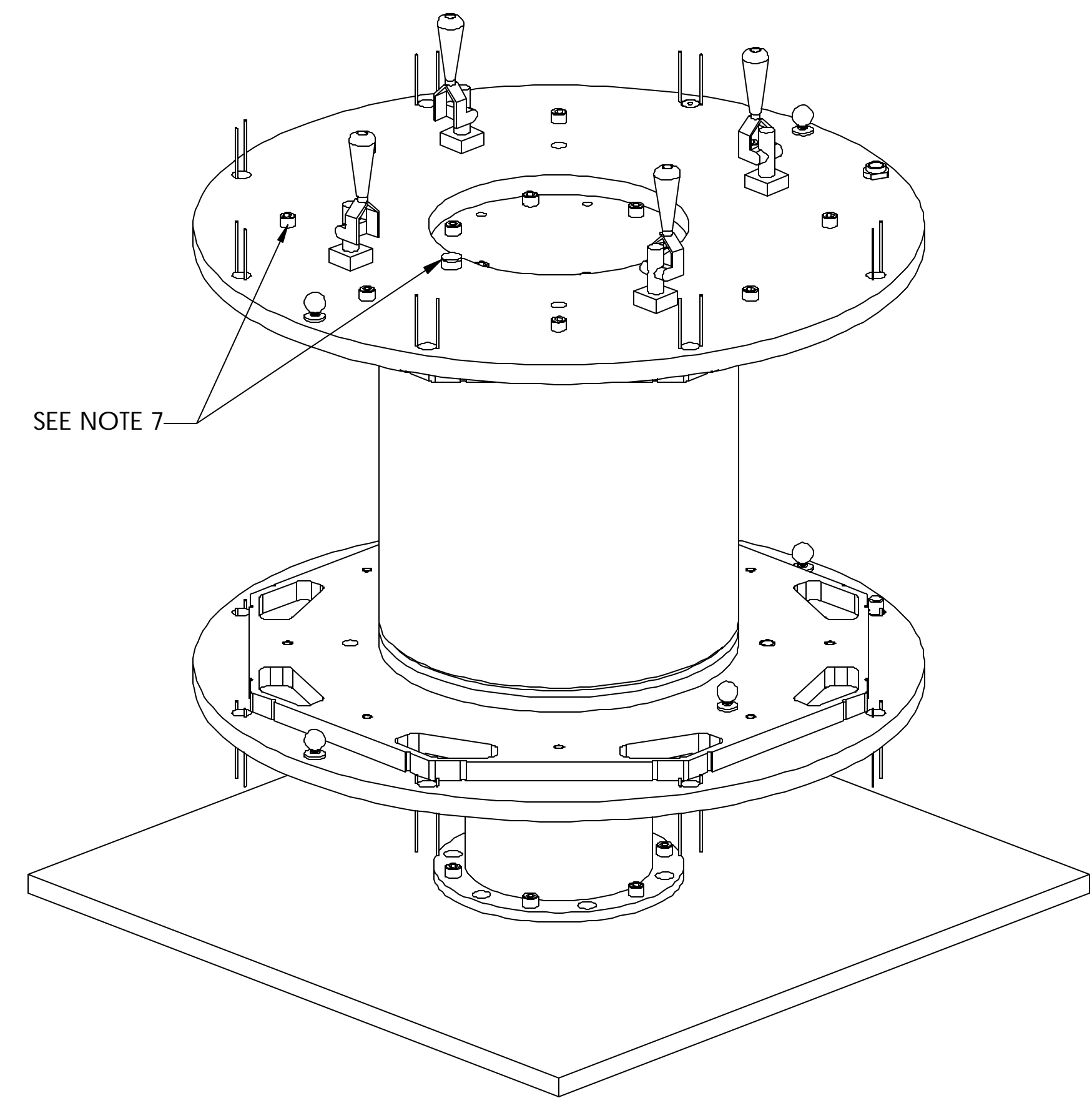
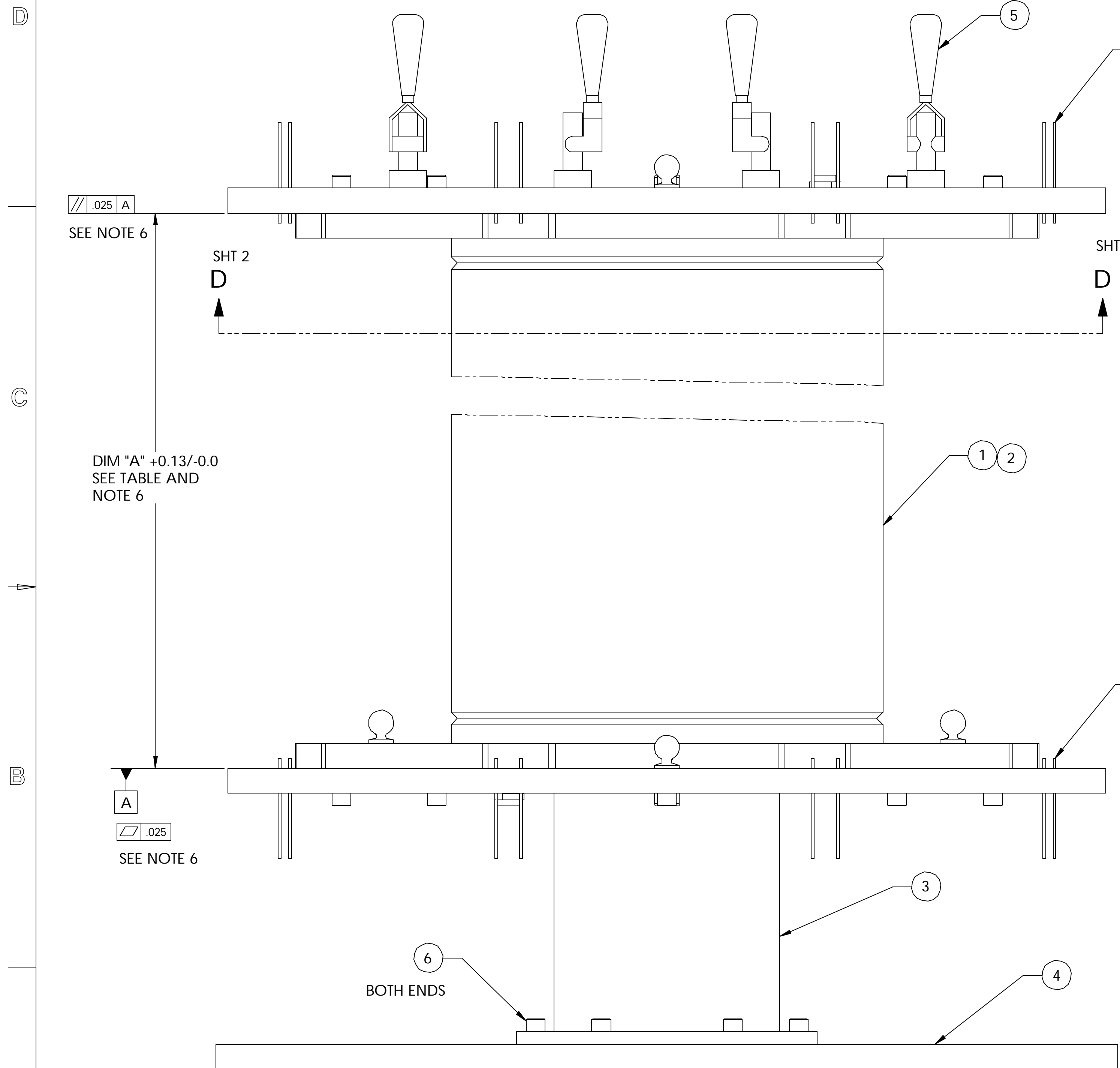


DWG. NO.		SIZE	REV.	SER.		
21F687 4		=	1			
ITEM	PART NO.	REQD	REQD	DESCRIPTION		MATERIAL
9	21F695-3	16	16	JOINING PIN CENTERING BUSHING		
8		32	32	1.5mm DIA GROUND PIN		STEEL
7	21F695-1	16	16	CAPTIVE PIN		
6		12	12	1/4-20 UNC-2B SOCKET HEAD CAPSCREW		STEEL
5		4	4	TOGGLE CLAMP		
4	21F694	1	1	BOND FIXTURE BASEPLATE		
3	21F693	1	1	BOND FIXTURE TUBE BASEPLATE STAND		
2	21F688-3		1	CENTRAL SECTION BOND FIXTURE SUB-ASSY ALIGNMENT		
1	21F688-1		1	END SECTION BOND FIXTURE SUB-ASSY ALIGNMENT		
PART NO.		-1	-3			



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 CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
- TORQUE SOCKET HEAD CAP SCREWS TO 24.3 in.-Lbs (2.0 ft.-Lbs.) MAX
- DIMENSIONS AND TOLERANCES ARE BASED UPON INDIVIDUAL PART TOLERANCES; AND ARE REFERENCE
- SCREWS ARE REMOVED; TOGGLE CLAMPS ARE USED TO LEVER TOP PLATE OFF FOR ASSEMBLY REMOVAL AFTER BONDING
- 1.5mm DIA. PINS ARE USED TO ALIGN ASSEMBLY PANELS IN POSITION
- CAPTIVE PIN IS USED TO CRITICALLY POSITION VERTEX JOINT ASSEMBLY (21F676) DURING BONDING
- JOINING PIN CENTERING BUSHING IS USED TO BOND FRAME JOINING PIN (21F660) DURING A SECONDARY BONDING PROCESS
- SEE DWG 21F650 AND 21F665 FOR BONDING ADHESIVE SPECIFICATIONS
- THE POSITION OF BONDING PINS AND BUSHINGS (ITEM 7 AND 9) IN THE FIXTURES TOP AND BOTTOM PLATES (21F692) DURING THE BONDING PROCESS MUST BE RECORDED AND REPEATED FOR ALL BONDING PROCESSES

PART NO.	DIM "A"	ASSEMBLY
-1	292.000	END SECTION
-3	840.000	CENTRAL SECTION

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY	
TOLERANCES	X.X ± 0.5	FRAC.	± 1/64	NO.	DATE	ISSD	UNIVERSITY OF CALIFORNIA - BERKELEY #
	X.XX ± 0.25	ANGLES	± 30°	REL TO	DATE	REQD	
	X.XXX ± 0.013	FINISH	1.6	SURFACE TREATMENT			
DO NOT SCALE PRINT				IDEN METHOD TAG			
THREADS ARE CLASS 2				PROJECT NUMBER	ATL-1P-ED-XXXX		
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NAME	US ATLAS SILICON SUBSYSTEM		
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS				DWG BY	W. K. MILLER	DATE	4/16/2002
BREAK EDGES .016 MAX. ON MACHINED WORK				CHK BY	BILL WILDS	DATE	4/16/2002
REMOVE BURS, WELD SPLATTER & LOOSE SCALE				APR BY	E. ANDERSSON	DATE	4/16/2002
IN ACCORDANCE WITH ASME Y14.5m & B46.1							
REV DWG		CHK ZONE	DATE	CHANGES		MICROFILMED: DWG. TYPE ASSEM SHOWS ON N/A SCALE: 1:1.5 DO NOT SCALE PRINTS	
						PATENT CLEAR: DESIGN ACCT. NO. P1AP-11 CATEGORY CIDE AP6250	
						DWG. NO. 21F687 4 SIZE REV.	
						SHEET 1 OF 2	

8

7

6

5

4

3

1

ITEM	PART NO.	REQD	REQD	DESCRIPTION	MATERIAL
5		12	12	M6 X 1.0 SOCKET HD CAP X 25.4	
4		4	4	12.7 DIA. GAGE PIN	
3	21F689-3		1	CENTRAL SECTION SPACING TUBE	
2	21F689-1		1	END SECTION SPACING TUBE	
1	21F690		2	PRE-ALIGNMENT ASSEMBLY	
DASH NO:			-1	-3	

D

C

B

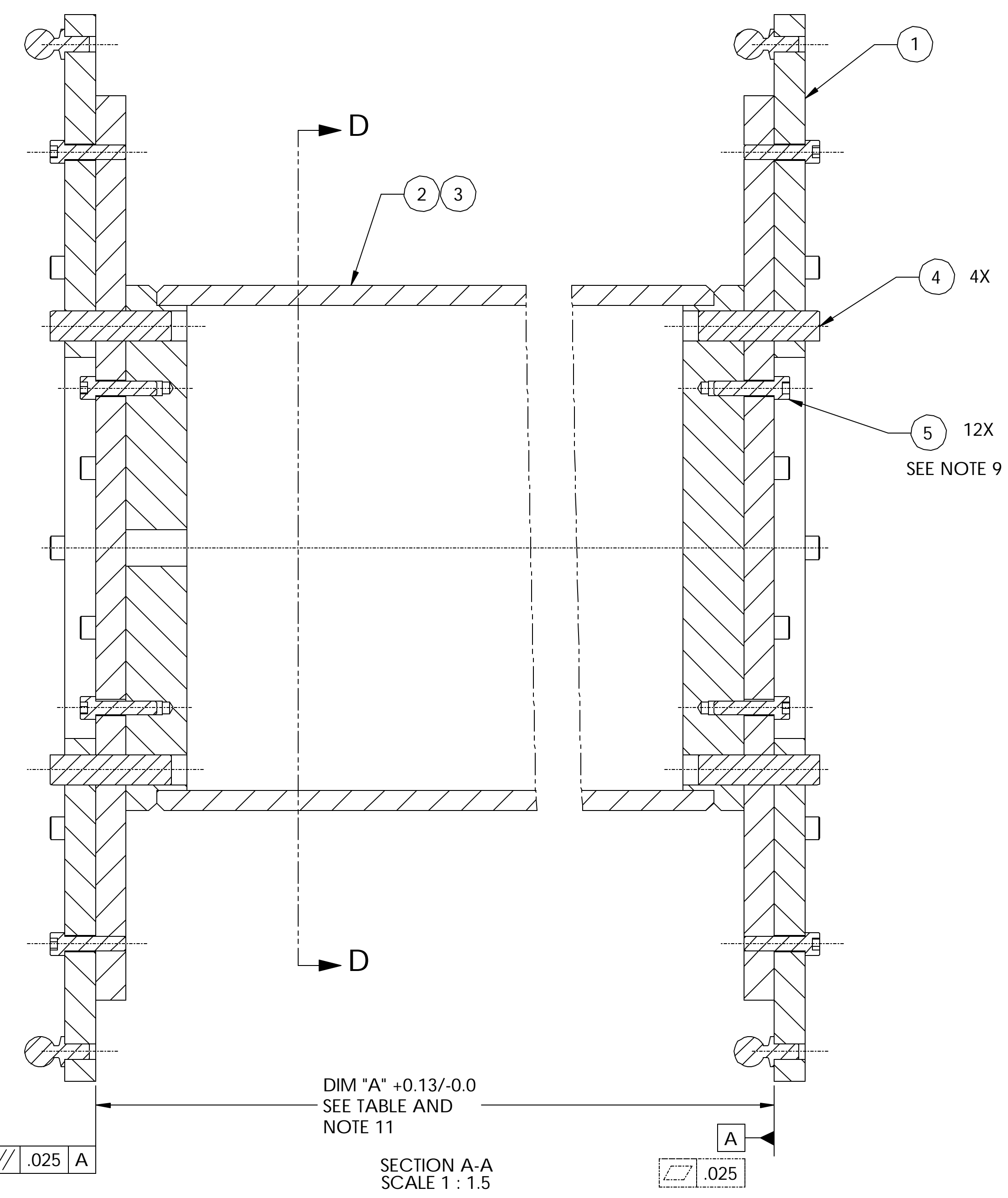
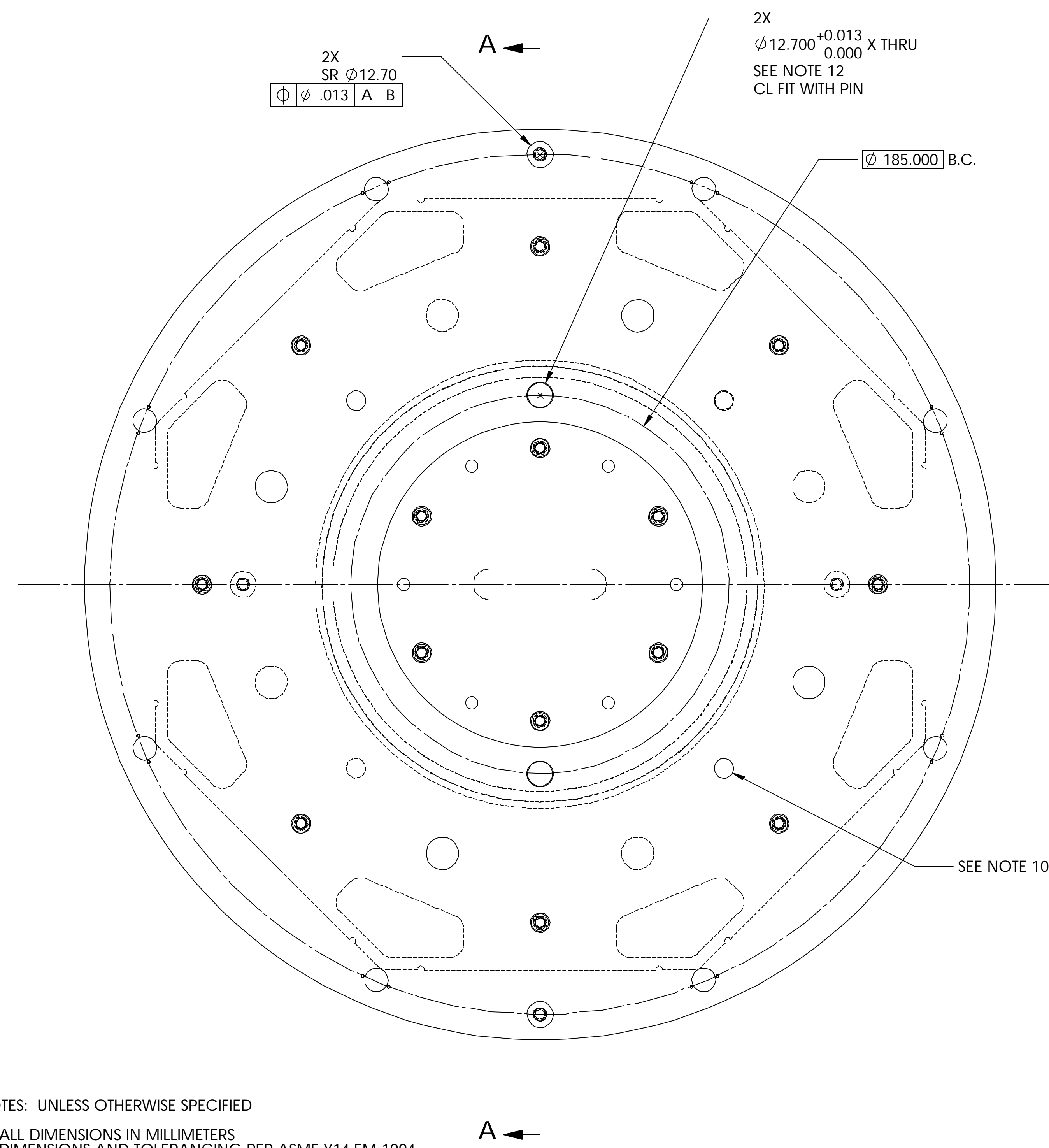
A

