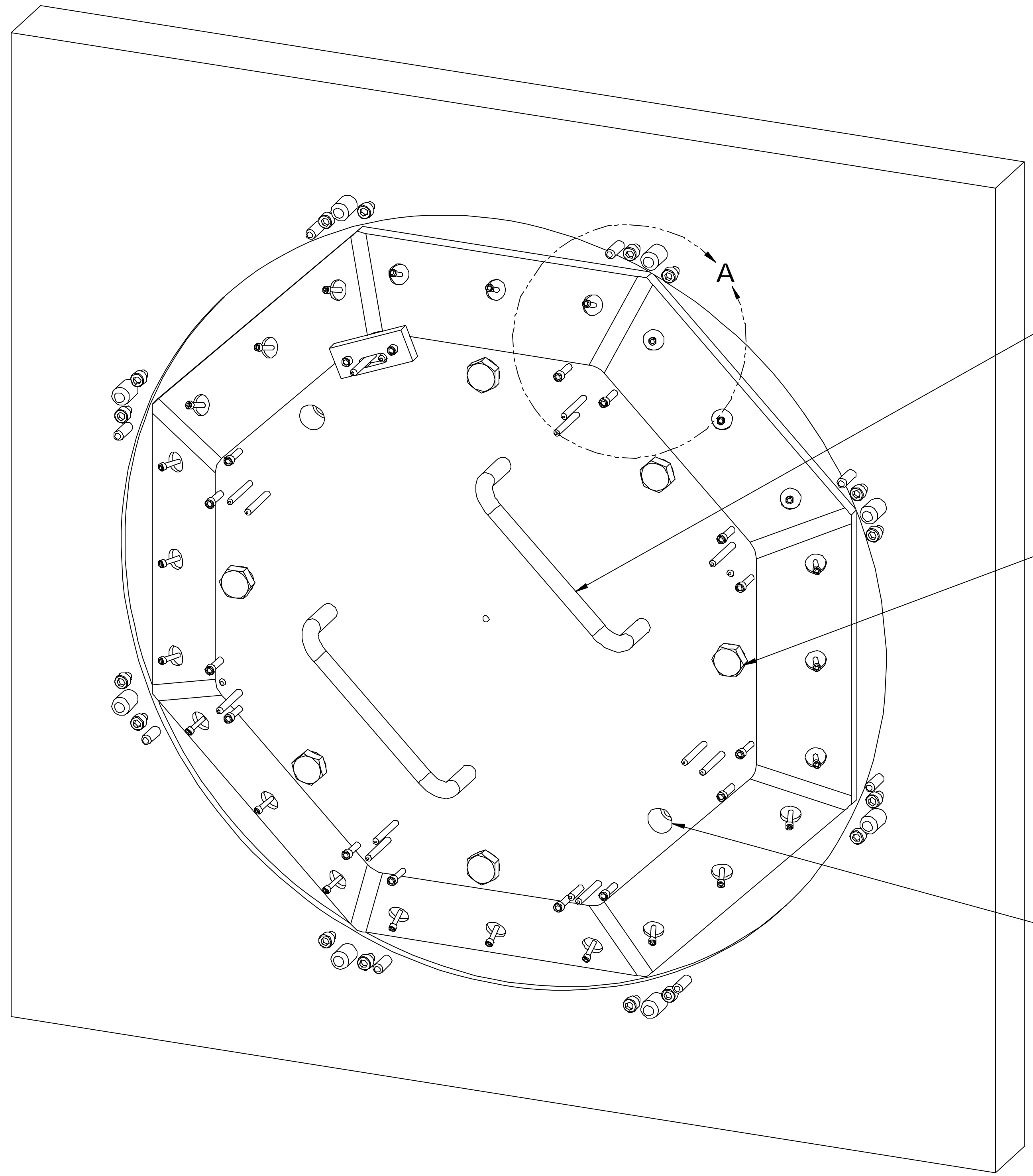
DETAIL B SCALE 1:1

NOTES: UNLESS OTHERWISE SPECIFIED

- ALL DIMENSIONS IN MILLIMETERS
- DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
- SURFACE TEXTURE PER ANI/ASME B 46.1-1985
- PARTS TO BE THOROUGHLY CLEAN FROM OIL, GREASE, DIRT AND CHIPS
- ALL TOLERANCES ARE REFERENCE BASED UPON INDIVIDUAL PART TOLERANCES
- APPLY LESS THAN 1/3 RECOMMENDED TORQUE RATING FOR INDIVIDUAL SCREWS TO PREVENT PULLING HELICOILS OUT OF GRAPHITE
- INSERT PINS INTO HOLES TO 2X DIA. DEPTH ONLY TO ALLOW FOR EASY REMOVAL
- SPRAY MOLD RELEASE ON GRAPHITE PLATE IS ACCEPTABLE, TAPE IS PROHIBITED
- HYSOL 9396 ADHESIVE WITH 3 MIL GLASS BEADS TYP FOR BOND JOINTS, SEE FABRICATION PROCEDURE DOCUMENT FOR EXACT SPECIFICATIONS

REV	DWG	CHK	ZONE	DATE	CHANGES	UNLESS OTHERWISE SPECIFIED	SHOP ORDERS	SER NO.	ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY #
						TOLERANCES X.X ± 0.5 X.XX ± 0.25 X.XXX ± 0.013	FRAC. ± 1/64 ANGLES ± 30° FINISH 1.6	ACCT NO. DATE ISSD DATE REQD	ATLAS PIXEL DETECTOR "A" SIDE ENDCONE ON BONDING FIXTURE
						DO NOT SCALE PRINT	PROJECT NAME US ATLAS SILICON SUBSYSTEM	DATE 4/16/2002	SCALE: 1:2
						THREADS ARE CLASS 2	DWG BY W. K. MILLER	DATE 4/16/2002	DO NOT SCALE PRINTS
						CHAMFER ENDS OF ALL SCREW THREADS 30°	CHK BY BILL WILDS	DATE 4/16/2002	SHEET 1 OF 1
						CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS	APR BY E. ANDERSSSEN	DATE 4/16/2002	SIZE 21F745 4
						BREAK EDGES .016 MAX. ON MACHINED WORK			REV.
						REMOVE BURS, WELD SPLATTER & LOOSE SCALE			
						IN ACCORDANCE WITH ASME Y14.5m & B46.1			