D

C

B

A



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
- TORQUE SOCKET HEAD CAP SCREWS TO 24.3 in-Lbs (2.0 ft-Lbs.) MAX
- REMOVE TWO 9.52 DOWEL PINS FROM TOP SIDE ONLY
- DIMENSIONS ARE REFERENCE, ARE BASED ON INDIVIDUAL PART TOLERANCES
- ANGULARLY ORIENT, MATCH DRILL AND PIN ITEM(S) 1 TO EACH OTHER; BOLT ASSEMBLY TOGETHER USING ITEM(S) 5
- CMM INSPECTION OR EQUIVALENT REQUIRED; INSPECTION REPORTS PROVIDED TO HYTEC FOR REVIEW AND APPROVAL. INSPECTION TEMPERATURE MUST BE INDICATED

PART NO.	DIM "A"	ASSEMBLY
-1	292.000	END SECTION
-3	840.000	CENTRAL SECTION

REV	DWG	CHK	ZONE	DATE	CHANGES	UNLESS OTHERWISE SPECIFIED	SHOP ORDERS	SER NO.	ERNEST ORLANDO LAWRENCE
						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	BERKELEY NATIONAL LABORATORY
						THREADS ARE CLASS 2 CHAMFER ENDS OF ALL SCREW THREADS 30° CUT ROUND, 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	DO NOT SCALE PRINT	PROJECT NAME PROJECT US ATLAS SILICON SUBSYSTEM	UNIVERSITY OF CALIFORNIA - BERKELEY #
						DWG BY CHK BY APR BY	DATE DATE DATE	DATE DATE DATE	ATLAS PIXEL DETECTOR SPACEFRAME BONDING FIXTURE SUB-ASSEMBLY ALIGNMENT
									SCALE: 1:1.5
									DO NOT SCALE PRINTS
									SHEET 1 OF 2
									21F688 4

8

7

6

5

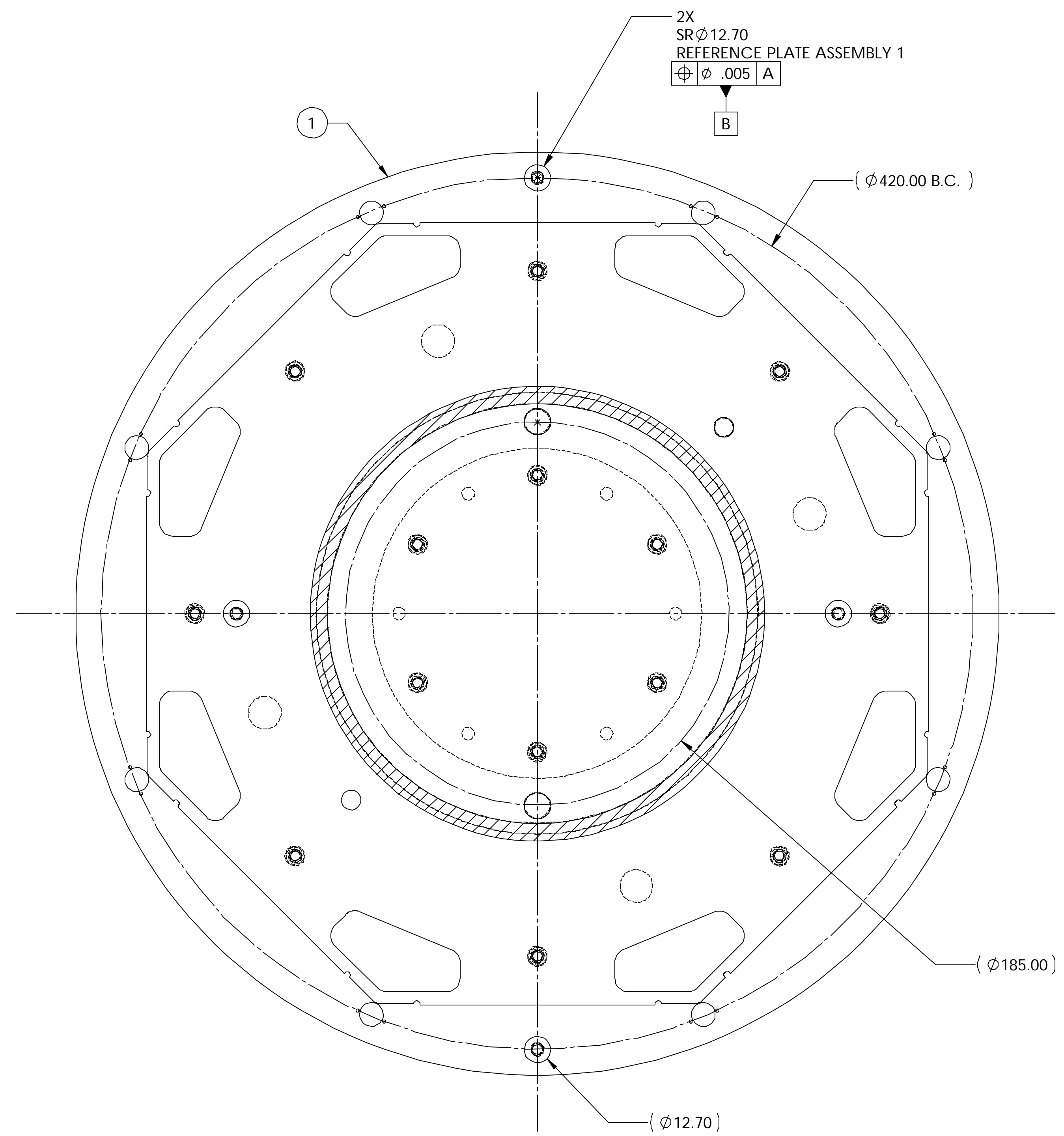
4

3

2

1

DWG. NO.	21F688 4	SIZE	REV.	SR.
ITEM	PART NO.	REQD	DESCRIPTION	
			MATERIAL	



NOTES: UNLESS OTHERWISE SPECIFIED

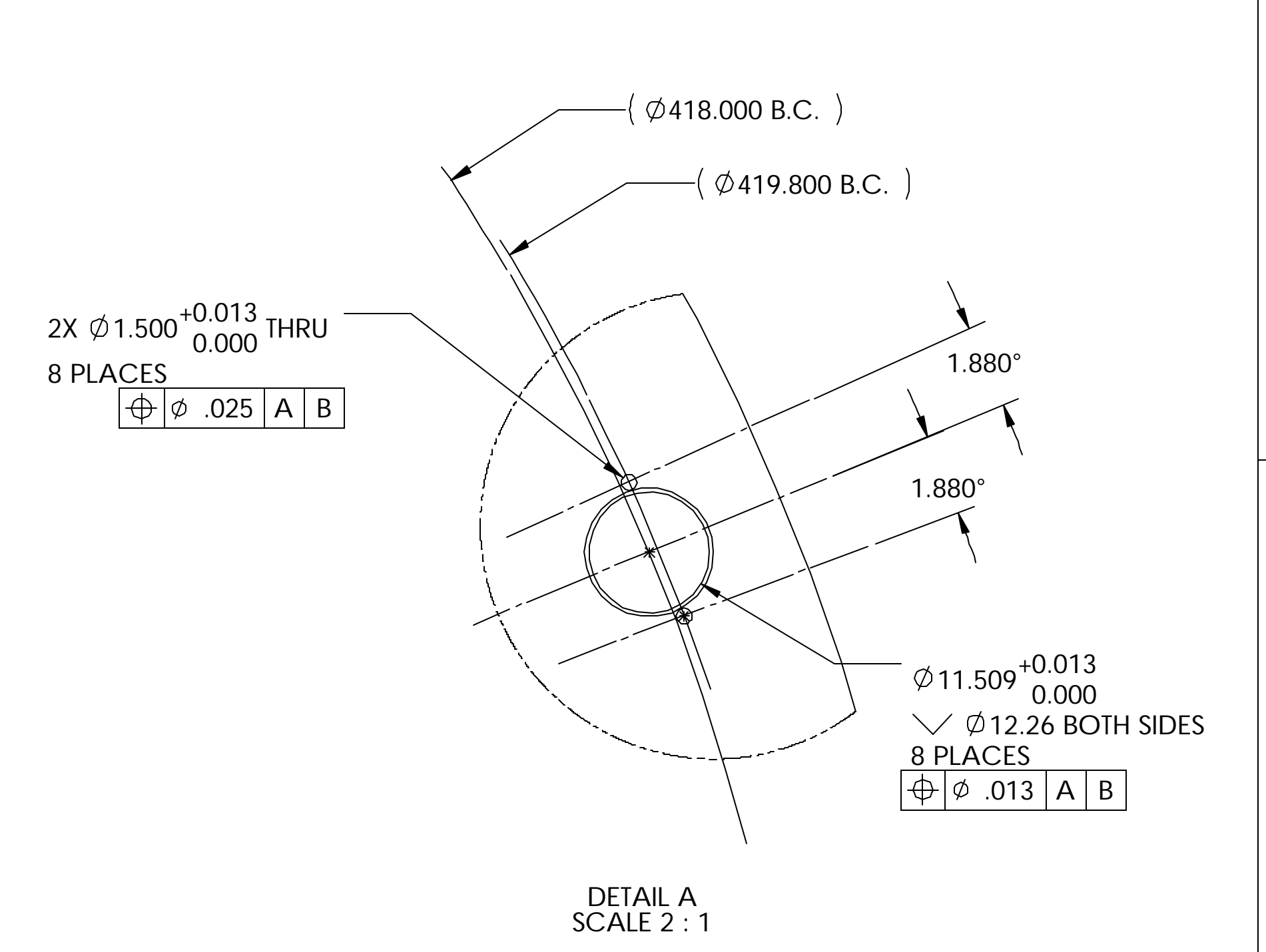
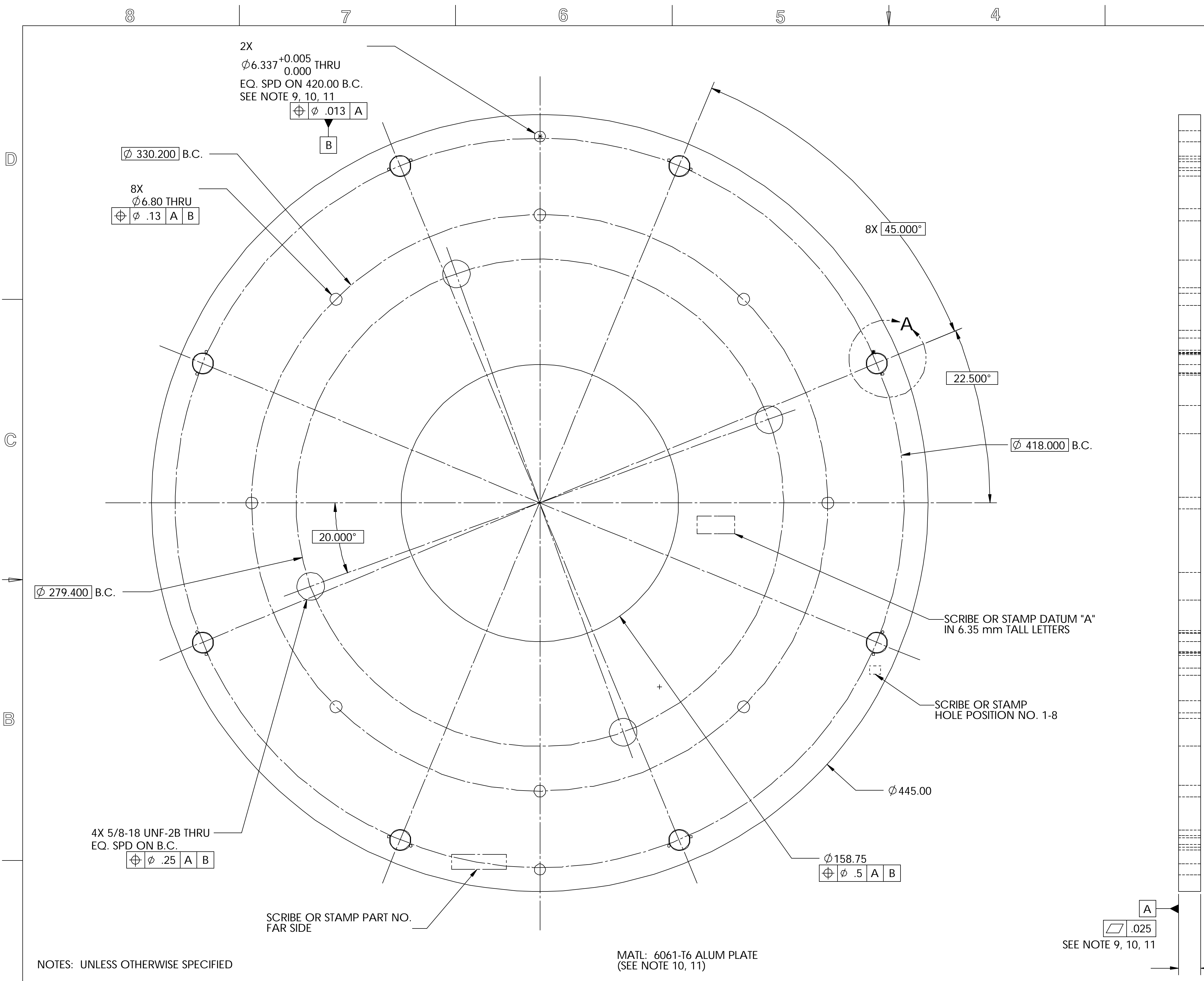
1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .38 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. TORQUE SOCKET HEAD CAP SCREWS TO 24.3 in-Lbs (2.0 ft-Lbs.) MAX
10. REMOVE TWO 9.52 DOWEL PINS FROM TOP SIDE ONLY
11. DIMENSIONS ARE REFERENCE, ARE BASED ON INDIVIDUAL PART TOLERANCES
12. ANGULARLY ORIENT, MATCH DRILL AND PIN ITEM(S) 1 TO EACH OTHER; BOLT ASSEMBLY TOGETHER USING ITEM(S) 5
13. CMM INSPECTION OR EQUIVALENT REQUIRED: INSPECTION REPORTS PROVIDED TO HYTEC FOR REVIEW AND APPROVAL. INSPECTION TEMPERATURE MUST BE INDICATED

SECTION D-D
SCALE 1:1.5

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

SCALE: 1:1.5
SHEET 2 OF 2
21F688 4

DWG. NO.	SIZE	REV.	SHEET
21F692 4		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



- 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 .038
 5. ALL INSIDE CORNERS TO BE .038 RADIUS MAX
 6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
 7. COUNTERSINK 82 DEGREES APPROXIMATELY .038 DEEP ALL DRILLED HOLES
 8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
 9. HOLES USED FOR TEMPORARY 1/2" DIA. TOOLING BALLS
 10. STRESS RELIEVE PLATE @ 350 F FOR 6 HOURS TO ACHIEVE DIMENSIONAL STABILITY
 11. CMM INSPECTION REQUIRED. INSPECTION REPORTS PROVIDED TO HYTEC FOR REVIEW AND APPROVAL. INSPECTION REPORTS TO INDICATE INSPECTION TEMPERATURE.