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
14		4	3.00 DIA. GAGE PIN X 25.4 LONG	STEEL
13		16	M3 X .50 SOCKET HEAD CAP SCREW X 25.4 LONG	STEEL
12		12	3.30 DIA. GAGE PIN X 25.4 LONG	STEEL
11		24	M3 X .5 SOCKET HEAD CAP X 9.0 LONG	STEEL
10		16	M4 X .7 SOCKET HEAD CAP SCREW X 8.0 LONG	STEEL
9		8	4.80 DIA. GAGE PIN X 25.4 LONG	STEEL
8		8	8.91 DIA. GAGE PIN X 25.4 LONG	STEEL
7		4	#8-32 UNC-2A SOCKET HEAD CAP SCREW	STEEL
6		2	4" HANDLE, BLACK ANODIZE ALUM	ALUM
5		6	M8 X 38.1 HEX HEAD BOLT	STEEL
4		2	1/2" DIA. DOWEL PIN	STEEL
3	21F749	8	ENDCONE BOND FIXTURE- INNER VERTEX CLAMP	ALUM
2	21F748	1	ENDCONE BOND FIXTURE - TOP PLATE	GRAPHITE
1	21F747	1	ENDCONE BOND FIXTURE - BOTTOM PLATE	GRAPHITE



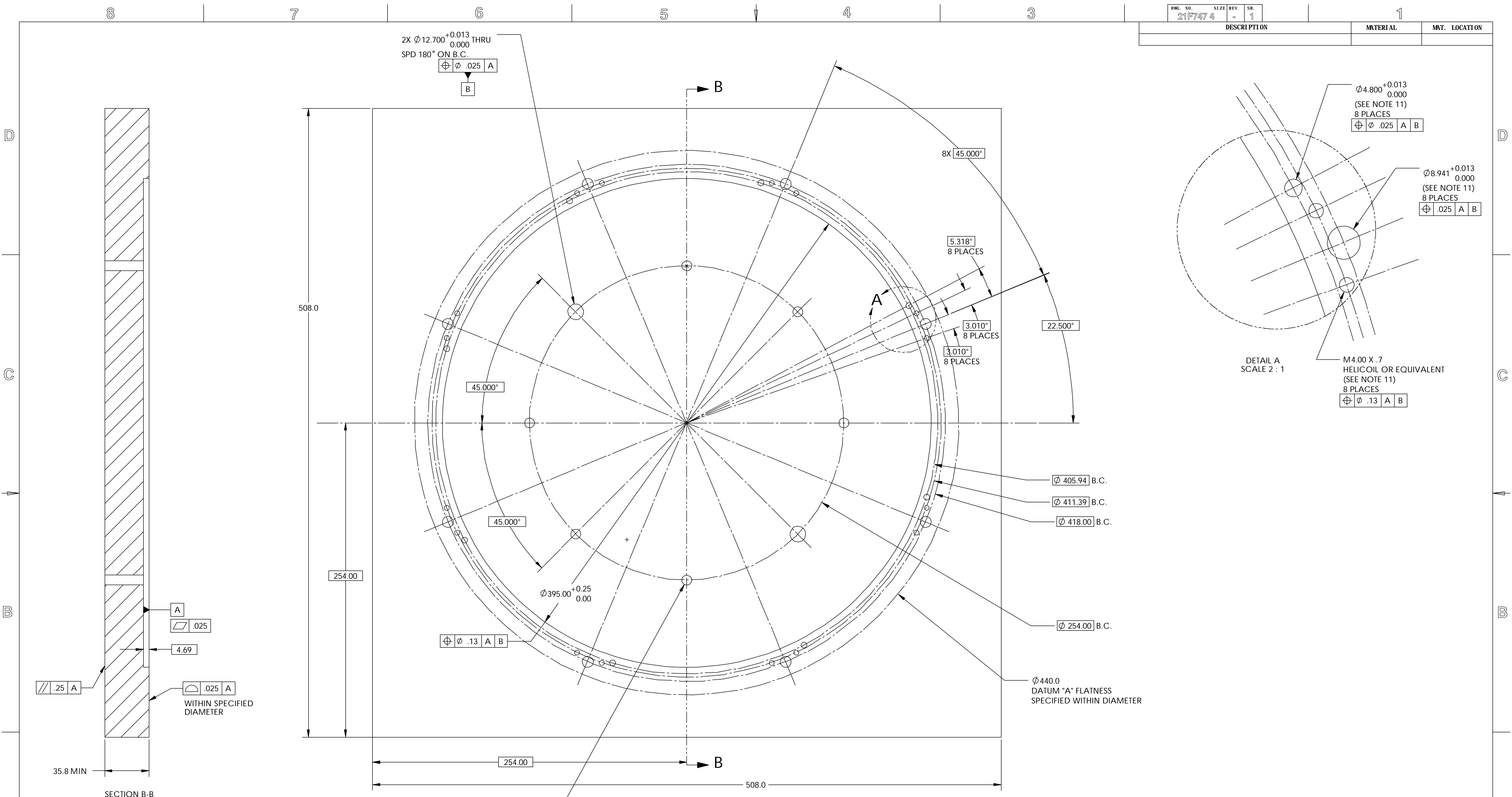
DETAIL A
SCALE 1.25 : 1

NOTES: UNLESS OTHERWISE SPECIFIED

- ALL DIMENSIONS IN MILLIMETERS
- DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
- SURFACE TEXTURE PER ANI/ASME B 46.1-1985
- PARTS TO BE THOROUGHLY CLEAN FROM OIL, GREASE, DIRT AND CHIPS
- ALL TOLERANCES ARE REFERENCE; BASED UPON INDIVIDUAL PART TOLERANCES
- APPLY LESS THAN 1/3 RECOMMENDED TORQUE RATING FOR INDIVIDUAL SCREWS TO PREVENT PULLING HELICOILS OUT OF GRAPHITE
- INSERT PINS INTO HOLES TO 2X DIA. DEPTH ONLY TO ALLOW FOR EASY REMOVAL

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY	
TOLERANCES	X.X ± 0.5	FRAC. ± 1/64	NO. REQD	DATE ISSD	UNIVERSITY OF CALIFORNIA - BERKELEY #		
	X.XX ± 0.25	ANGLES ± 30°	DEL TO	DATE REQD	ATLAS PIXEL DETECTOR SIDE "A" AND "C" ENDCONE BONDING FIXTURE		
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT		MICROFILMED: DWG. TYPE ASSEM		
DO NOT SCALE PRINT		INDEX METHOD TAG		SCALE: 1:1.5		DO NOT SCALE PRINTS	
THREADS ARE CLASS 2		PROJECT NAME US ATLAS SILICON SUBSYSTEM		PROJECT NO. ATL-IP-ED-XXXX		SHEET 1 OF 2	
CHAMFER ENDS OF ALL SCREW THREADS 30°		DWG. BY W. K. MILLER		DATE 4/16/2002		CATEGORY CIDE P1AP-11 AP6250	
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS		CHK BY BILL WILDS		DATE 4/16/2002		DWG. NO. 21F7464	
BREAK EDGES .016 MAX. ON MACHINED WORK		APR BY E. ANDERSSSEN		DATE 4/16/2002		SIZE REV.	
REMOVE BURS, WELD SPLATTER & LOOSE SCALE		IN ACCORDANCE WITH ASME Y14.5m & B46.1					
REV	DWG	CHK	ZONE	DATE	CHANGES		

DWG. NO.	SIZE	REV.	SHEET
21F747 4		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