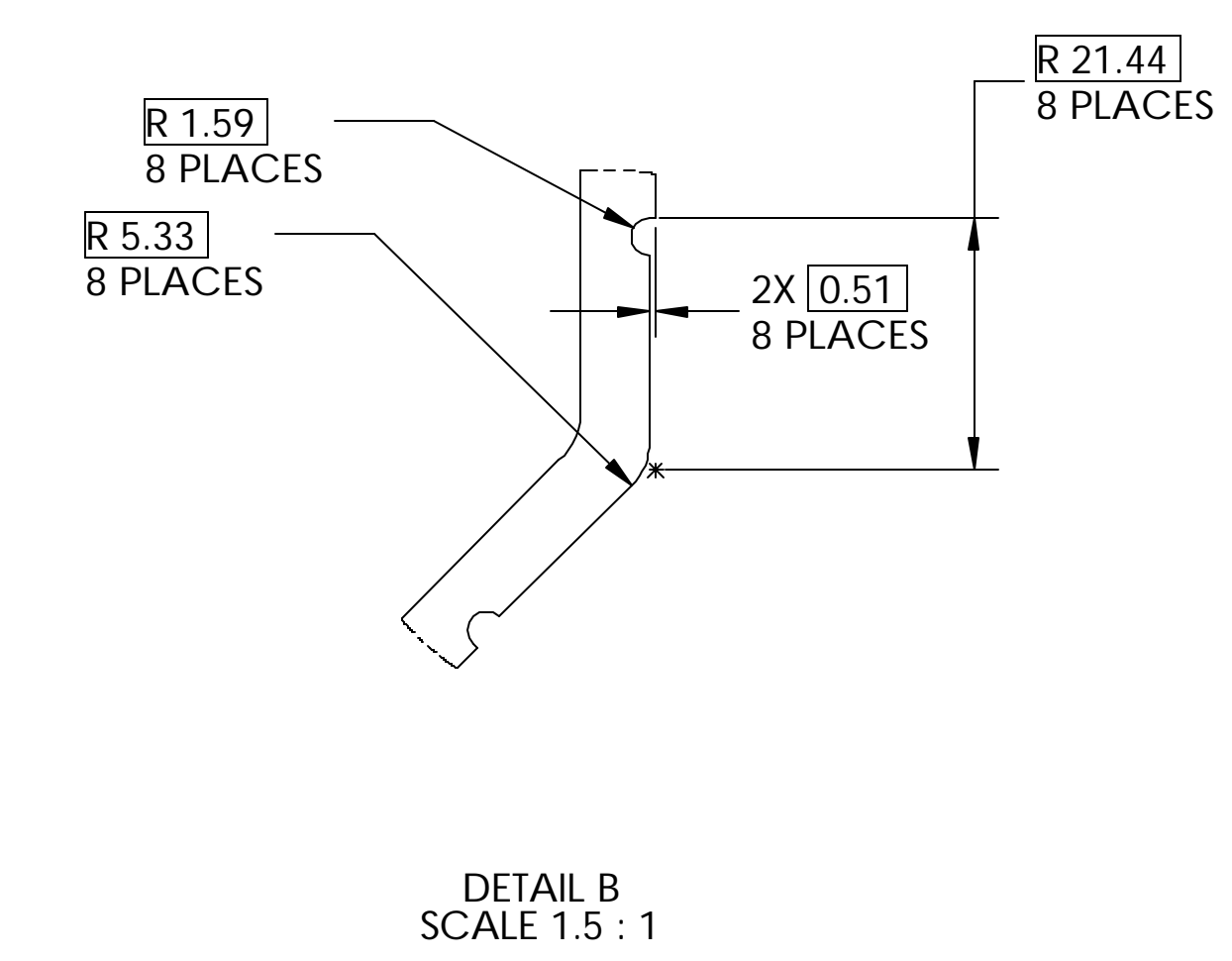
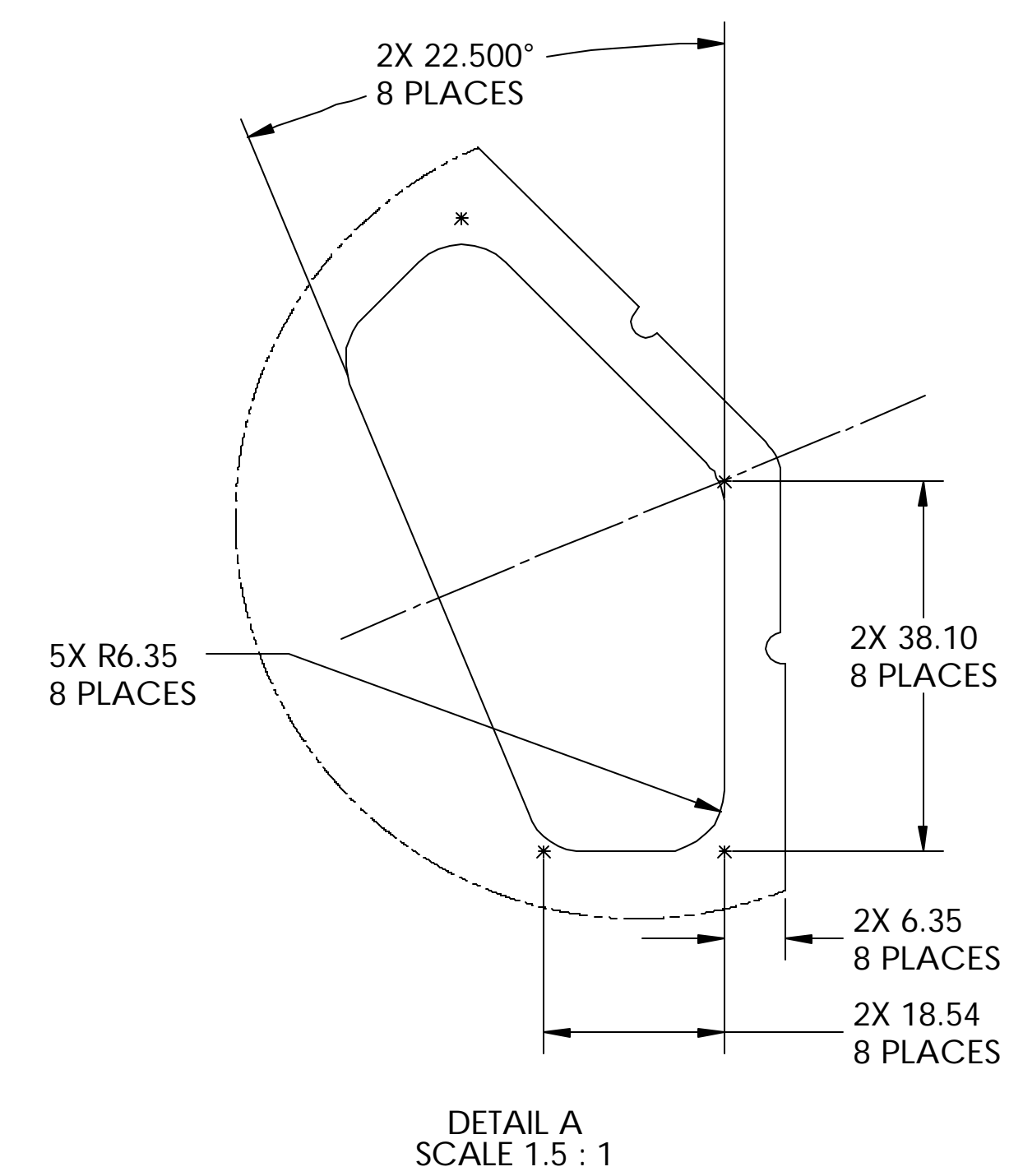
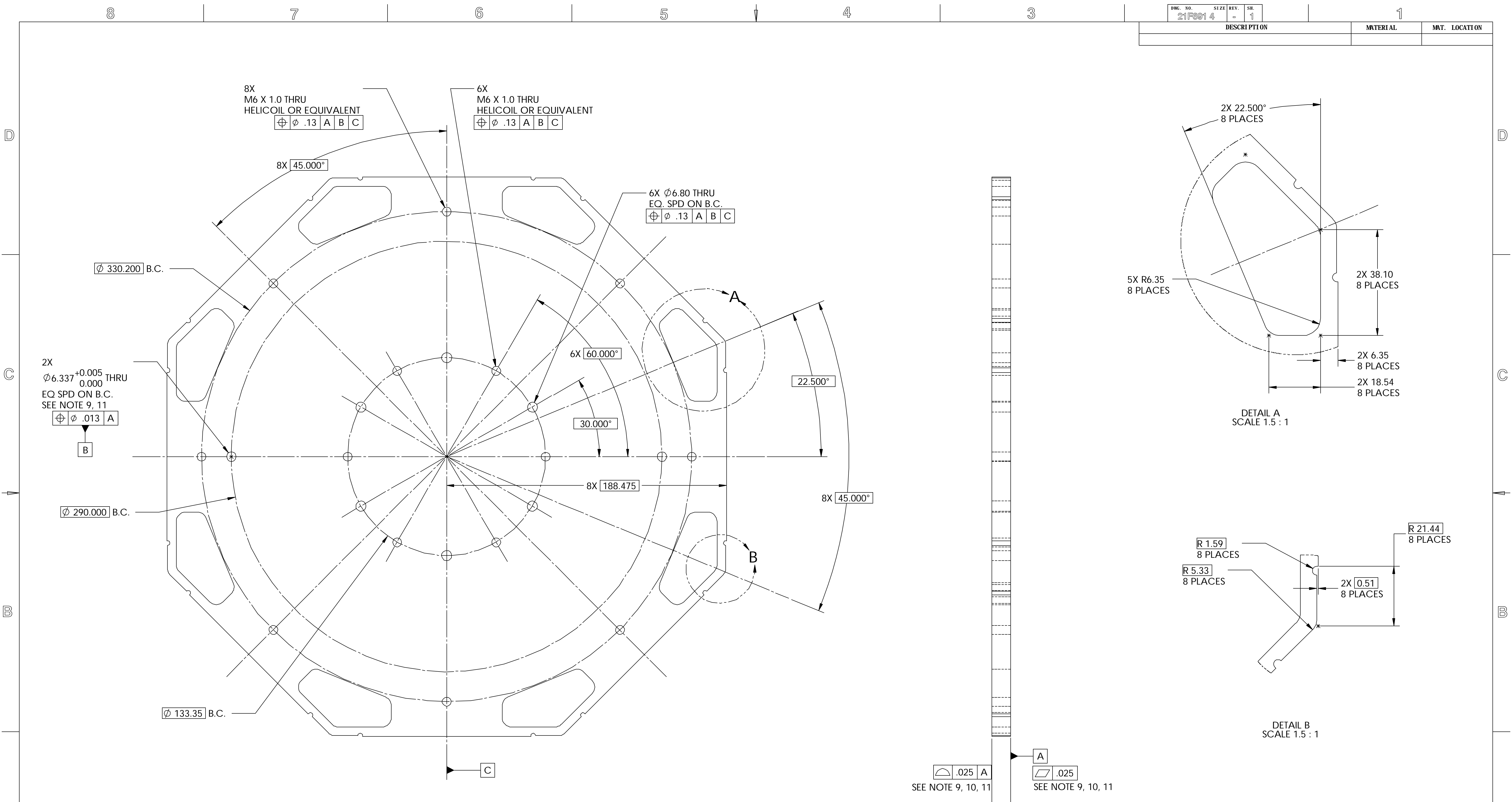
MATL: 6061-T6 ALUM PLATE
(SEE NOTE 10, 11)

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.	
TOLERANCES	X.X ± 0.5	FRAC. ± 1/64	NO. REQD.	DATE ISSD	SCALE PRINTS
	X.XX ± 0.25	ANGLES ± 30°	DATE REQD.		
	X.XXX ± 0.013	FINISH 1.6			
DO NOT SCALE PRINT			PROJECT NUMBER		
THREADS ARE CLASS 2			PROJECT NAME		
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NO.		
CUT ROUND. 1.5 THREAD RELIEF ON MACHINED THREADS			PROJECT TITLE		
BREAK EDGES .016 MAX. ON MACHINED WORK			PROJECT SUBSYSTEM		
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			PROJECT NUMBER		
IN ACCORDANCE WITH ASME Y14.5m & B46.1			PROJECT TITLE		
REV	DWG	CHK	ZONE	DATE	CHANGES

ACCT NO.	DATE	DATE	DATE
BY	DATE	DATE	DATE
W. K. MILLER	4/16/2002		
BILL WILDS	4/16/2002		
E. ANDERSSSEN	4/16/2002		

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY		UNIVERSITY OF CALIFORNIA - BERKELEY #	
ATLAS PIXEL DETECTOR SPACEFRAME BOND FIXTURE VERTEX CORNER JOINT ALIGNMENT PLATE			
MICROFILMED:	DWG. TYPE	SHOWS ON	SCALE: 1:1.25
	PART	21F690	DO NOT SCALE PRINTS
PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CODE	DWG. NO.
	P1AP-11	AP6250	21F692 4
			SHEET 1 OF 1
			SIZE
			REV.

DWG. NO.	SIZE	REV.	SER.
21F691 4		1	
DESCRIPTION		MATERIAL	MNT. LOCATION



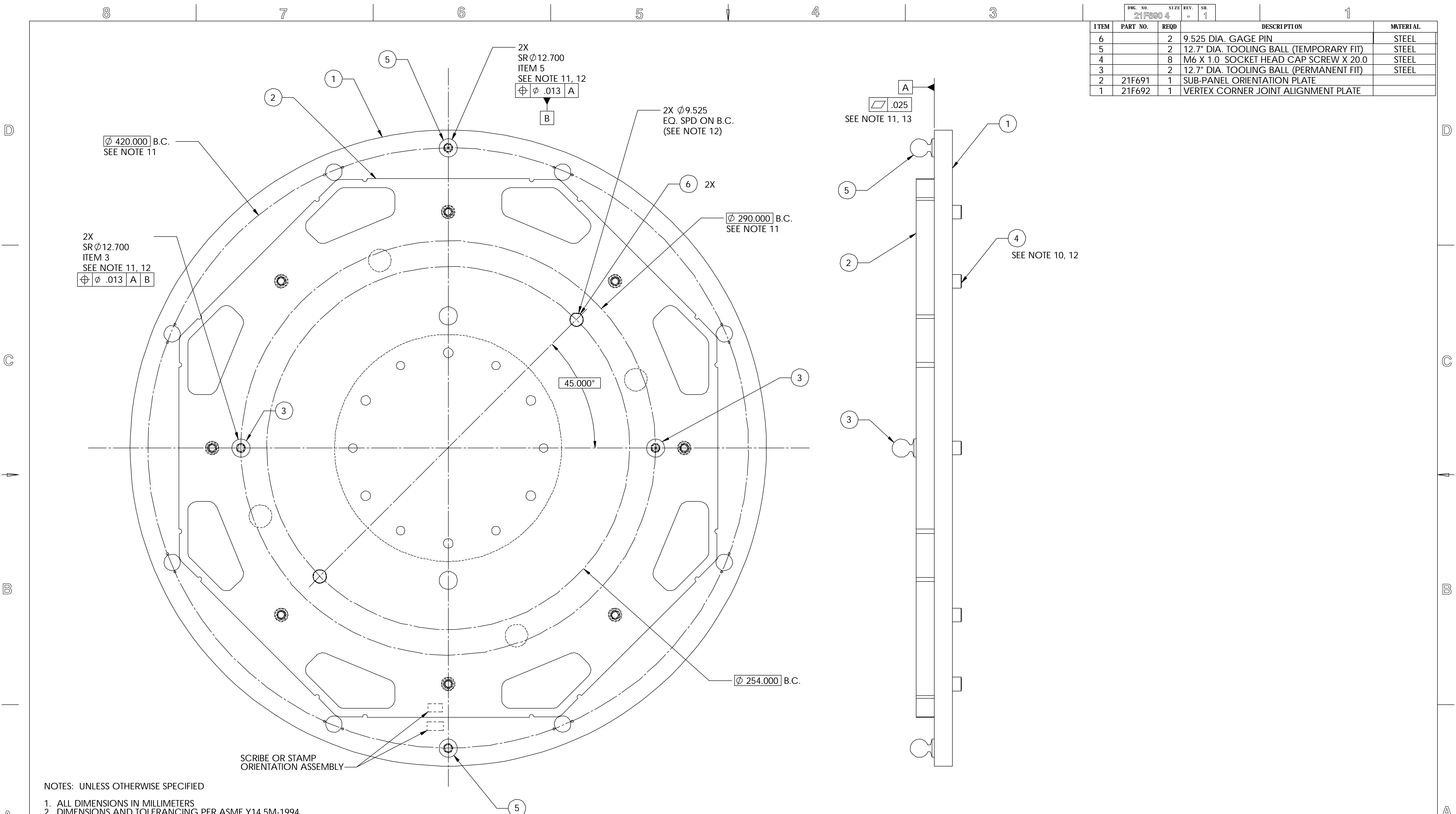
- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL DIMENSIONS IN MILLIMETERS
 2. DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
 3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
 4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
 5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
 6. COUNTERSINK 82 DEGREES ALL 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. HOLES FOR 1/2" DIA. PERMANENT TOOLING BALLS
 10. STRESS RELIEVE PLATE @ 350 F FOR 6 HOURS TO ACHIEVE DIMENSIONAL STABILITY
 11. CMM INSPECTION REQUIRED. CMM REPORT TO BE PROVIDED TO HYTEC FOR REVIEW AND APPROVAL. INSPECTION TEMPERATURE TO BE INDICATED ON REPORT.

MATL: 6061-T6 ALUM
(SEE NOTE 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 SPACEFRAME BOND FIXTURE SUB-PANEL ORIENTATION PLATE	
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT			MICROFILMED: DWG. TYPE: PART	
DO NOT SCALE PRINT			PROJECT NAME: US ATLAS SILICON SUBSYSTEM		SCALE: 1:1.25		DO NOT SCALE PRINTS
THREADS ARE CLASS 2			PROJECT NUMBER: ATL-IP-ED-XXXX		SHOWS ON: 21F690		SHEET 1 OF 1
CHAMFER ENDS OF ALL SCREW THREADS 30°			DWG. BY: W. K. MILLER		DATE: 4/16/2002		SIZE: REV.
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS			CHK BY: BILL WILDS		DATE: 4/16/2002		
BREAK EDGES .016 MAX. ON MACHINED WORK			APR BY: E. ANDERSSSEN		DATE: 4/16/2002		
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE							
IN ACCORDANCE WITH ASME Y14.5m & B46.1							
REV	DWG	CHK	ZONE	DATE	CHANGES		

SCALE: 1:1.25
SHOWS ON: 21F690
PART
CATEGORY CIDE: AP6250
DWG. NO.: 21F691 4

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
6		2	9.525 DIA. GAGE PIN	STEEL
5		2	12.7" DIA. TOOLING BALL (TEMPORARY FIT)	STEEL
4		8	M6 X 1.0 SOCKET HEAD CAP SCREW X 20.0	STEEL
3		2	12.7" DIA. TOOLING BALL (PERMANENT FIT)	STEEL
2	21F691	1	SUB-PANEL ORIENTATION PLATE	
1	21F692	1	VERTEX CORNER JOINT ALIGNMENT PLATE	