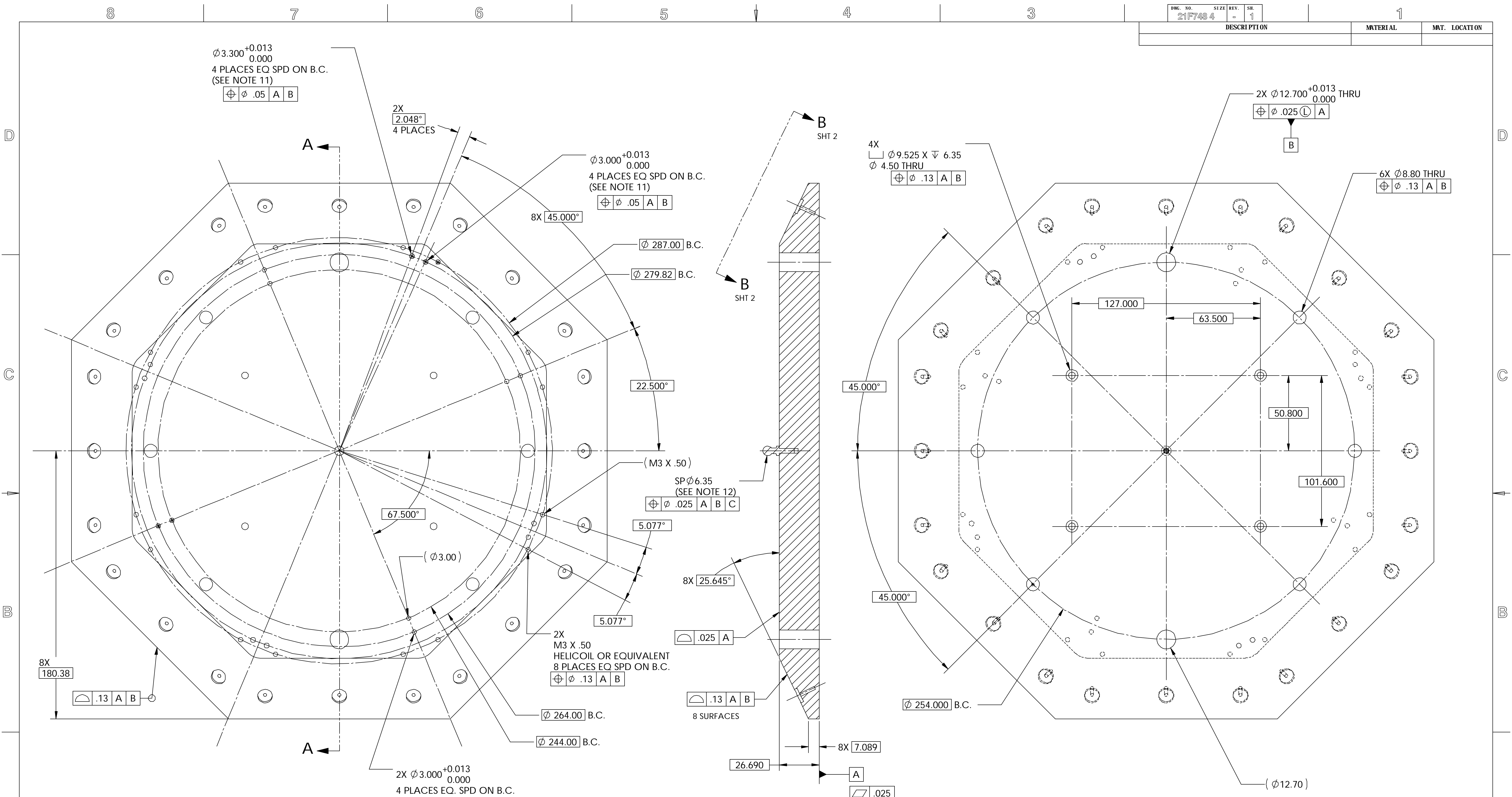
NOTES: UNLESS OTHERWISE SPECIFIED

- ALL DIMENSIONS IN MILLIMETERS
- DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
- SURFACE TEXTURE PER ANI/ASME B 46.1-1985
- REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
- ALL INSIDE CORNERS TO BE .38 RADIUS MAX
- COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
- COUNTERSINK 82 DEGREES APPROXIMATELY .38 DEEP ALL DRILLED HOLES
- PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
- ROOM TEMPERATURE DURING MACHINING TO BE RECORDED AND PROVIDED TO LAWRENCE BERKELEY LABORATORY; TOP AND BOTTOM PLATES TO BE MACHINED AT THE SAME TEMPERATURE (WITHIN 5 DEGREES F)
- INSPECTION REPORTS TO BE PROVIDED TO LAWRENCE BERKELEY LABORATORY
- HOLES ARE THRU HOLES, OR 3X DIA. DEEP WITH A SMALLER PILOT HOLE THRU

REV	DWG	CHK	ZONE	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS	
TOLERANCES	X.X ± 0.5	FRAC.	± 1/64
	X.XX ± 0.25	ANGLES	± 30'
	X.XXX ± 0.013	FINISH	1.6
DO NOT SCALE PRINT		SURFACE TREATMENT	
THREADS ARE CLASS 2		PROJECT NUMBER	
CHAMFER ENDS OF ALL SCREW THREADS 30°		PROJECT NAME	
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS		PROJECT TAG	
BREAK EDGES .016 MAX. ON MACHINED WORK		PROJECT NUMBER	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		PROJECT NAME	
IN ACCORDANCE WITH ASME Y14.5m & B46.1		PROJECT NUMBER	

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY			
UNIVERSITY OF CALIFORNIA - BERKELEY #			
ATLAS PIXEL DETECTOR ENDCONE BOND FIXTURE BOTTOM GRAPHITE PLATE			
MICROFILMED:	DWG. TYPE	SHOWS ON	SCALE: 1:1.5
	PART	21F746	DO NOT SCALE PRINTS
PATENT CLEAR:	DESIGN ACCT. NO.	PIAP-11	SHEET 1 OF 1
	CATEGORY CODE	AP6250	SIZE
	DWG. NO.	21F747 4	REV.