NOTES: UNLESS OTHERWISE SPECIFIED

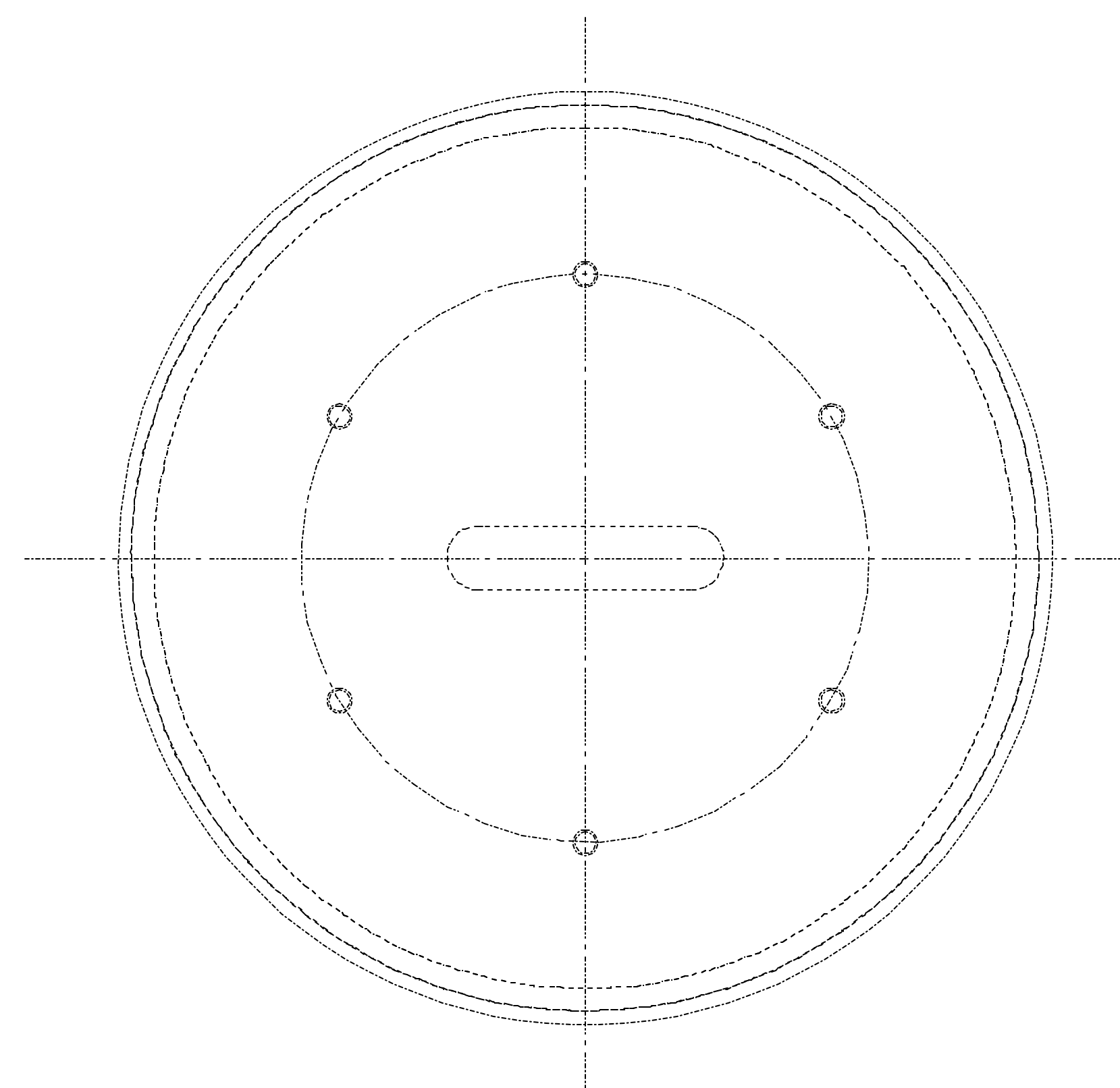
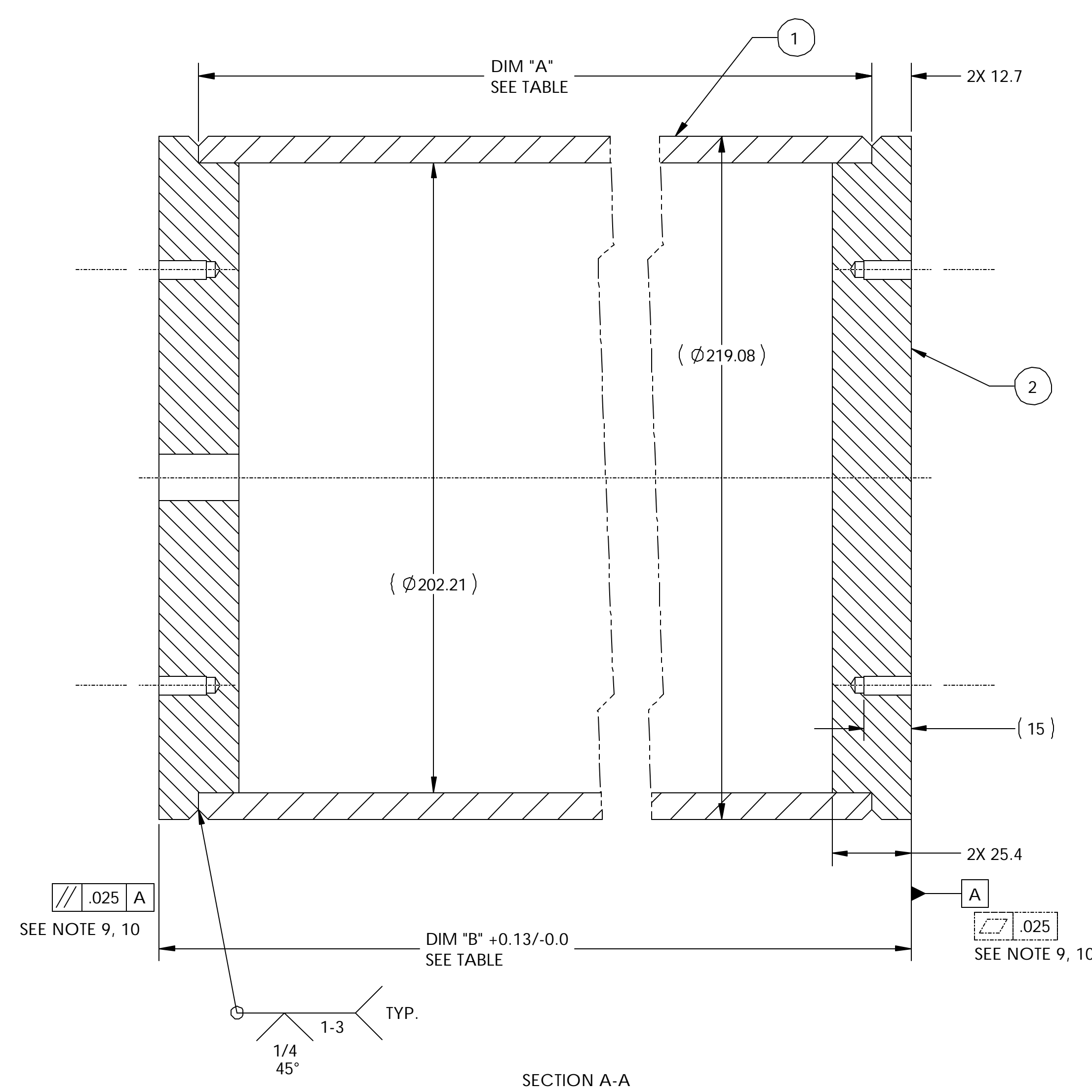
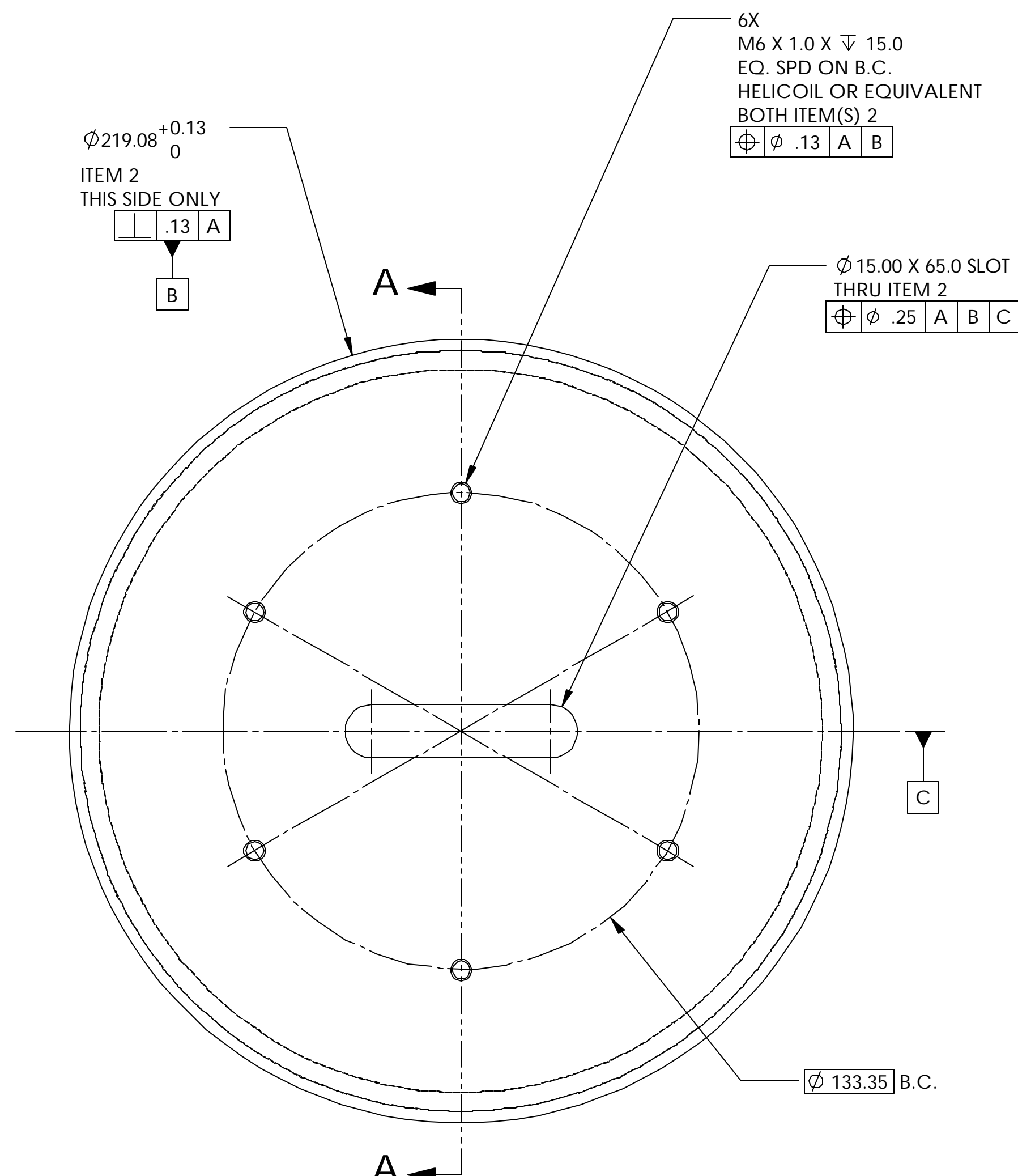
1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .38 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. TORQUE SOCKET HEAD CAP SCREWS TO 24.3in-Lbs (2.0 ft-Lbs) FOR ALUMINUM PLATE WITH HELICOIL
10. APPLY LOCKTITE THREADLOCK BLUE TO THREADS TO PREVENT THEM FROM LOOSENING
11. DIMENSIONS AND TOLERANCES ARE BASED UPON INDIVIDUAL PART TOLERANCES, AND ARE REFERENCE
12. ANGULARLY ORIENT ITEM 1 AND 2 USING TOOLING BALLS, MATCH DRILL AND PIN TOGETHER, BOLT PLATES TOGETHER
13. CMM INSPECTION REQUIRED; INSPECTION REPORTS PROVIDED TO HYTEC FOR REVIEW AND APPROVAL. INSPECTION TEMPERATURE MUST BE INDICATED

REV	DWG	CHK	ZONE	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.
TOLERANCES	X.X ± 0.5	FRAC. ± 1/64	ACCT. NO.	NO. REQD
	X.XX ± 0.25	ANGLES ± 30°	DATE ISSD	DATE REQD
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT	
DO NOT SCALE PRINT		INDEX METHOD TAG		
THREADS ARE CLASS 2		PROJECT NAME	ATL-1P-ED-XXXX	
CHAMFER ENDS OF ALL SCREW THREADS 30°		PROJECT NO.	US ATLAS SILICON SUBSYSTEM	
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS		DWG. BY	W. K. MILLER	
BREAK EDGES, .016 MAX. ON MACHINED WORK		CHK. BY	BILL WILDS	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		DATE	4/16/2002	
IN ACCORDANCE WITH ASME Y14.5m & B46.1		APR. BY	E. ANDERSSSEN	
		DATE	4/16/2002	

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY				
UNIVERSITY OF CALIFORNIA - BERKELEY #				
ATLAS PIXEL DETECTOR SPACEFRAME BOND FIXTURE PRE-ALIGNMENT ASSEMBLY				
MICROFILMED:	DWG. TYPE	SHOWS ON	SCALE:	DO NOT SCALE PRINTS
	ASSEM	21F688	1:1.25	
PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CIDE	DWG. NO.	SIZE
	P1AP-11	AP6250	21F6904	REV.
			SHEET 1 OF 1	

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
2		2	TUBE SPACER END PLATE	6061-T6 ALUM
1		1	8.0" DIA. SCH 40 ALUM PIPE (.33 WALL) OR EQUIV.	6061-T6 ALUM



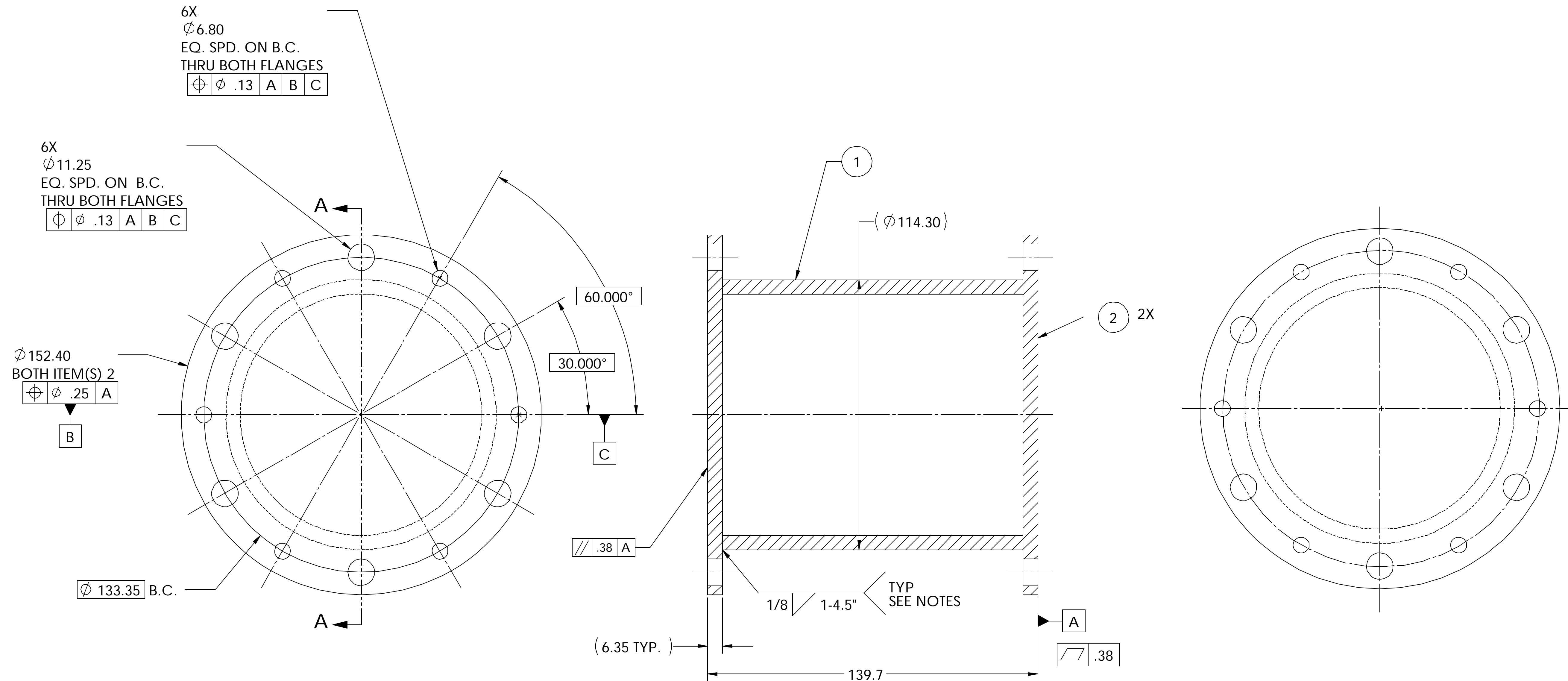
- NOTES: UNLESS OTHERWISE SPECIFIED
- ALL DIMENSIONS IN MILLIMETERS
 - DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
 - SURFACE TEXTURE PER ANI/ASME B 46.1-1985
 - REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
 - ALL INSIDE CORNERS TO BE .38 RADIUS MAX
 - COUNTERSINK 82 DEGREES ALL TAPPED 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
 - STRESS RELIEVE PART @ 350 F FOR 6 HOURS
 - CMM INSPECTION REQUIRED; INSPECTION REPORTS PROVIDED TO HYTEC FOR REVIEW AND APPROVAL. INSPECTION TEMPERATURE MUST BE INDICATED

PART NO	DIM "A"	DIM "B"	ASSEMBLY
-689-1	241.20	266.600	END SECTION
-689-3	789.20	814.600	CENTRAL SECTION

REV	DWG	CHK	ZONE	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER NO.
TOLERANCES	X.X ± 0.5	FRAC. ± 1/64	ACCT NO.	NO. REQD
	X.XX ± 0.25	ANGLES ± 30'	DATE ISSD	DATE REQD
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT	
DO NOT SCALE PRINT		IDEN METHOD TAG		
THREADS ARE CLASS 2		PROJECT NAME	ATL-IP-ED-XXXX	
CHAMFER ENDS OF ALL SCREW THREADS 30°		PROJECT NUMBER	US ATLAS SILICON SUBSYSTEM	
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS		DWG BY	DATE	4/16/2002
BREAK EDGES .016 MAX. ON MACHINED WORK		CHK BY	DATE	4/16/2002
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		APR BY	DATE	4/16/2002
IN ACCORDANCE WITH ASME Y14.5m & B46.1		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY #		
		ATLAS PIXEL DETECTOR SPACEFRAME BOND FIXTURE CENTRAL AND END SECTION SPACING TUBES		
		MICROFILMED:	DWG. TYPE	SCALE: 1:1.25
			ASSEM	DO NOT SCALE PRINTS
		PATENT CLEAR:	DESIGN ACCT. NO.	SHEET 1 OF 1
			P1AP-11	SIZE REV.
			AP6250	21F6894

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
2		2	END PLATE	6061-T6 ALUM
1		1	4.0" DIA. SCH 40 TUBE	6061-T6 ALUM



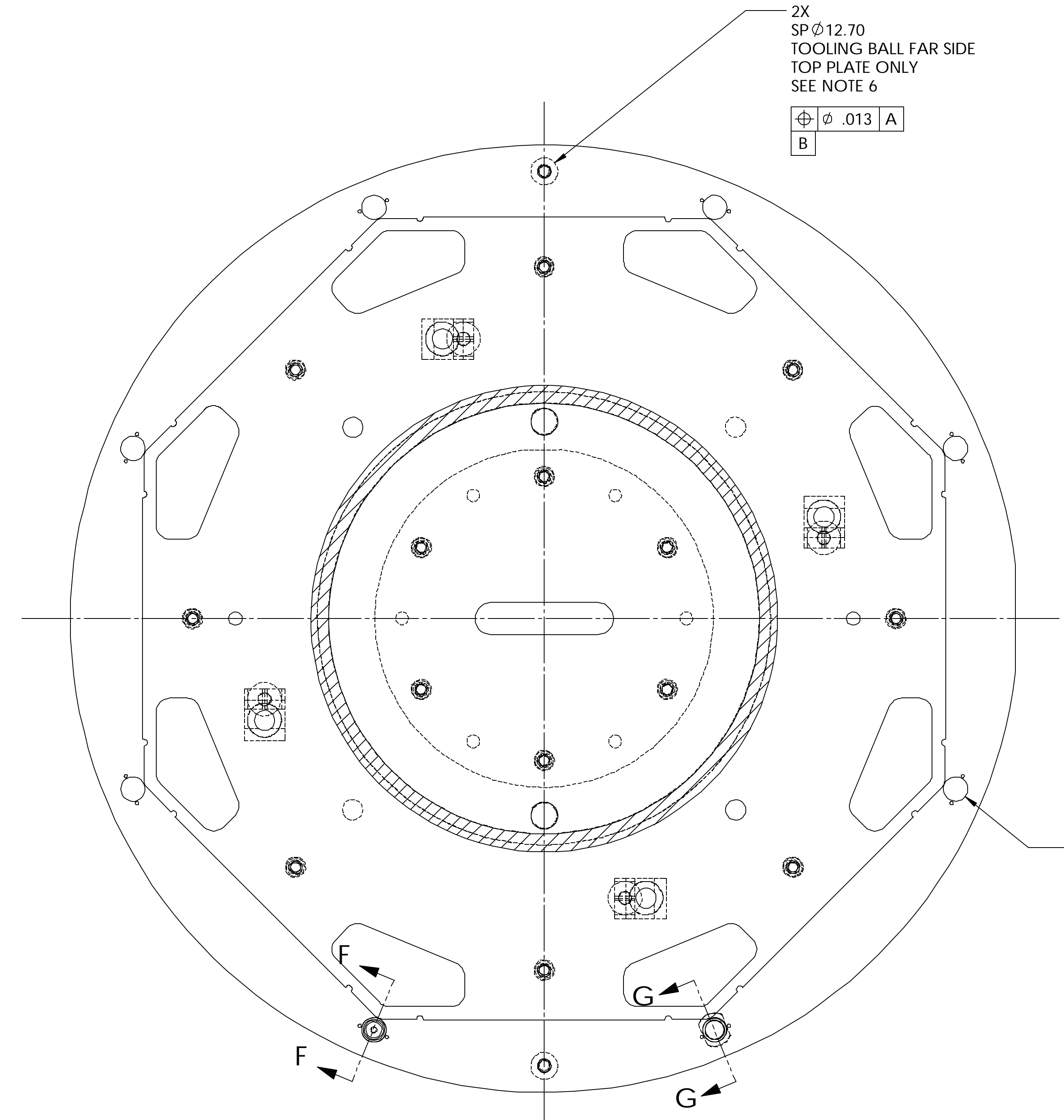
SECTION A-A
SCALE 1 : 1

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. PLACE WELD BEAD IN LINE WITH 7.14 DIA. HOLE AND AWAY FROM 11.11 DIA. HOLE

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 SPACEFRAME BONDING FIXTURE TUBE BASEPLATE STAND
						DO NOT SCALE PRINT	INDEX METHOD TAG		
						THREADS ARE CLASS 2	PROJECT NUMBER ATL-IP-ED-XXXX		
						CHAMFER ENDS OF ALL SCREW THREADS 30°	PROJECT NAME US ATLAS SILICON SUBSYSTEM		
						CUT ROUND. 1.5 THREAD RELIEF ON MACHINED THREADS	DWG BY W. K. MILLER	DATE 4/16/2002	
						BREAK EDGES .016 MAX. ON MACHINED WORK	CHK BY BILL WILDS	DATE 4/16/2002	
						REMOVE BURRS, WELD SPLATTER & LOOSE SCALE	APR BY E. ANDERSSSEN	DATE 4/16/2002	
						IN ACCORDANCE WITH ASME Y14.5m & B46.1			
									SCALE: 1:1 SHEET 1 OF 1
									DWG. NO. 21F6934 CATEGORY CODE AP6250 SIZE REV.

DWG. NO.	21F687 4	SIZE	REV.	SER.	1
ITEM	PART NO.	REQD	DESCRIPTION		MATERIAL

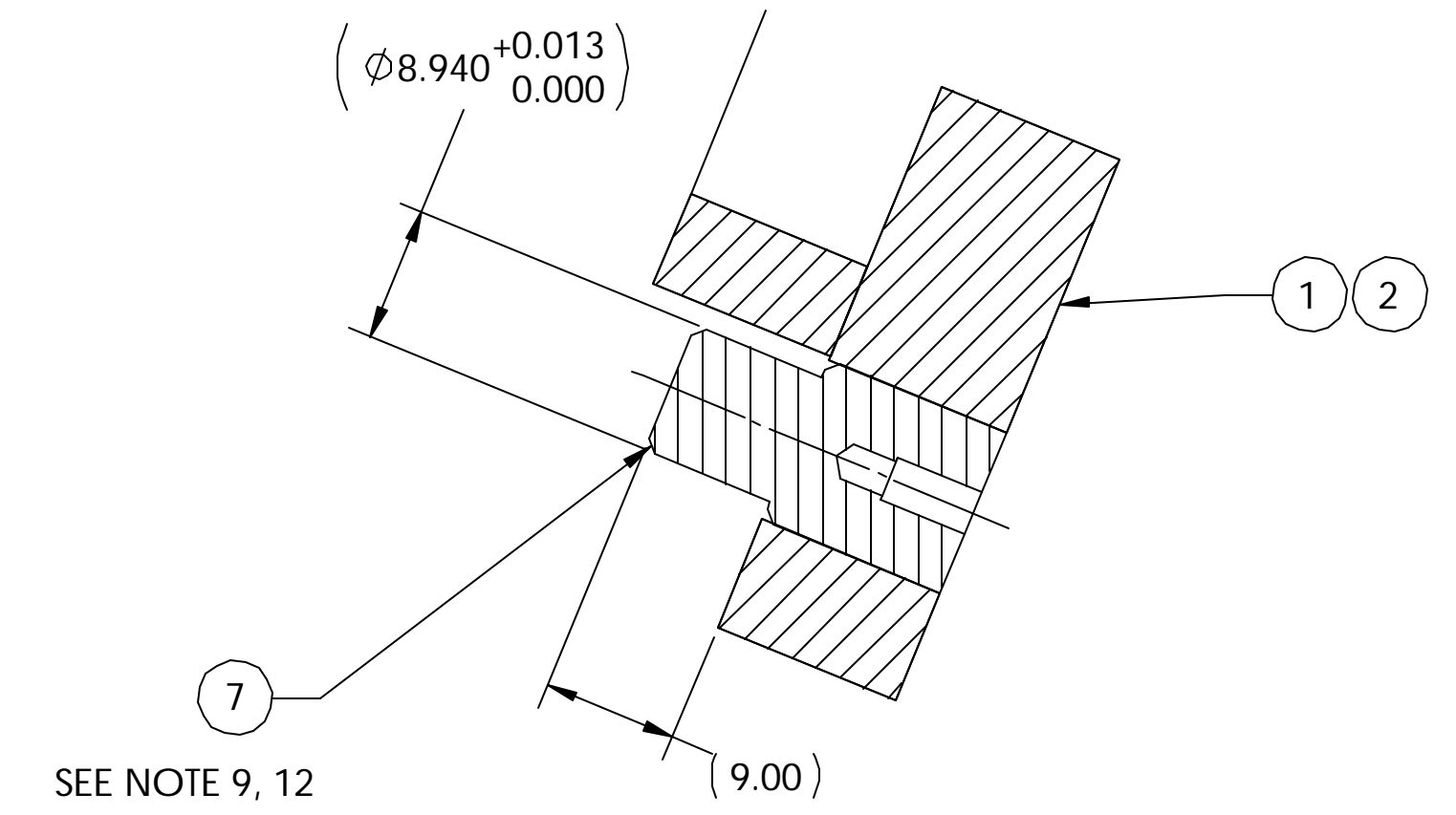


2X
SP Ø12.70
TOOLING BALL FAR SIDE
TOP PLATE ONLY
SEE NOTE 6

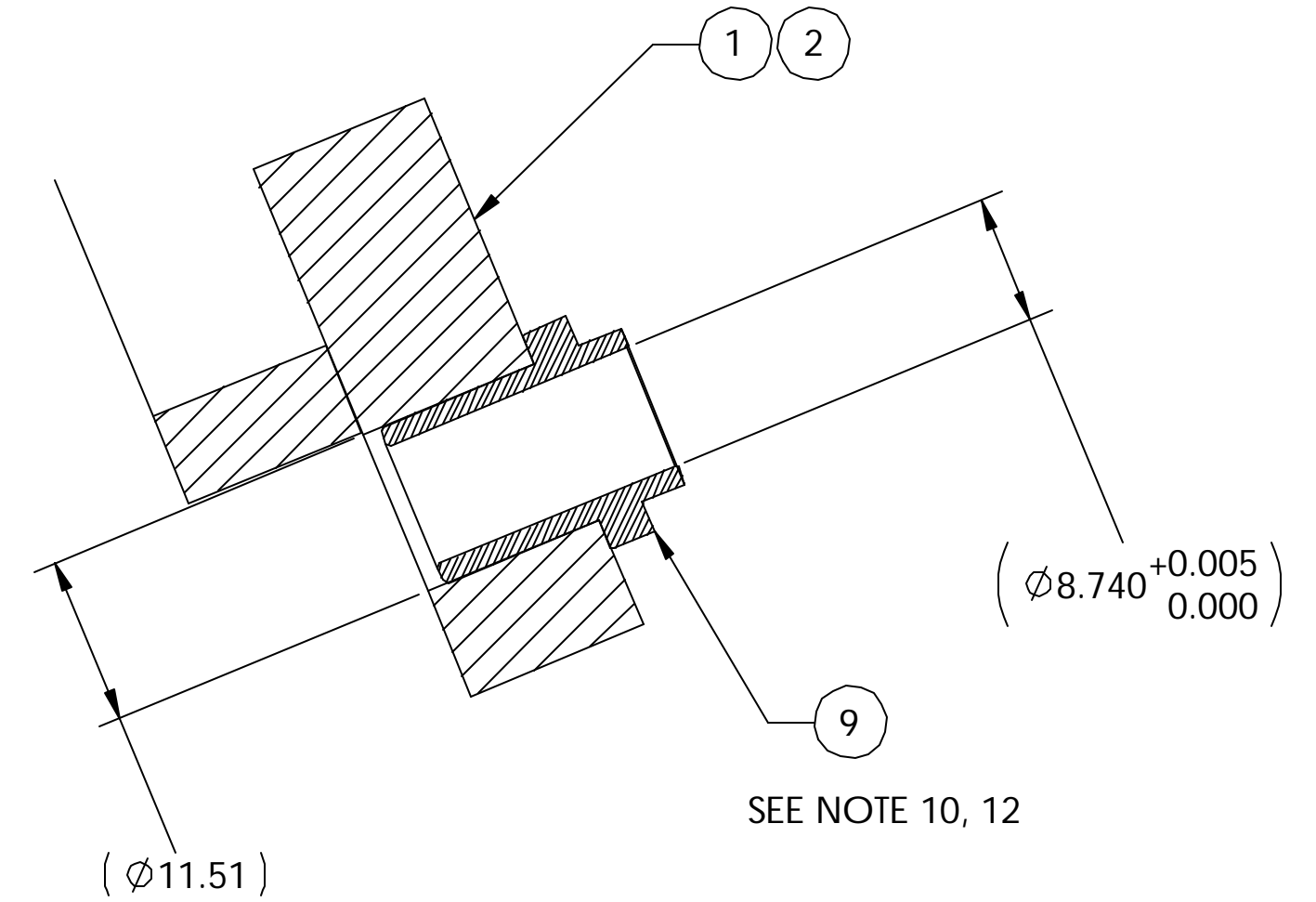
⊕	Ø .013	A
		B

16X Ø11.509^{+0.013}_{0.000}
TOP AND BOTTOM PLATE
SEE NOTE 6

⊕	Ø .05	A	B
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SECTION F-F
SCALE 2 : 1



SEE NOTE 10, 12

SECTION D-D
SCALE 1 : 1.5

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 CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
- TORQUE SOCKET HEAD CAP SCREWS TO 24.3 in-Lbs (2.0 ft-Lbs.) MAX
- DIMENSIONS AND TOLERANCES ARE BASED UPON INDIVIDUAL PART TOLERANCES; AND ARE REFERENCE
- SCREWS ARE REMOVED; TOGGLE CLAMPS ARE USED TO LEVER TOP PLATE OFF FOR ASSEMBLY REMOVAL AFTER BONDING
- 1.5mm DIA. PINS ARE USED TO ALIGN ASSEMBLY PANELS IN POSITION
- CAPTIVE PIN IS USED TO CRITICALLY POSITION VERTEX JOINT ASSEMBLY (21F676) DURING BONDING
- JOINING PIN CENTERING BUSHING IS USED TO BOND FRAME JOINING PIN (21F660) DURING A SECONDARY BONDING PROCESS
- SEE DWG 21F650 AND 21F665 FOR BONDING ADHESIVE SPECIFICATIONS
- THE POSITION OF BONDING PINS AND BUSHINGS (ITEM 7 AND 9) IN THE FIXTURES TOP AND BOTTOM PLATES (21F692) DURING THE BONDING PROCESS MUST BE RECORDED AND REPEATED FOR ALL BONDING PROCESSES

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 SPACEFRAME END AND CENTRAL SECTION BONDING FIXTURE ASSEMBLY	
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT		MICROFILMED: DWG. TYPE ASSEM		
DO NOT SCALE PRINT			PROJECT NAME		SCALE: 1:1.5		
THREADS ARE CLASS 2			PROJECT NO. ATL-IP-ED-XXXX		DO NOT SCALE PRINTS		
CHAMFER ENDS OF ALL SCREW THREADS 30°			DWG. W. K. MILLER		DATE 4/16/2002		
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS			CHK BILL WILDS		DATE 4/16/2002		
BREAK EDGES .016 MAX. ON MACHINED WORK			APR E. ANDERSSSEN		DATE 4/16/2002		
REMOVE BURS, WELD SPLATTER & LOOSE SCALE			IN ACCORDANCE WITH ASME Y14.5m & B46.1		PATENT CLEAR: DESIGN ACCT. NO. P1AP-11		
REV	DWG	CHK	ZONE	DATE	CATEGORY CIDE DWG. NO. 21F687 4		
CHANGES					SHEET 2 OF 2		

D
C
B
A

D
C
B
A

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

8

7

6

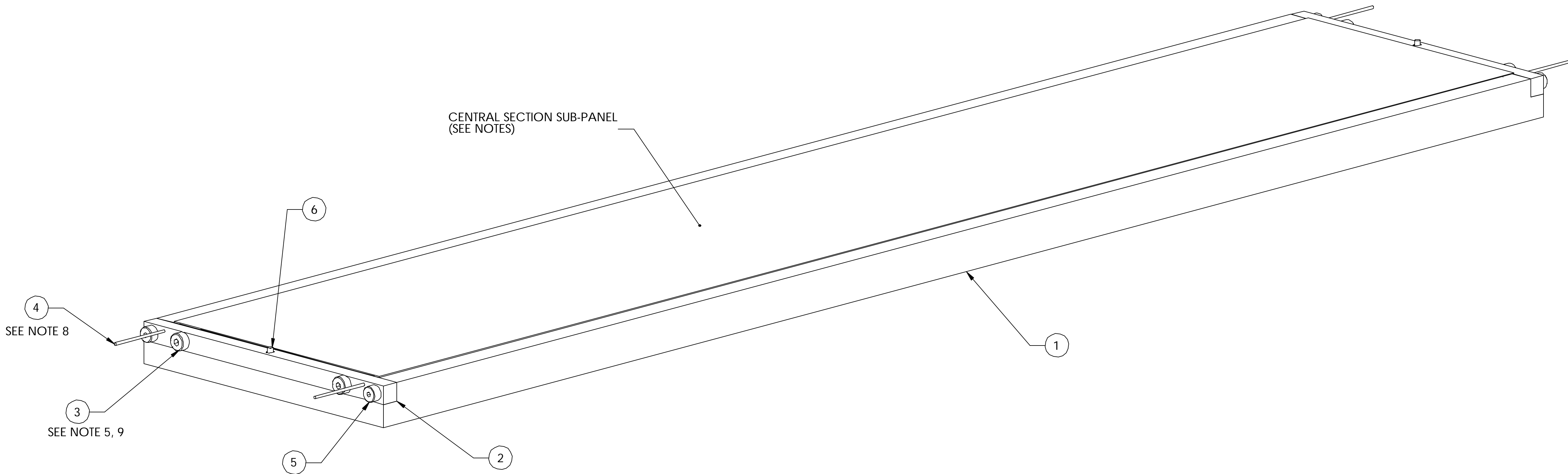
5

4

3

1

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
6		2	3.0 mm DIA. GAGE PIN	
5		4	M5 X .8 SOCKET HEAD CAP SCREW X 15 LONG	
4		4	1.50 mm DIA. GAGE PIN	
3	21F704	4	PANEL BOND FIXTURE MODIFIED SCREW	
2	21F702	2	CENTRAL SECTION PANEL BOND FIXTURE END PLATE	
1	21F701-3	1	CENTRAL SECTION PANEL BOND FIXTURE BASEPLATE	



NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS IN MILLIMETERS
2. FIXTURE USED TO FABRICATE SUB-PANEL 1 AND SUB-PANEL 2 (PART 21F666)
3. SUB-PANEL ASSEMBLIES SHOWN IN THEIR PRE-MACHINED STATE; POST BONDING MACHINED POCKETS IN PANEL 21F668 ARE SHOWN ON 21F666 AND 21F667
4. SEE PANEL DRAWINGS FOR ADHESIVE REQUIREMENTS
5. TORQUE SCREW TO 11 in-Lbs. MAX.
6. DIMENSIONS, TOLERANCES, AND DATUMS ARE BASED UPON INDIVIDUAL PARTS; SOME ARE REFERENCE
7. INSERT 21F676 IS PRE-BONDED INTO PART 21F675 PRIOR TO BONDING INTO PANEL ASSEMBLY
8. ITEM 4 AND 1.50 DIA. HOLE IN ITEM 2 CRITICALLY POSITION CORNER BLOCK ASSEMBLY
9. TORQUE ON ITEM 3 DRAWS CORNERBLOCK ASSEMBLY FLAT AGAINST ITEM 2
10. NOTE RELATIVE POSITION OF CORNERBLOCK ASSEMBLY -1 AND -2 AS DEFINED IN PANEL DRAWING 21F666 AND 21F667

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

8

7

6

5

4

3

2

1

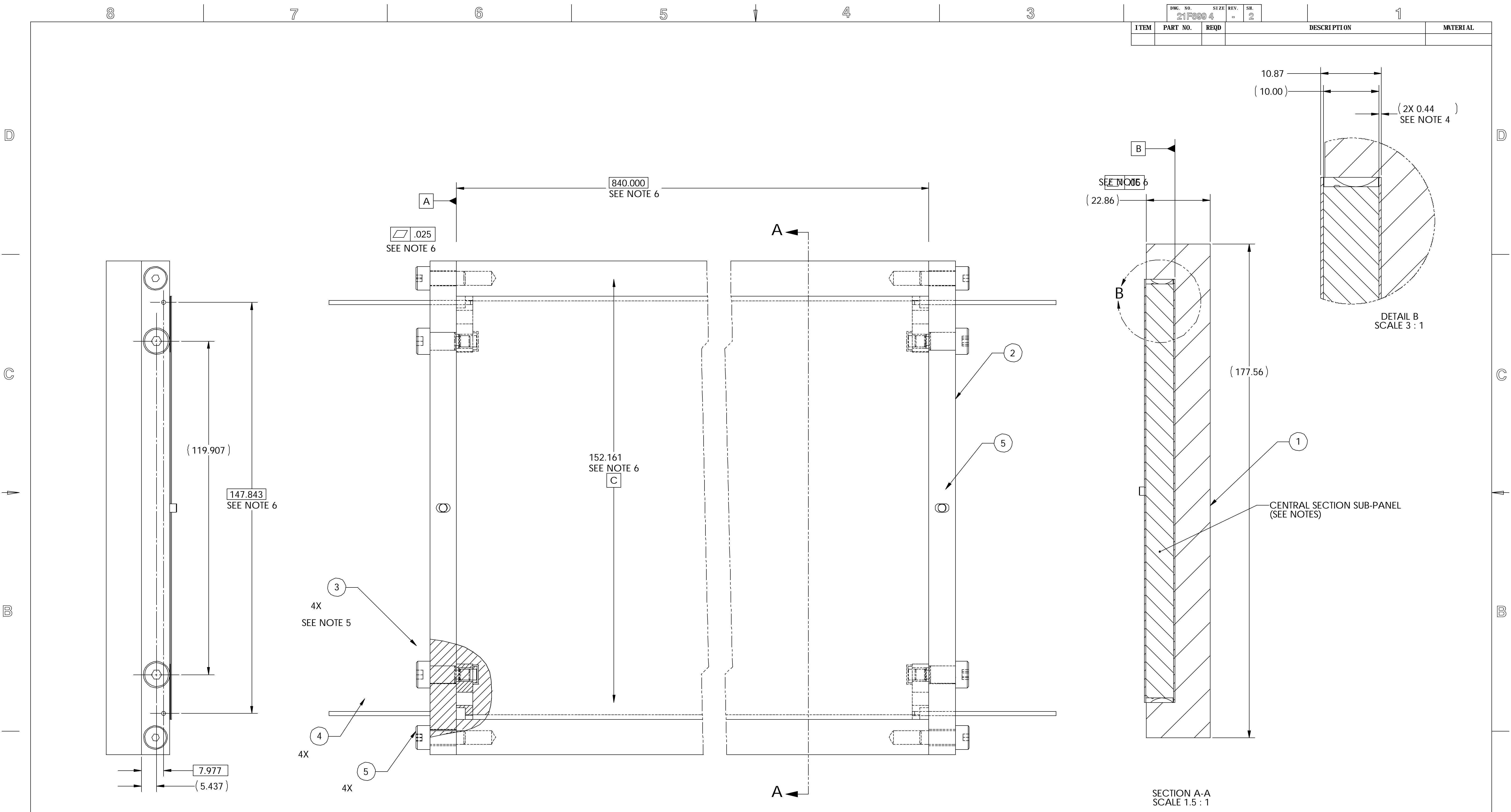
ATLAS PIXEL DETECTOR
SPACEFRAME CENTRAL SECTION
SUB-PANEL BOND FIXTURE

SCALE: 1: 1.25

SHEET 1 OF 2

DWG. NO. 21F6994

DWG. NO.	21F699 4	SIZE	REV.	SR.	1
ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL	