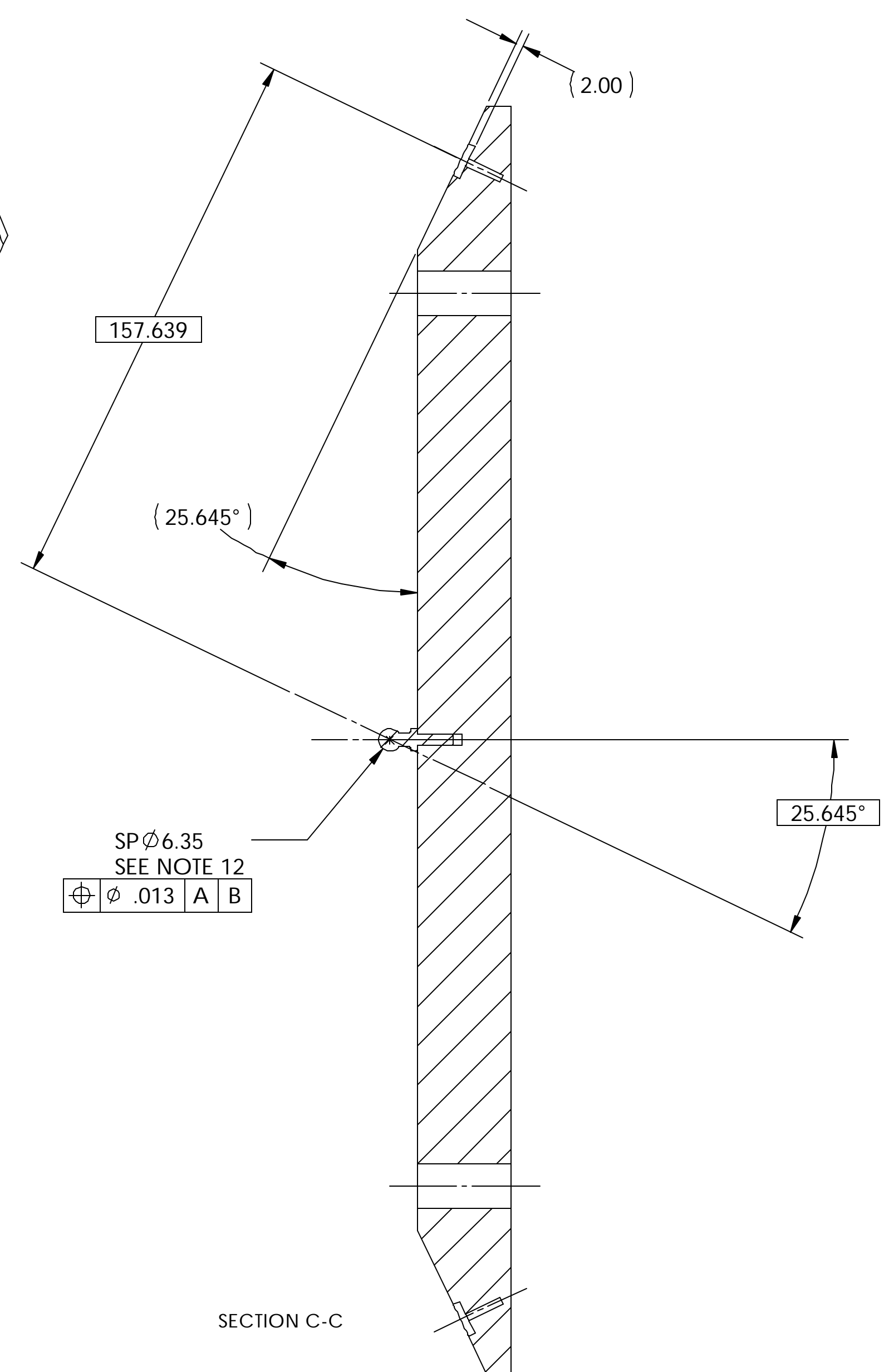
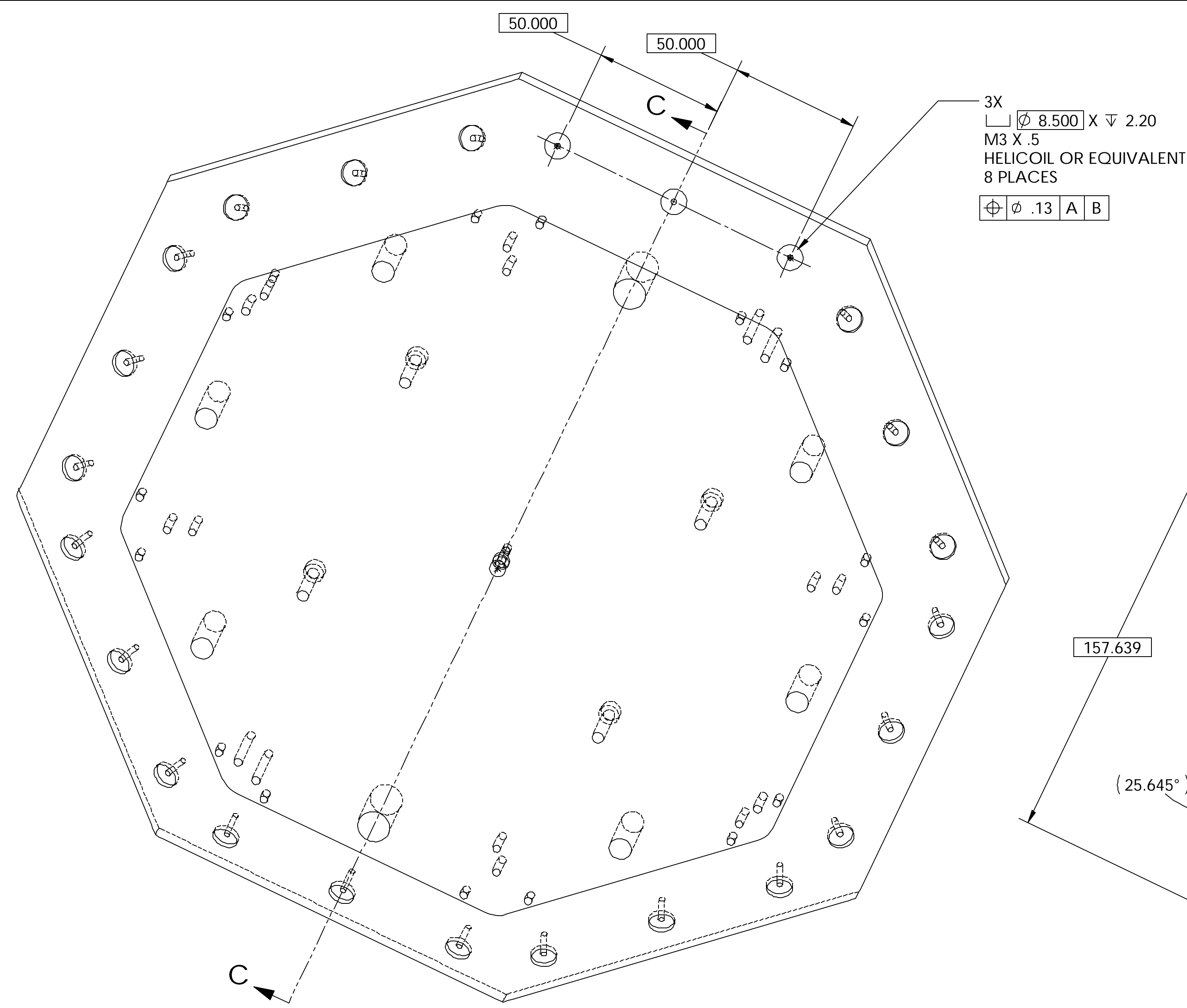
NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
3. SURFACE TEXTURE PER AN/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .38 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. ROOM TEMPERATURE DURING MACHINING TO BE RECORDED AND PROVIDED TO LAWRENCE BERKELEY LABORATORY; TOP AND BOTTOM PLATES TO BE MACHINED AT THE SAME TEMPERATURE (WITHIN 5 DEGREES F)
10. INSPECTION REPORTS TO BE PROVIDED TO LAWRENCE BERKELEY LABORATORY
11. HOLES ARE THRU HOLES, OR 3X DIA. DEEP WITH A SMALLER PILOT HOLE THRU
12. 6.35 DIA. TOOLING BALL PERMANENTLY INSTALLED

MATL: ISOTROPIC GRAPHITE; CTE LESS THAN OR EQUAL TO 6μIN/IN/°F OR EQUIVALENT (SEE NOTE 9, 10)