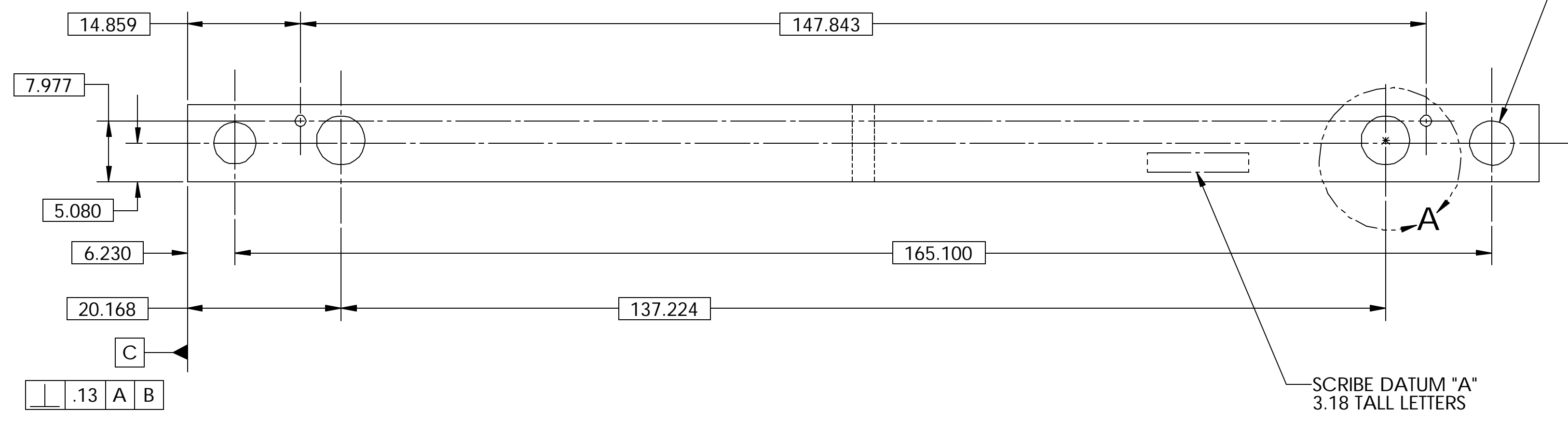
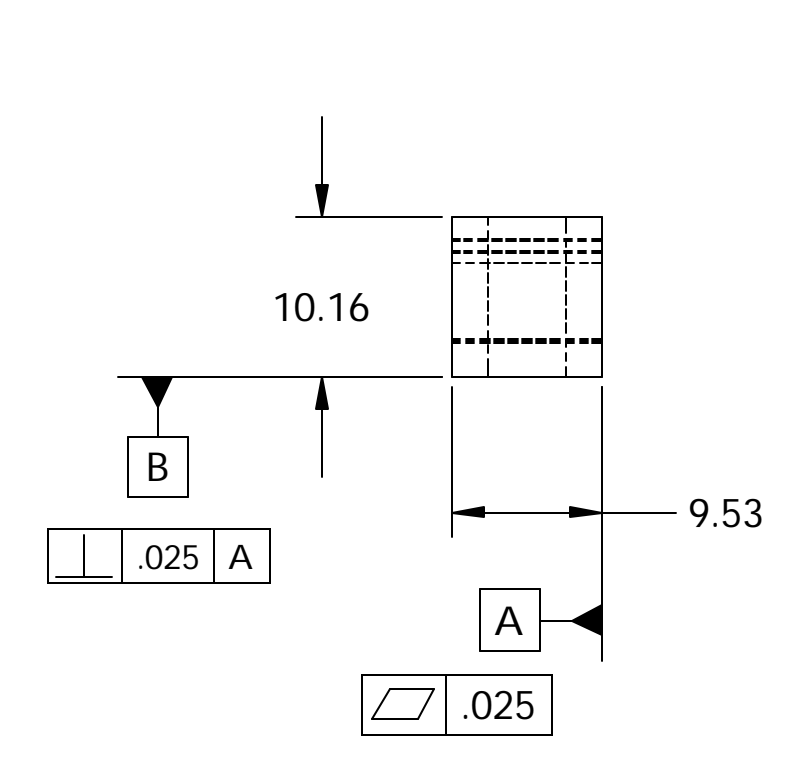
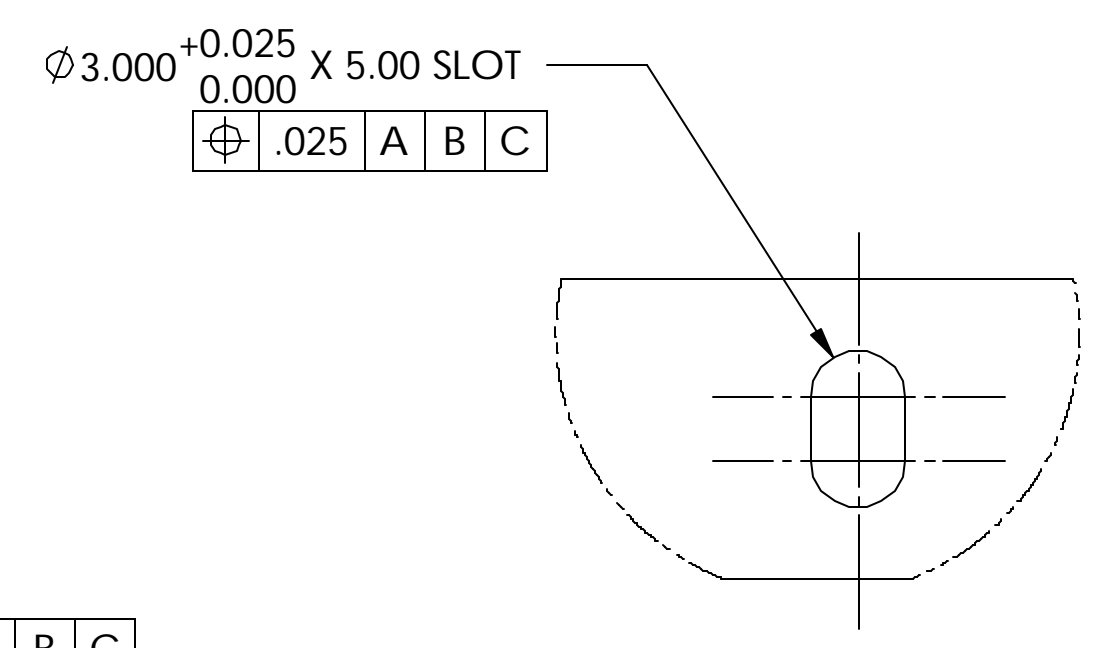
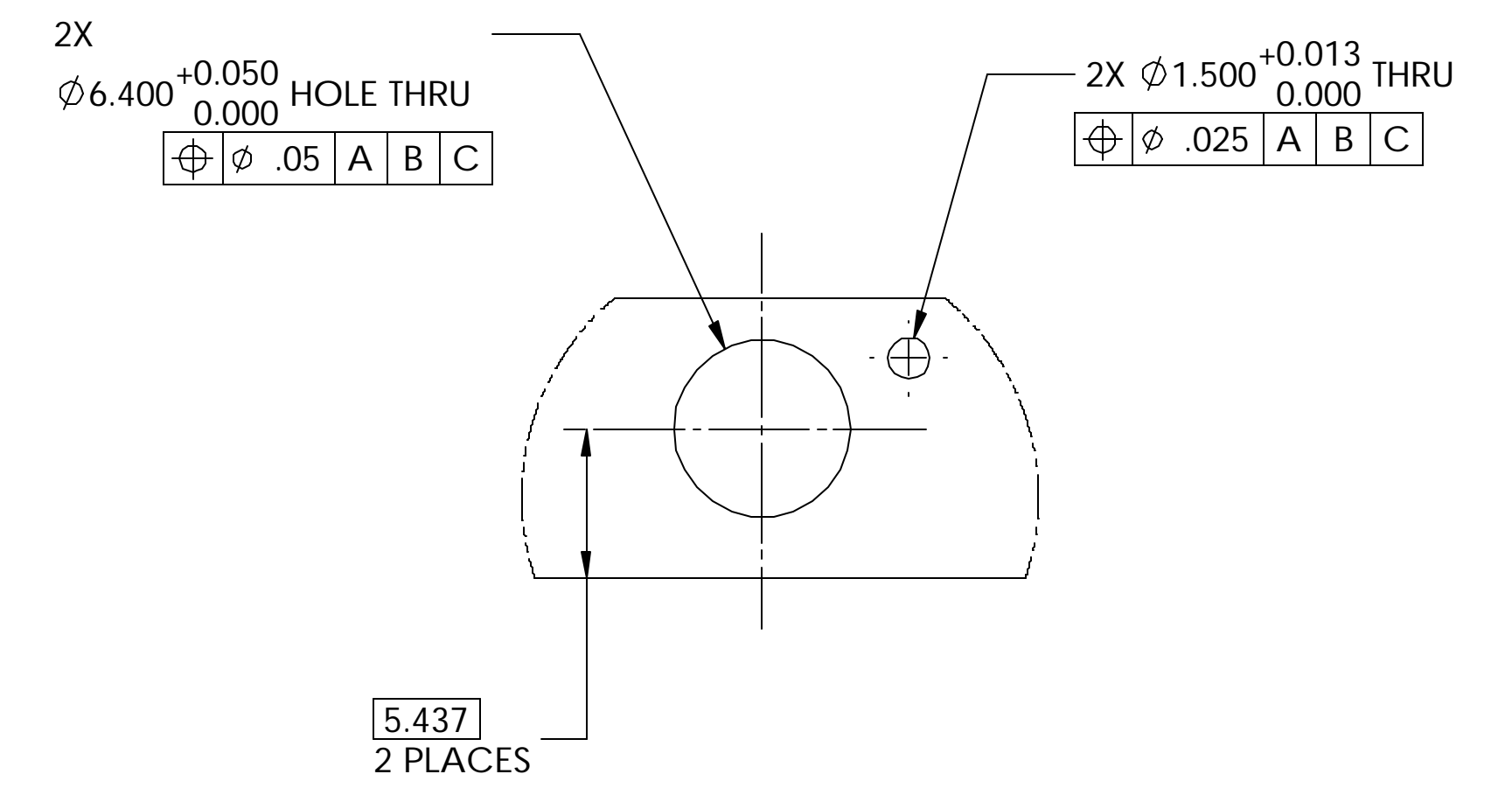
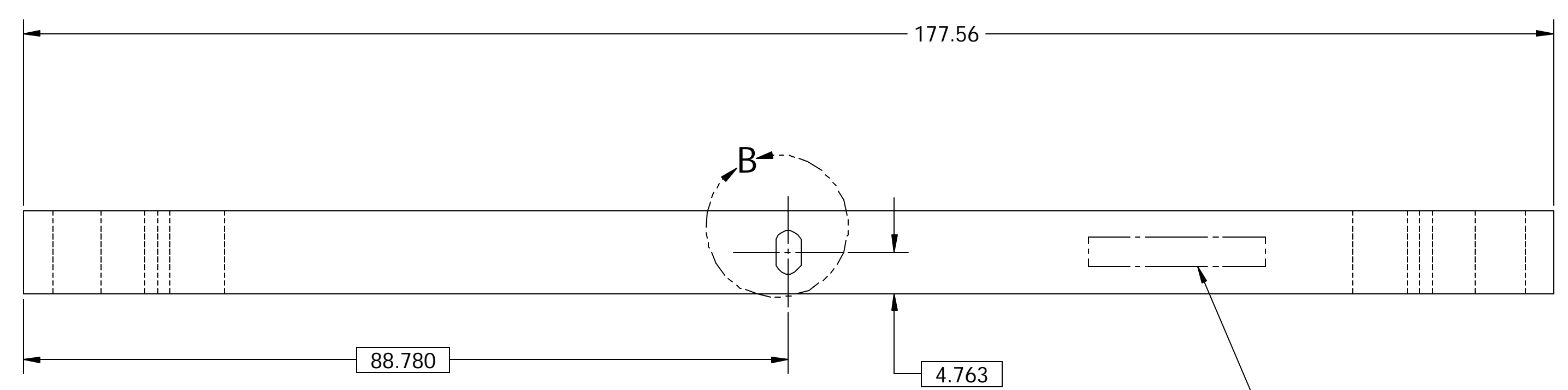
NOTES: UNLESS OTHERWISE SPECIFIED

- DIMENSIONS IN MILLIMETERS
- FIXTURE USED TO FABRICATE SUB-PANEL 1 AND SUB-PANEL 2 (PART 21F666)
- SUB-PANEL ASSEMBLIES SHOWN IN THEIR PRE-MACHINED STATE; POST BONDING MACHINED POCKETS IN PANEL 21F668 ARE SHOWN ON 21F666 AND 21F667
- SEE PANEL DRAWINGS FOR ADHESIVE REQUIREMENTS
- TORQUE SCREW TO 11 in-Lbs. MAX.
- DIMENSIONS, TOLERANCES, AND DATUMS ARE BASED UPON INDIVIDUAL PARTS; SOME ARE REFERENCE
- INSERT 21F676 IS PRE-BONDED INTO PART 21F675 PRIOR TO BONDING INTO PANEL ASSEMBLY
- ITEM 4 AND 1.50 DIA. HOLE IN ITEM 2 CRITICALLY POSITION CORNER BLOCK ASSEMBLY
- TORQUE ON ITEM 3 DRAWS CORNERBLOCK ASSEMBLY FLAT AGAINST ITEM 2
- NOTE RELATIVE POSITION OF CORNERBLOCK ASSEMBLY -1 AND -2 AS DEFINED IN PANEL DRAWING 21F666 AND 21F667

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY	
TOLERANCES	X.X ± 0.5	FRAC.	± 1/64	ACCT. NO.	DATE	ISSD	UNIVERSITY OF CALIFORNIA - BERKELEY #
	X.XX ± 0.25	ANGLES	± 30°	DEL. TO	DATE	REQD	
	X.XXX ± 0.013	FINISH	1.6	SURFACE TREATMENT			ATLAS PIXEL DETECTOR SPACEFRAME CENTRAL SECTION SUB-PANEL BOND FIXTURE
DO NOT SCALE PRINT				IDEN METHOD TAG			
THREADS ARE CLASS 2				PROJECT NAME	ATL-IP-ED-XXXX		MICROFILMED: DWG. TYPE ASSEM N/A SHOWS ON N/A SCALE: 1.5:1 DO NOT SCALE PRINTS
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NO.	US ATLAS SILICON SUBSYSTEM		
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS				DWG. BY	W. K. MILLER		PATENT CLEAR: DESIGN ACCT. NO. P1AP-11 CATEGORY CIDE AP6250 DWG. NO. 21F699 4 SIZE REV.
BREAK EDGES .016 MAX. ON MACHINED WORK				CHK BY	BILL WILDS		
REMOVE BURS, WELD SPLATTER & LOOSE SCALE				APR BY	E. ANDERSSSEN		
IN ACCORDANCE WITH ASME Y14.5m & B46.1				DATE	4/16/2002		

REV	DWG	CHK	ZONE	DATE	CHANGES

DWG. NO.	SIZE	REV.	SHEET
21F703 4	=	1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: TOOL STEEL

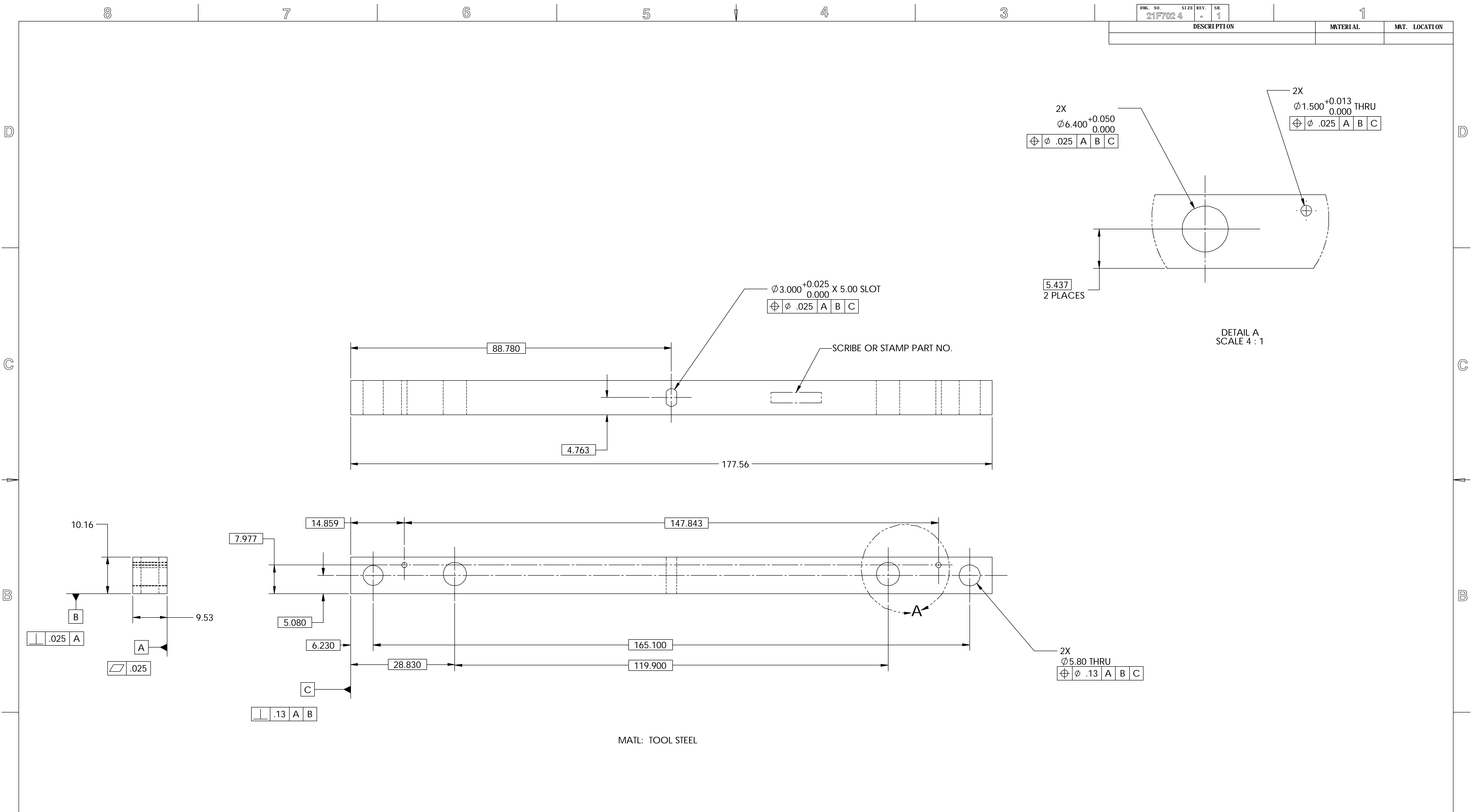
NOTES: UNLESS OTHERWISE SPECIFIED

- 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

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°	DATE REQD.	ATLAS PIXEL DETECTOR SPACEFRAME END SECTION SUB-PANEL BOND FIXTURE END PLATE			
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT		MICROFILMED: DWG. TYPE PART 21F700		
DO NOT SCALE PRINT		PROJECT NAME		SCALE: 2:1		DO NOT SCALE PRINTS	
THREADS ARE CLASS 2		PROJECT NUMBER		SCALE: 2:1		SHEET 1 OF 1	
CHAMFER ENDS OF ALL SCREW THREADS 30°		PROJECT US ATLAS SILICON SUBSYSTEM		SCALE: 2:1		SIZE REV.	
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS		DWG. BY W. K. MILLER		DATE 4/16/2002		DWG. NO. 21F703 4	
BREAK EDGES .016 MAX. ON MACHINED WORK		CHK BY BILL WILDS		DATE 4/16/2002		REV.	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		APR BY E. ANDERSSSEN		DATE 4/16/2002		AP6250	
IN ACCORDANCE WITH ASME Y14.5m & B46.1		REV DWG		CHG ZONE		DATE	

CHANGES

DWG. NO.	SIZE	REV.	SHEET
21F702 4		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



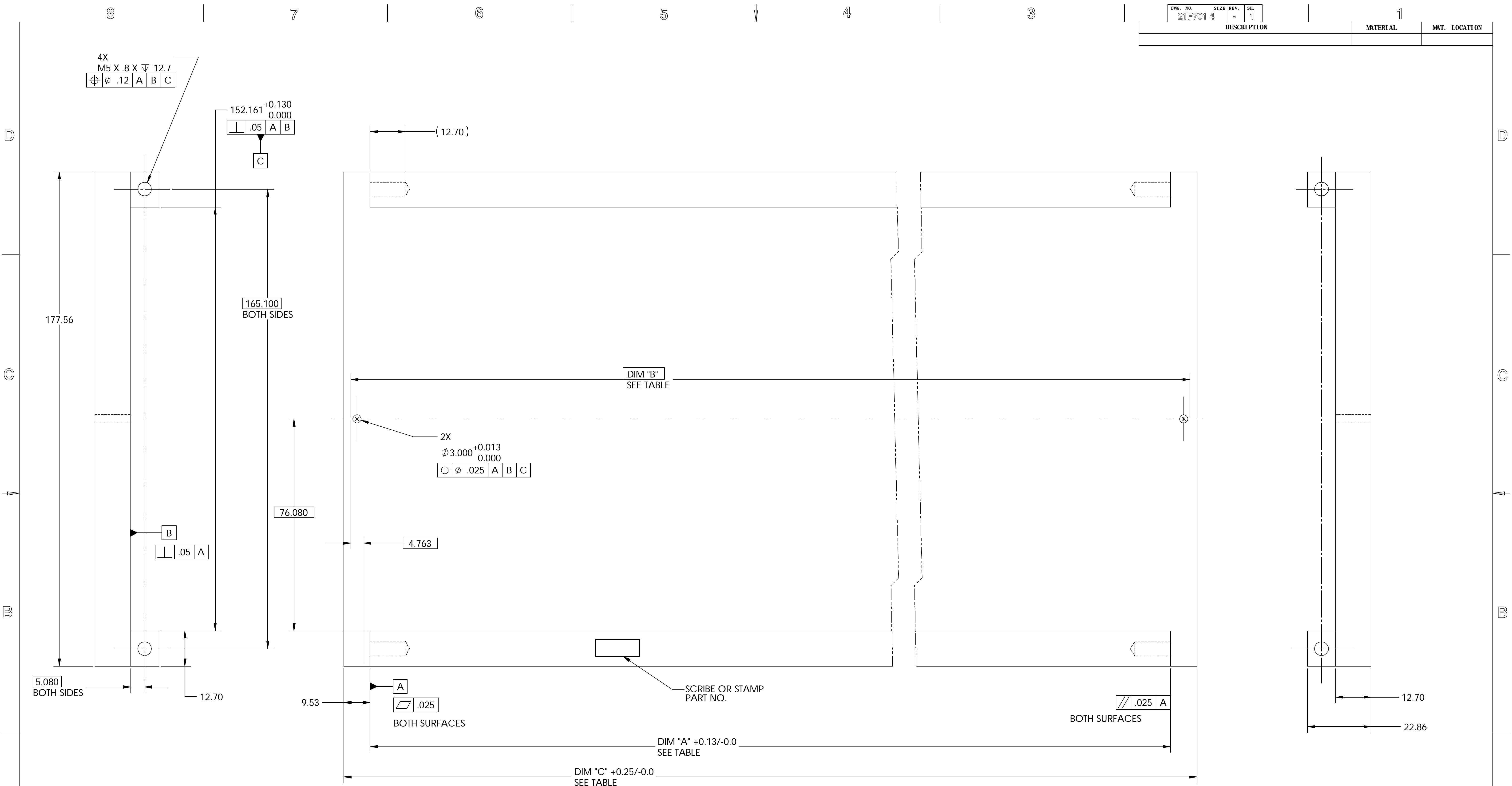
NOTES: UNLESS OTHERWISE SPECIFIED

1. 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

MATL: TOOL STEEL

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'	DATE REQD.		ATLAS PIXEL DETECTOR SPACEFRAME CENTRAL SECTION SUB-PANEL BOND FIXTURE END PLATE	
	X.XXX ± 0.013	FINISH	1.6			MICROFILMED: DWG. TYPE PART 21F699 SCALE: 2:1 DO NOT SCALE PRINTS	
DO NOT SCALE PRINT				PROJECT NAME		CATEGORY CODE	
THREADS ARE CLASS 2				PROJECT NO. ATL-IP-ED-XXXX		DWG. NO. 21F702 4	
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT US ATLAS SILICON SUBSYSTEM		SIZE REV.	
CUT ROUND. 1.5 THREAD RELIEF ON MACHINED THREADS				DWE W. K. MILLER DATE 4/16/2002		SHEET 1 OF 1	
BREAK EDGES .016 MAX. ON MACHINED WORK				CHK BILL WILDS DATE 4/16/2002		PATENT CLEAR: DESIGN ACCT. NO. AP6250	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				APR E. ANDERSSON DATE 4/16/2002		DWG. NO. 21F702 4	
IN ACCORDANCE WITH ASME Y14.5m & B46.1						REV.	
REV	DWG	CHK	ZONE	DATE	CHANGES		

DWG. NO.	SIZE	REV.	SHEET
21F701 4	=	1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: TOOL STEEL

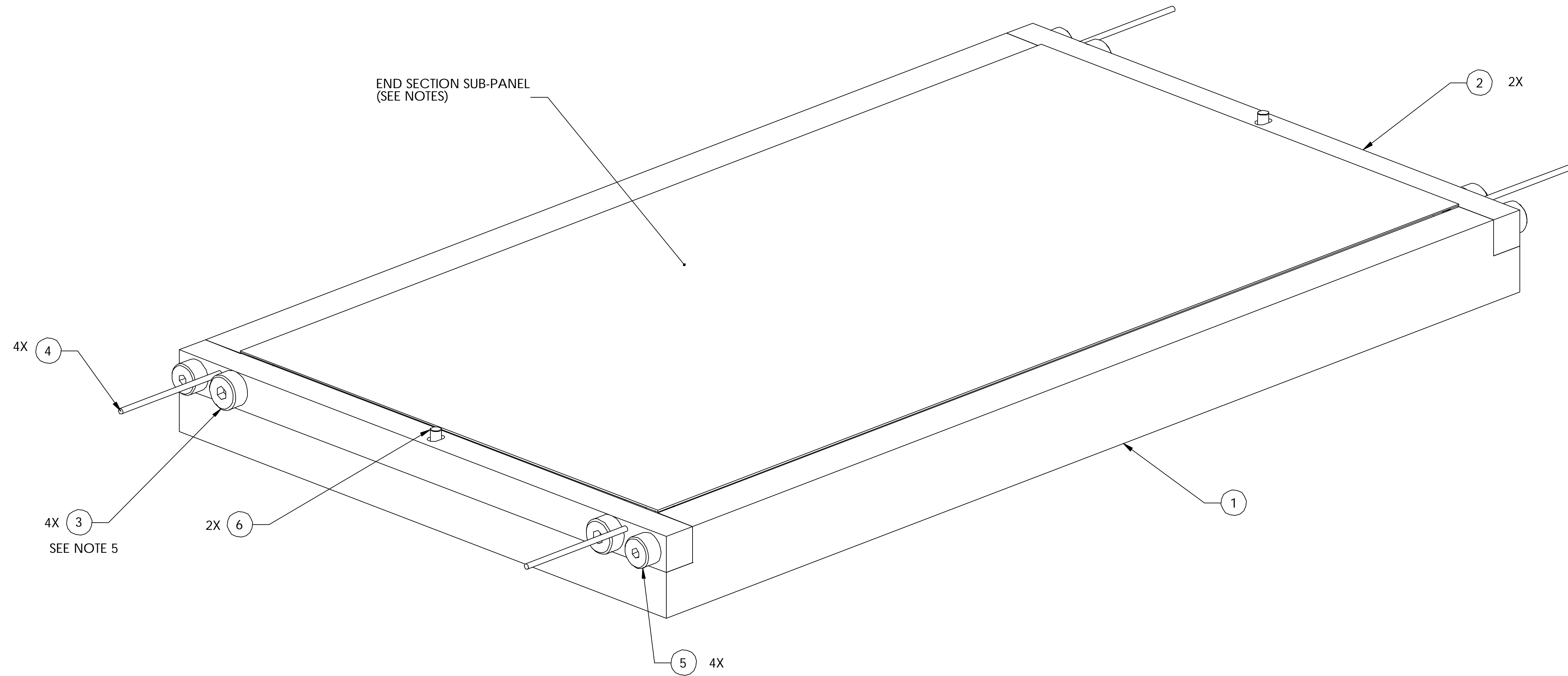
PART NO	DIM "A"	DIM "B"	DIM "C"	ASSEMBLY
21F701-1	292.000	301.525	311.050	END SECTION
21F701-3	840.000	849.525	859.050	CENTRAL SECTION

- NOTES: UNLESS OTHERWISE SPECIFIED
1. 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

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.	ERNEST ORLANDO LAWRENCE	
TOLERANCES	X.X ± 0.5	FRAC. ± 1/64	NO. REQD.	DATE ISSD	BERKELEY NATIONAL LABORATORY	
	X.XX ± 0.25	ANGLES ± 30°	DEL. TO	DATE REQD.	UNIVERSITY OF CALIFORNIA - BERKELEY #	
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT	ATLAS PIXEL DETECTOR		
DO NOT SCALE PRINT				SPACEFRAME END AND CENTRAL SECTION		
THREADS ARE CLASS 2				SUB-PANEL BOND FIXTURE BASEPLATE		
CHAMFER ENDS OF ALL SCREW THREADS 30°				MICROFILMED:		
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS				DWG. TYPE		
BREAK EDGES, .016 MAX. ON MACHINED WORK				PART		
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				SHOWS ON		
IN ACCORDANCE WITH ASME Y14.5m & B46.1				SCALE: 1.5:1		
				DO NOT SCALE PRINTS		
				PROJECT NAME		
				PROJECT NO. ATL-1P-ED-XXXX		
				DWG. W. K. MILLER		
				DATE 4/16/2002		
				CHK. BILL WILDS		
				DATE 4/16/2002		
				APR. E. ANDERSSON		
				DATE 4/16/2002		
REV	DWG	CHK	ZONE	DATE	CHANGES	

PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CODE	DWG. NO.	SIZE	REV.
	P1AP-11	AP6250	21F701 4	1	1

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
6		4	3.0mm DIA. GAGE PIN	STEEL
5		4	M5 X .8 SOCKET HD CAP SCREW X 15 LONG	STEEL
4		4	1.50mm DIA. GAGE PIN	STEEL
3	21F704	4	PANEL BOND FIXTURE MODIFIED SCREW	
2	21F703	1	END SECTION PANEL BOND FIXTURE END PLATE	
1	21F701-1	1	END SECTION PANEL BOND FIXTURE BASEPLATE	



NOTES: UNLESS OTHERWISE SPECIFIED

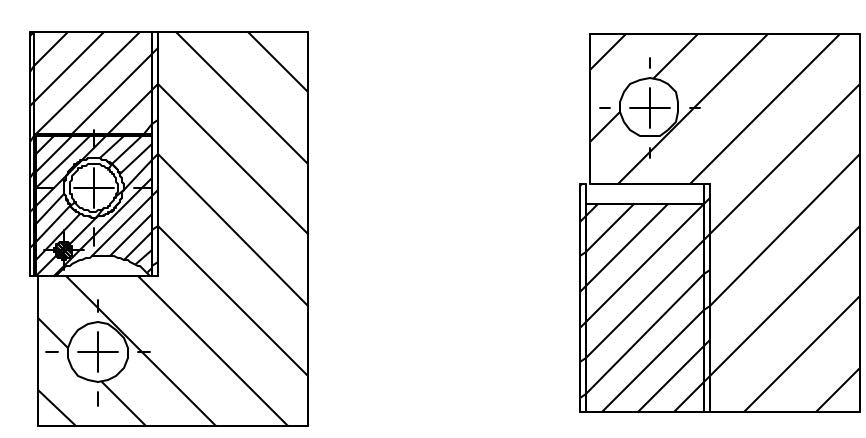
- DIMENSIONS IN MILLIMETERS
- FIXTURE USED TO FABRICATE SUB-PANEL 1 AND SUB-PANEL 2 (PART 21F666)
- SUB-PANEL ASSEMBLIES SHOWN IN THEIR PRE-MACHINED STATE; POST BONDING MACHINED POCKETS IN PANEL 21F668 ARE SHOWN ON 21F666 AND 21F667
- SEE PANEL DRAWINGS FOR ADHESIVE REQUIREMENTS
- TORQUE SCREW TO 11 in-Lbs. MAX.
- DIMENSIONS, TOLERANCES, AND DATUMS ARE BASED UPON INDIVIDUAL PARTS; SOME ARE REFERENCE
- INSERT 21F676 IS PRE-BONDED INTO PART 21F675 PRIOR TO BONDING INTO PANEL ASSEMBLY
- ITEM 4 AND 1.50 DIA. HOLE IN ITEM 2 CRITICALLY POSITION CORNER BLOCK ASSEMBLY
- TORQUE ON ITEM 3 DRAWS CORNERBLOCK ASSEMBLY FLAT AGAINST ITEM 2
- NOTE RELATIVE POSITION OF CORNERBLOCK ASSEMBLY -1 AND -2 AS DEFINED IN PANEL DRAWING 21F666 AND 21F667

REV	DWG	CHK	ZONE	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.
TOLERANCES	X.X ± 0.5	FRAC.	± 1/64	ACCT. NO.
	X.XX ± 0.25	ANGLES	± 30°	DATE ISSD
	X.XXX ± 0.013	FINISH	1.6	DATE REQD
		SURFACE TREATMENT		
DO NOT SCALE PRINT		IDEN. METHOD	TAG	
THREADS ARE CLASS 2		PROJECT NUMBER	ATL-IP-ED-XXXX	
CHAMFER ENDS OF ALL SCREW THREADS 30°		PROJECT NAME	US ATLAS SILICON SUBSYSTEM	
CUT ROUND. 1.5 THREAD RELIEF ON MACHINED THREADS		DWG. BY	W. K. MILLER	DATE 4/16/2002
BREAK EDGES .016 MAX. ON MACHINED WORK		CHK. BY	BILL WILDS	DATE 4/16/2002
REMOVE BURS, WELD SPLATTER & LOOSE SCALE		APR. BY	E. ANDERSSON	DATE 4/16/2002
IN ACCORDANCE WITH ASME Y14.5m & B46.1				

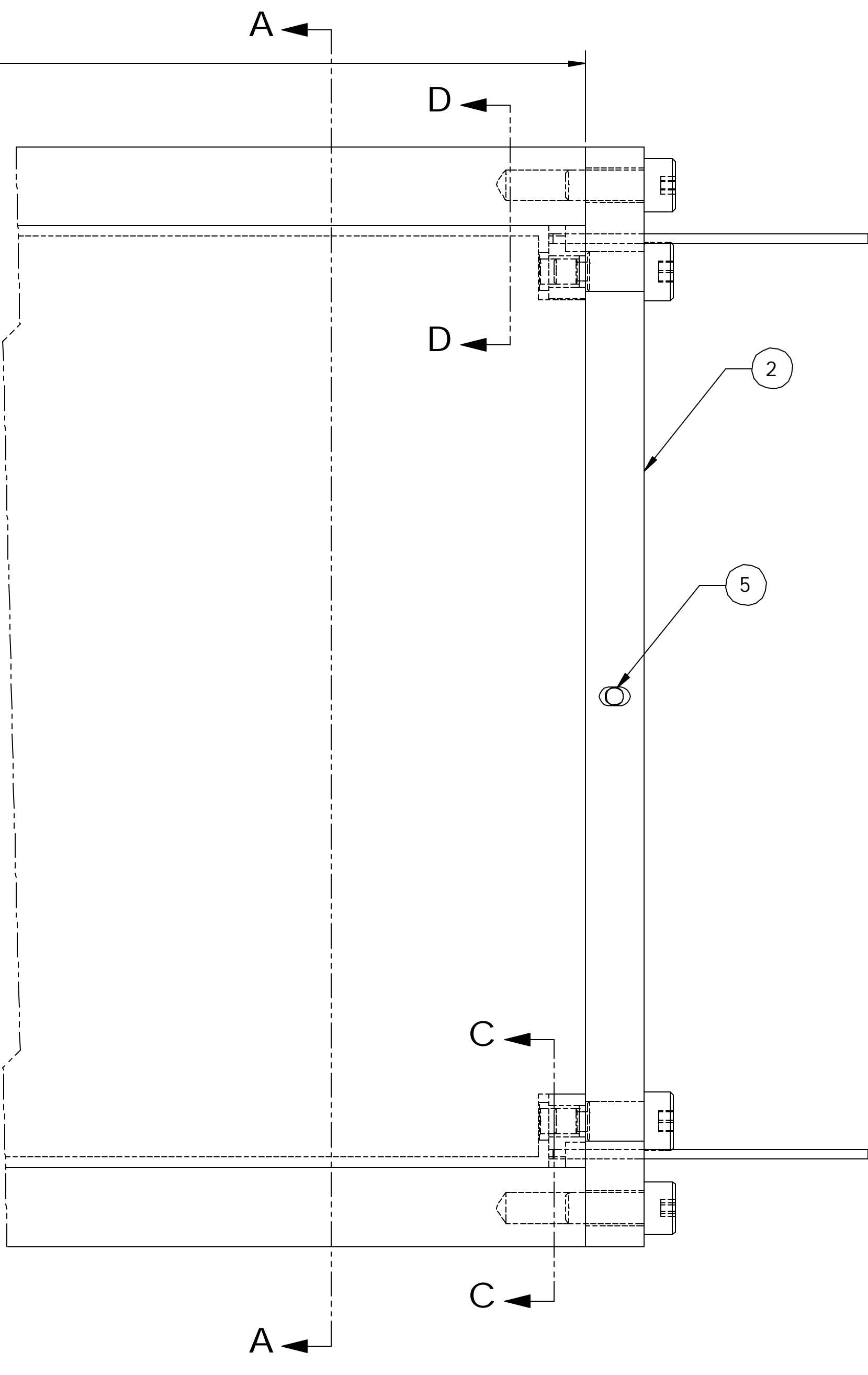
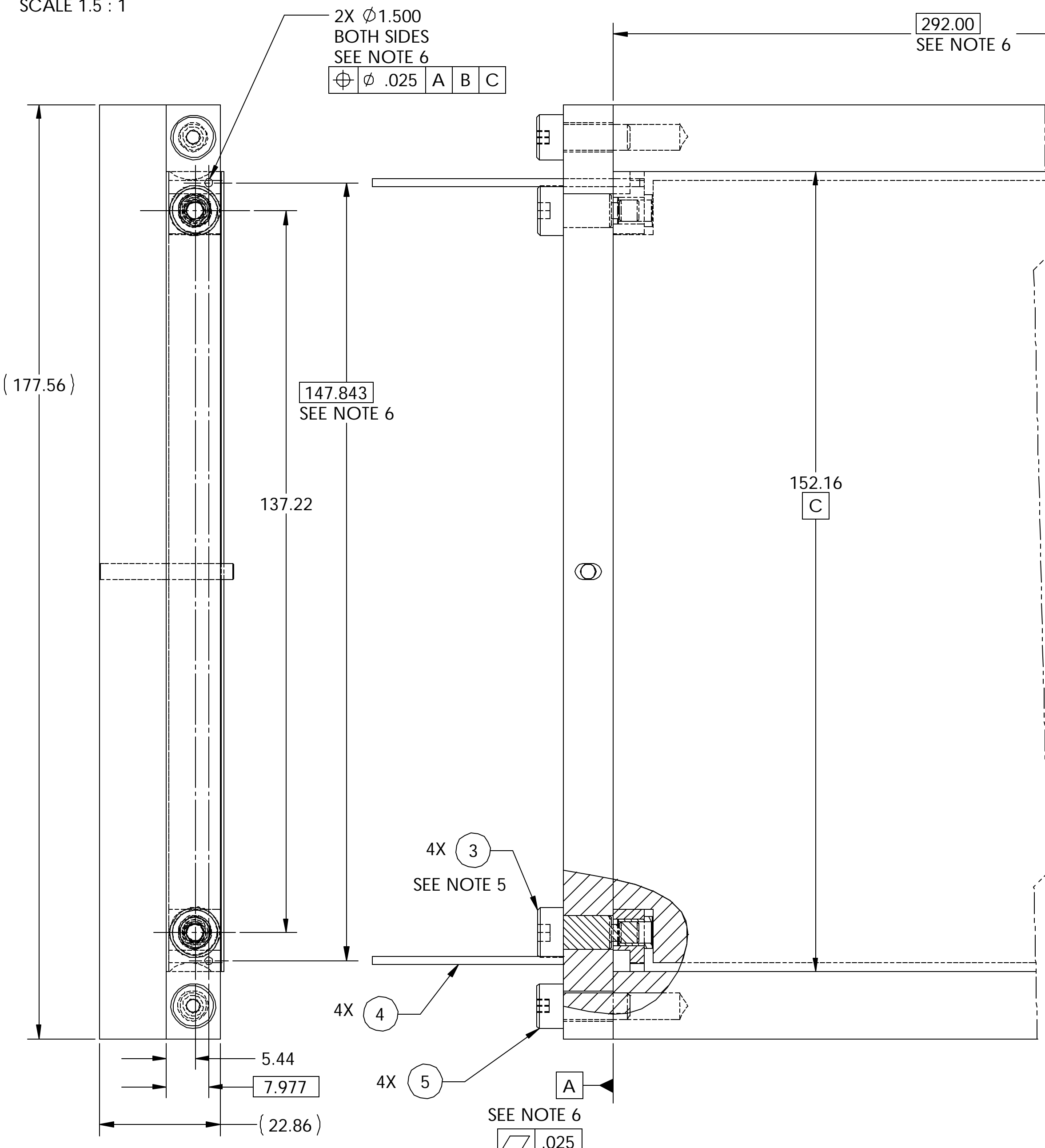
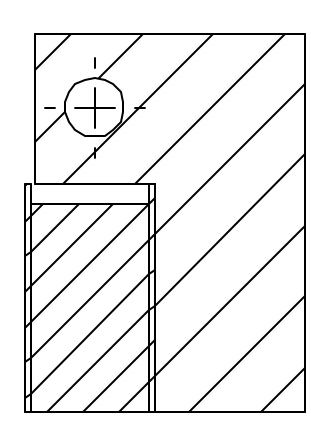
ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY				UNIVERSITY OF CALIFORNIA - BERKELEY #	
ATLAS PIXEL DETECTOR SPACEFRAME END SECTION SUB-PANEL BOND FIXTURE				MICROFILMED:	DWG. TYPE
					ASSEM
				SHOWS ON	N/A
				SCALE:	1.5:1
				DO NOT SCALE PRINTS	
				PATENT CLEAR:	DESIGN ACCT. NO.
					AP6250
				DWG. NO.	21F7004
				SIZE	
				REV.	
				SHEET 1 OF 2	