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY	
TOLERANCES	X.X ± 0.5	FRAC. ± 1/64	ACCT. NO.	NO. REQD.	DATE ISSD	UNIVERSITY OF CALIFORNIA - BERKELEY #	
	X.XX ± 0.25	ANGLES ± 30°	DEL. TO	DATE REQD.		ATLAS PIXEL DETECTOR ENDCONE BOND FIXTURE TOP GRAPHITE PLATE	
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT			MICROFILMED: PART	
DO NOT SCALE PRINT			INDEX METHOD TAG	DATE 4/16/2002		SCALE: 1:1.25	
THREADS ARE CLASS 2			PROJECT NAME	DATE 4/16/2002		DO NOT SCALE PRINTS	
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NO.	DATE 4/16/2002		SHEET 1 OF 2	
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS			PROJECT US ATLAS SILICON SUBSYSTEM	DATE 4/16/2002		SIZE REV.	
BREAK EDGES .016 MAX. ON MACHINED WORK			DWG. BY W. K. MILLER	DATE 4/16/2002		DWG. NO. 21F748 4	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			CHK BY BILL WILDS	DATE 4/16/2002		CATEGORY CIDE AP6250	
IN ACCORDANCE WITH ASME Y14.5m & B46.1			APR BY E. ANDERSSSEN	DATE 4/16/2002		REV.	
REV	DWG	CHK	ZONE	DATE	CHANGES		

DWG. NO.	SIZE	REV.	SHEET	1
Sheet2	=	2		
DESCRIPTION				
MATERIAL				
MNT. LOCATION				



VIEW B-B
(SEE SHT 1)

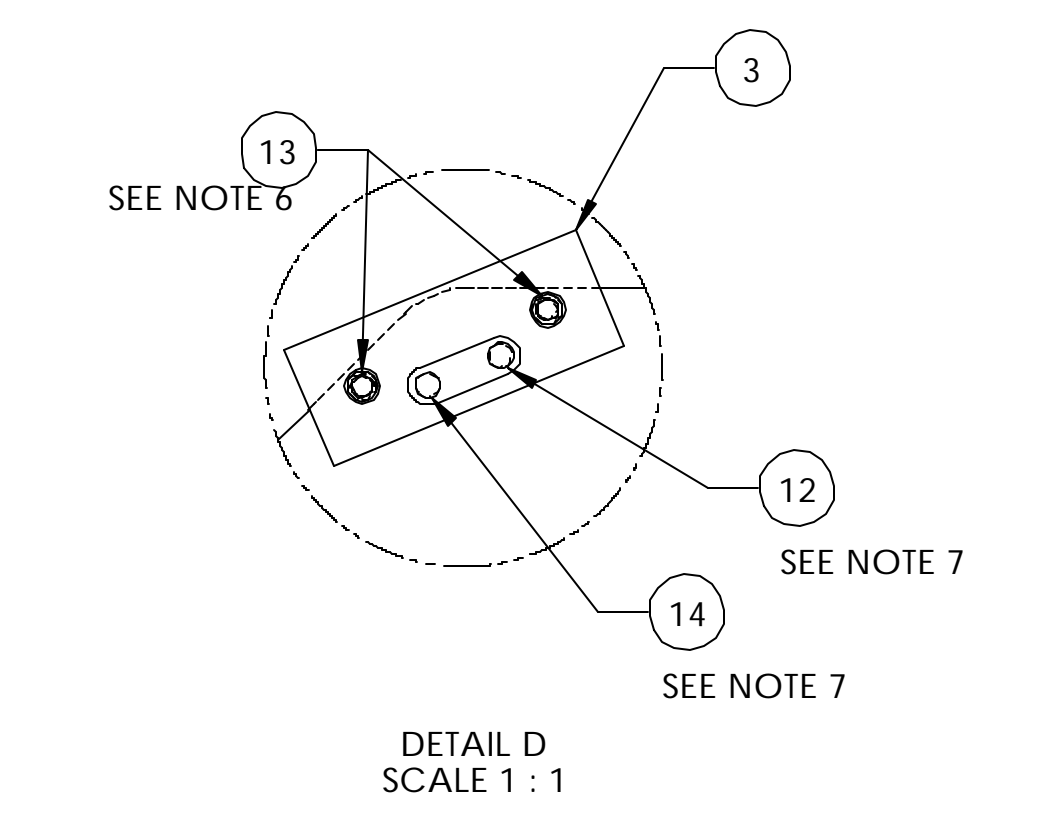
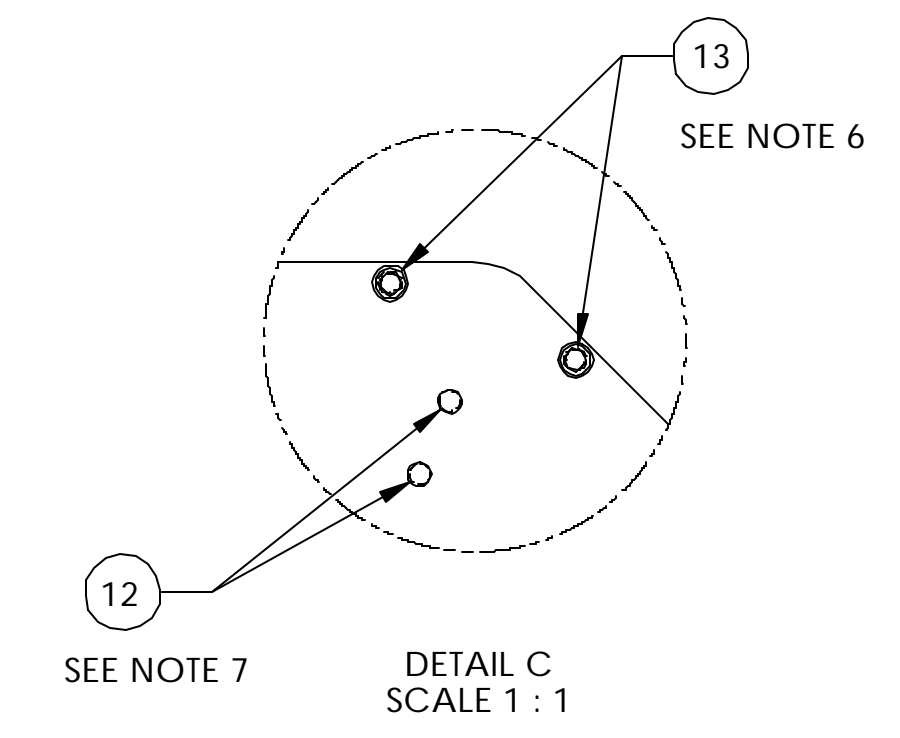
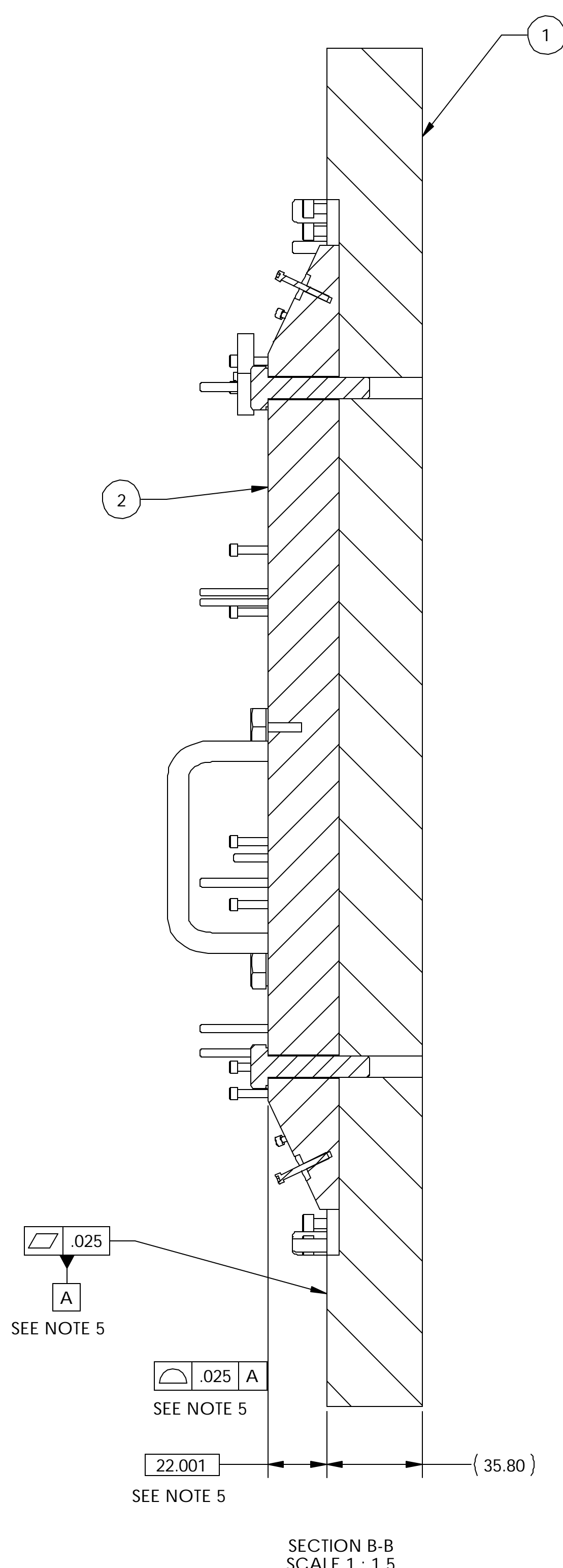
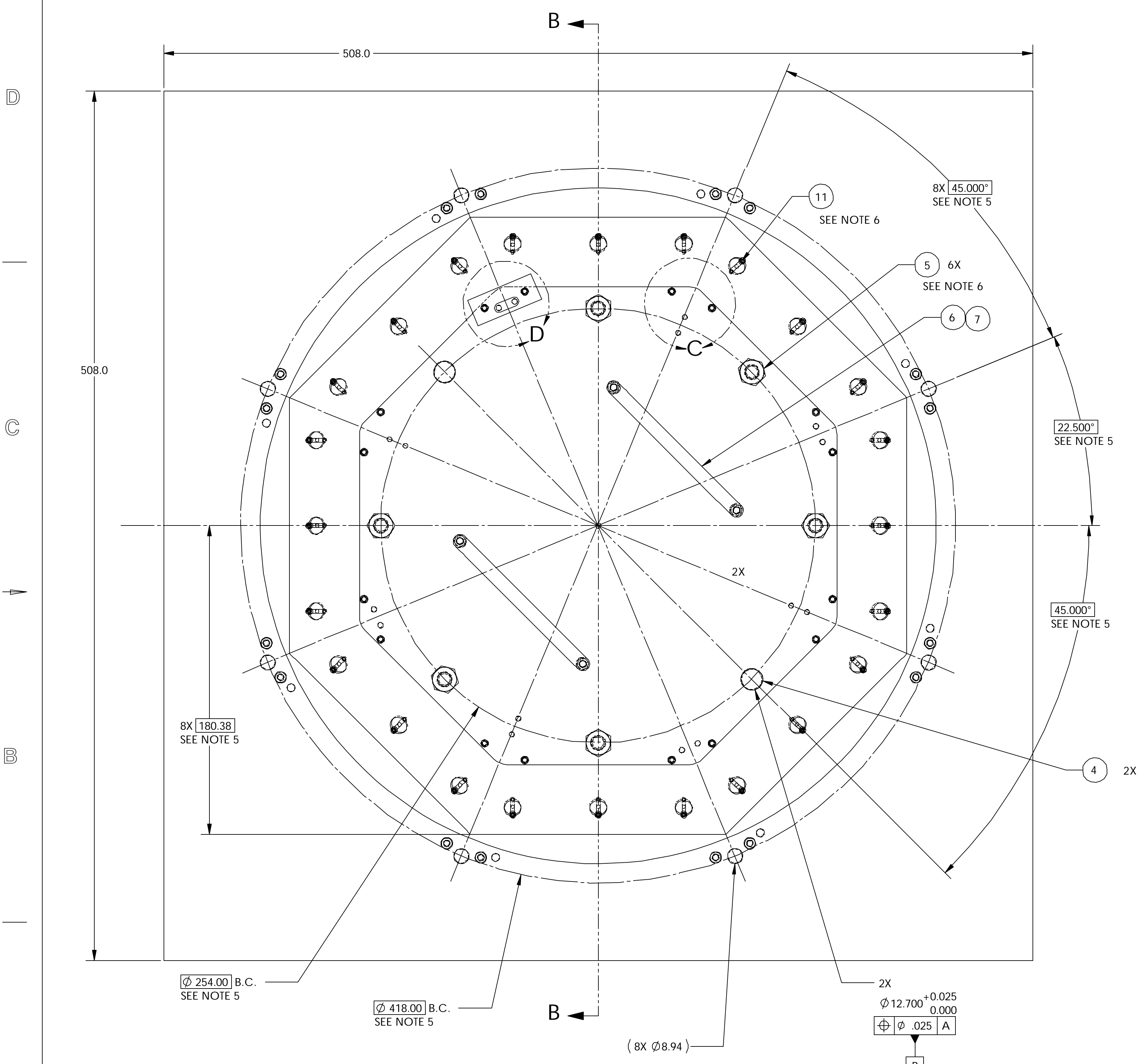
SECTION C-C

- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL DIMENSIONS IN MILLIMETERS
 2. DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
 3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
 4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
 5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
 6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
 7. COUNTERSINK 82 DEGREES APPROXIMATELY .38 DEEP ALL DRILLED HOLES
 8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
 9. ROOM TEMPERATURE DURING MACHINING TO BE RECORDED AND PROVIDED TO HYTEC; TOP AND BOTTOM PLATES TO BE MACHINED AT THE SAME TEMPERATURE (WITHIN 5 DEGREES F)
 10. INSPECTION REPORTS TO BE PROVIDED TO LAWRENCE BERKELEY LABORATORY
 11. HOLES ARE THRU HOLES, OR 3X DIA. DEEP WITH A SMALLER PILOT HOLE THRU
 12. 6.35 DIA. TOOLING BALL PERMANENTLY INSTALLED

UNLESS OTHERWISE SPECIFIED	SHOP ORDERS	SER. NO.	ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY
TOLERANCES	ACCT. NO.	DATE ISSD	UNIVERSITY OF CALIFORNIA - BERKELEY #
X.X ± 0.5	FRAC. ± 1/64	DATE REQD.	
X.XX ± 0.25	ANGLES ± 30'		
X.XXX ± 0.013	FINISH 1.6		
DO NOT SCALE PRINT	SURFACE TREATMENT		
THREADS ARE CLASS 2	INDEX METHOD TAG		
CHAMFER ENDS OF ALL SCREW THREADS 30°	PROJECT NAME		
CUT ROUN. 1.5 THREAD RELIEF ON MACHINED THREADS	ATL-IP-ED-XXXX		
BREAK EDGES .016 MAX. ON MACHINED WORK	PROJECT US ATLAS SILICONE SUBSYSTEM		
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE	DWG. BY W. K. MILLER	DATE 4/16/2002	MICROFILMED:
IN ACCORDANCE WITH ASME Y14.5m & B46.1	CHK BY BILL WILDS	DATE 4/16/2002	DWG. TYPE PART
	APR BY E. ANDERSSON	DATE 4/16/2002	SHOWS ON 21F746
			SCALE: 1:1.25
			DO NOT SCALE PRINTS
			SHEET 2 OF 2
			PATENT CLEAR: DESIGN ACCT. NO. CATEGORY CODE
			P1AP-11 AP6250
			DWG. NO. 21F748 4
			SIZE REV.

REV	DWG	CHK	ZONE	DATE	CHANGES

DWG. NO. 21F746 4		SIZE =	REV. 2	SHEET NO. 2
ITEM	PART NO.	REQD.	DESCRIPTION	MATERIAL



NOTES: UNLESS OTHERWISE SPECIFIED

- ALL DIMENSIONS IN MILLIMETERS
- DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
- SURFACE TEXTURE PER ANI/ASME B 46.1-1985
- PARTS TO BE THOROUGHLY CLEAN FROM OIL, GREASE, DIRT AND CHIPS
- ALL TOLERANCES ARE REFERENCE; BASED UPON INDIVIDUAL PART TOLERANCES
- APPLY LESS THAN 1/3 RECOMMENDED TORQUE RATING FOR INDIVIDUAL SCREWS TO PREVENT PULLING HELICOILS OUT OF GRAPHITE
- INSERT PINS INTO HOLES TO 2X DIA. DEPTH ONLY TO ALLOW FOR EASY REMOVAL

REV	DWG	CHK	ZONE	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS	
TOLERANCES	X.X ± 0.5	FRAC.	± 1/64
	X.XX ± 0.25	ANGLES	± 30°
	X.XXX ± 0.013	FINISH	1.6
THREADS	CLASS 2		
CHAMFER ENDS	OF ALL SCREW THREADS 30°		
CUT ROUNDS	1.5 THREAD RELIEF ON MACHINED THREADS		
BREAK EDGES	.016 MAX. ON MACHINED WORK		
REMOVE	BURRS, WELD SPLATTER & LOOSE SCALE		
IN ACCORDANCE	WITH ASME Y14.5m & B46.1		

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY			
UNIVERSITY OF CALIFORNIA - BERKELEY #			
ATLAS PIXEL DETECTOR SIDE "A" AND "C" ENDCONE BONDING FIXTURE			
MICROFILMED:	DWG. TYPE ASSEM	SHOWS ON 21F745	SCALE: 1:1.5
PATENT CLEAR:	DESIGN ACCT. NO. P1AP-11	CATEGORY CODE AP6250	DO NOT SCALE PRINTS
DWG. NO. 21F746 4	DATE 4/16/2002	DATE 4/16/2002	DATE 4/16/2002
BY E. ANDERSSON	DATE 4/16/2002	DATE 4/16/2002	DATE 4/16/2002

SHEET 2 OF 2