DWG. NO. 21F7004		SIZE -	REV. 2	SR. -
ITEM	PART NO.	REQD	DESCRIPTION	
			MATERIAL	

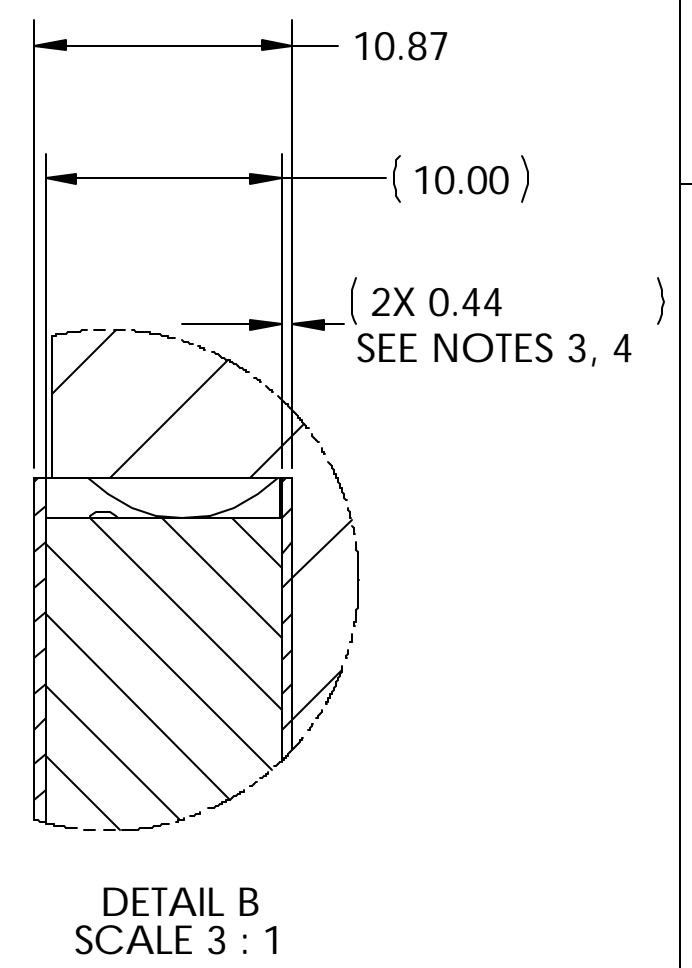


SECTION C-C
SCALE 1.5 : 1

SECTION D-D
SCALE 1.5 : 1



SECTION A-A
SCALE 1.5 : 1



DETAIL B
SCALE 3 : 1

END SECTION SUB-PANEL
(SEE NOTES)

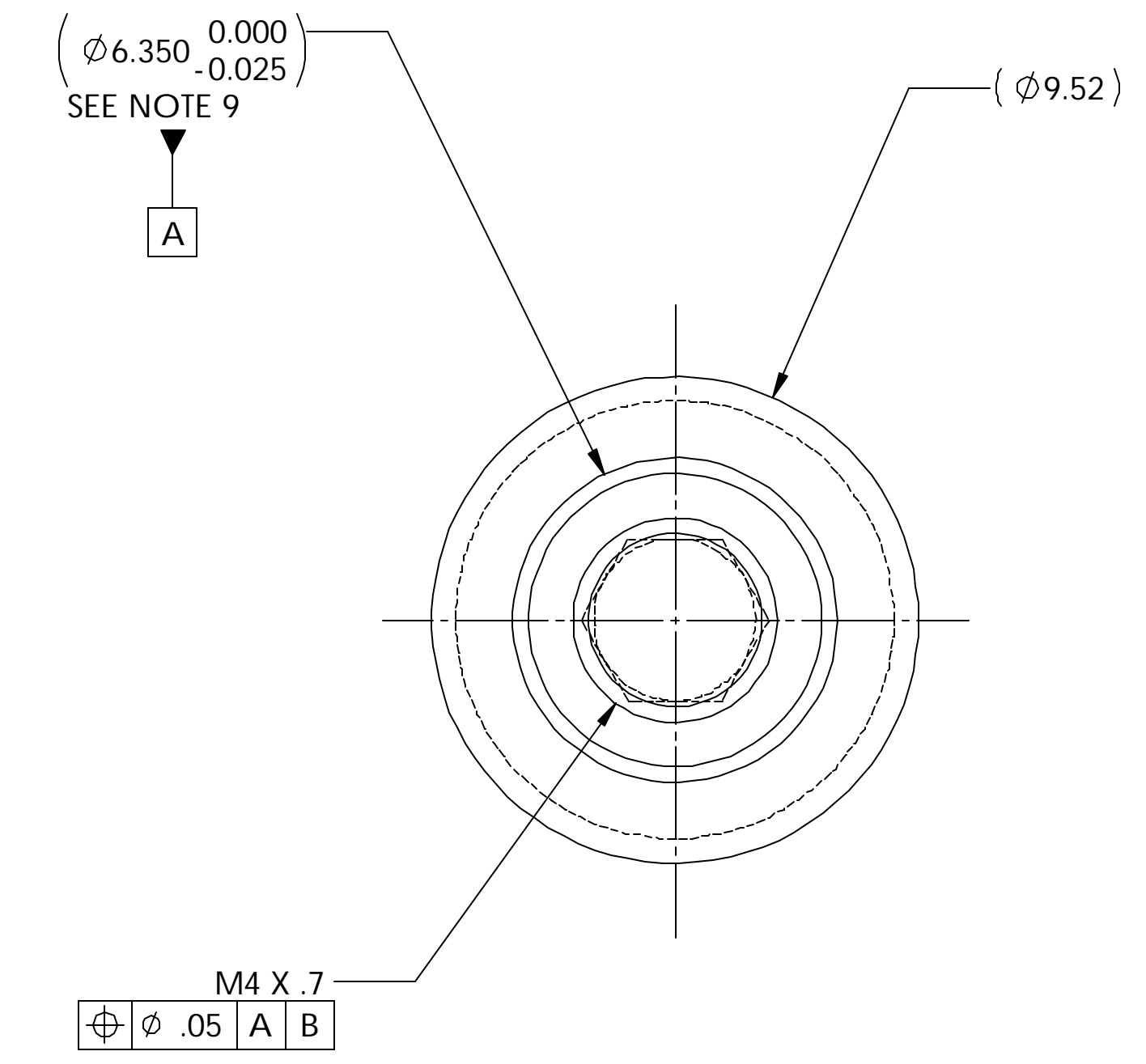
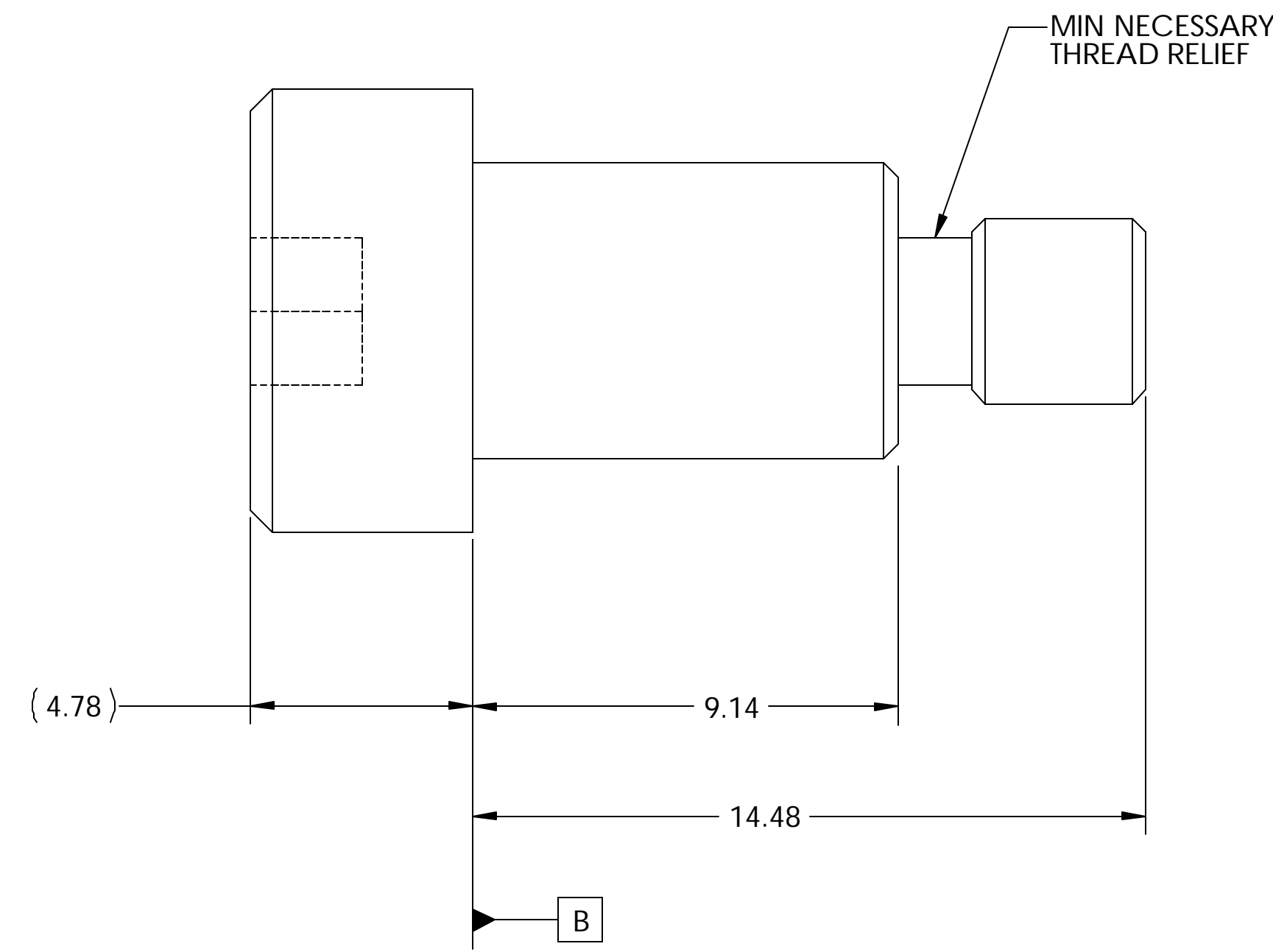
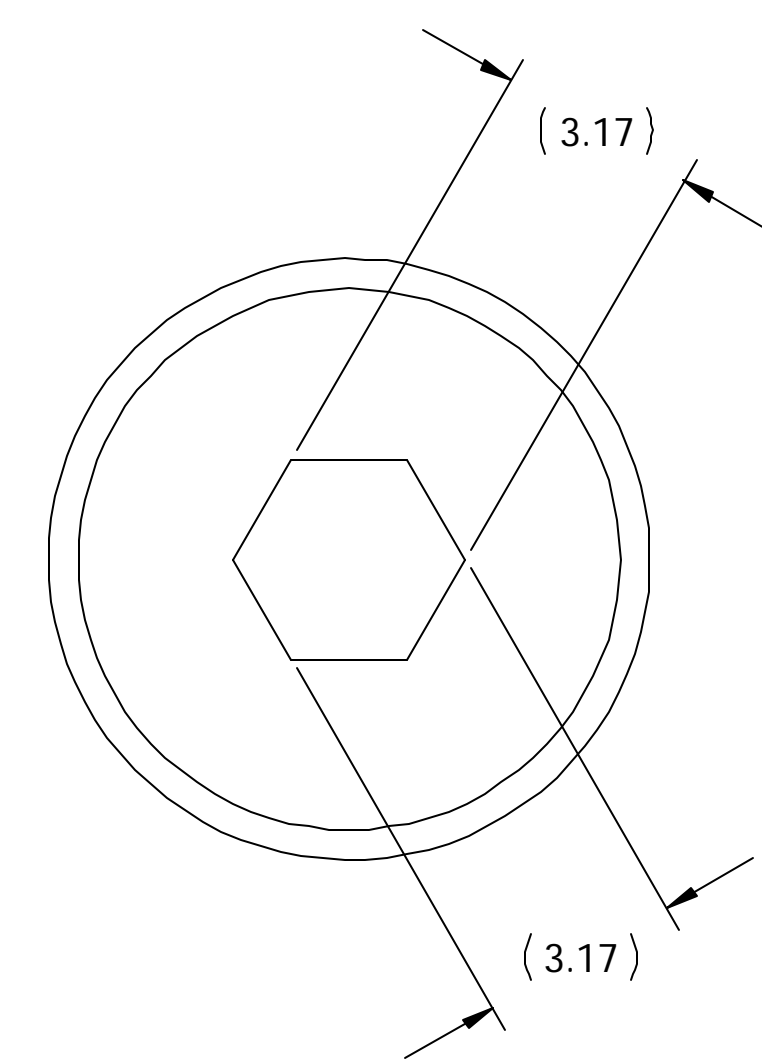
NOTES: UNLESS OTHERWISE SPECIFIED

- DIMENSIONS IN MILLIMETERS
- FIXTURE USED TO FABRICATE SUB-PANEL 1 AND SUB-PANEL 2 (PART 21F666)
- SUB-PANEL ASSEMBLIES SHOWN IN THEIR PRE-MACHINED STATE; POST BONDING MACHINED POCKETS IN PANEL 21F668 ARE SHOWN ON 21F666 AND 21F667
- SEE PANEL DRAWINGS FOR ADHESIVE REQUIREMENTS
- TORQUE SCREW TO 11 in-Lbs. MAX.
- DIMENSIONS, TOLERANCES, AND DATUMS ARE BASED UPON INDIVIDUAL PARTS; SOME ARE REFERENCE
- INSERT 21F676 IS PRE-BONDED INTO PART 21F675 PRIOR TO BONDING INTO PANEL ASSEMBLY
- ITEM 4 AND 1.50 DIA. HOLE IN ITEM 2 CRITICALLY POSITION CORNER BLOCK ASSEMBLY
- TORQUE ON ITEM 3 DRAWS CORNERBLOCK ASSEMBLY FLAT AGAINST ITEM 2
- NOTE RELATIVE POSITION OF CORNERBLOCK ASSEMBLY -1 AND -2 AS DEFINED IN PANEL DRAWING 21F666 AND 21F667

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.		ERNEST ORLANDO LAWRENCE	
TOLERANCES	X.X ± 0.5	FRAC. ± 1/64	ACCT. NO.	NO. REQD	DATE ISSD	BERKELEY NATIONAL LABORATORY	
	X.XX ± 0.25	ANGLES ± 30°	DEL. TO	DATE REQD	UNIVERSITY OF CALIFORNIA - BERKELEY #		
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT	ATLAS PIXEL DETECTOR			
DO NOT SCALE PRINT				IDEX METHOD TAG	SPACEFRAME END SECTION		
THREADS ARE CLASS 2				PROJECT NUMBER	SUB-PANEL BOND FIXTURE		
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NAME	MICROFILMED:		
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS				PROJECT US ATLAS SILICON SUBSYSTEM	DWG. TYPE	SHOWS ON	SCALE: 1.5:1
BREAK EDGES .016 MAX. ON MACHINED WORK				DWG. BY W. K. MILLER	ASSEM	N/A	DO NOT SCALE PRINTS
REMOVE BURS, WELD SPLATTER & LOOSE SCALE				CHK BY BILL WILDS	DATE 4/16/2002	PATENT CLEAR:	DESIGN ACCT. NO.
IN ACCORDANCE WITH ASME Y14.5m & B46.1				APR BY E. ANDERSSSEN	DATE 4/16/2002	AP6250	DWG. NO. 21F7004
REV	DWG	CHK	ZONE	DATE	CHANGES		

SHEET 2 OF 2
21F7004

DWG. NO.	SIZE	REV.	SHEET
21F7044		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: 18-8 SSSL 1/4" PRECISION SHOULDER SCREW
(SEE NOTE 9)

NOTES: UNLESS OTHERWISE SPECIFIED

- 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
- SCREW PURCHASED FROM McMASTER-CARR #94035A542

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.		ERNEST ORLANDO LAWRENCE	
TOLERANCES	X.X ± 0.5	FRAC.	± 1/64	NO.	DATE	BERKELEY NATIONAL LABORATORY	
	X.XX ± 0.25	ANGLES	± 30°	REQD.	ISSD	UNIVERSITY OF CALIFORNIA - BERKELEY #	
	X.XXX ± 0.013	FINISH	1.6	DATE	REQD.	ATLAS PIXEL DETECTOR	
						SPACEFRAME CENTRAL AND END SECTION	
						SUB-PANEL BOND FIXTURE SHOULDER BOLT	
DO NOT SCALE PRINT				INDEX METHOD TAG		MICROFILMED:	
TOLERANCES ARE CLASS 2				PROJECT NAME		DWG. TYPE	
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NO.		PART	
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS				PROJECT US ATLAS SILICON SUBSYSTEM		N/A	
BREAK EDGES .016 MAX. ON MACHINED WORK				DWG. BY		SCALE: 8:1	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				W. K. MILLER		DO NOT SCALE PRINTS	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				DATE 4/16/2002		SHEET 1 OF 1	
CHANGES				CHK BY		PATENT CLEAR:	
				BILL WILDS		DESIGN ACCT. NO.	
				DATE 4/16/2002		CATEGORY CODE	
				APR BY		DWG. NO.	
				E. ANDERSSON		21F7044	
				DATE 4/16/2002		SIZE	
						REV.	