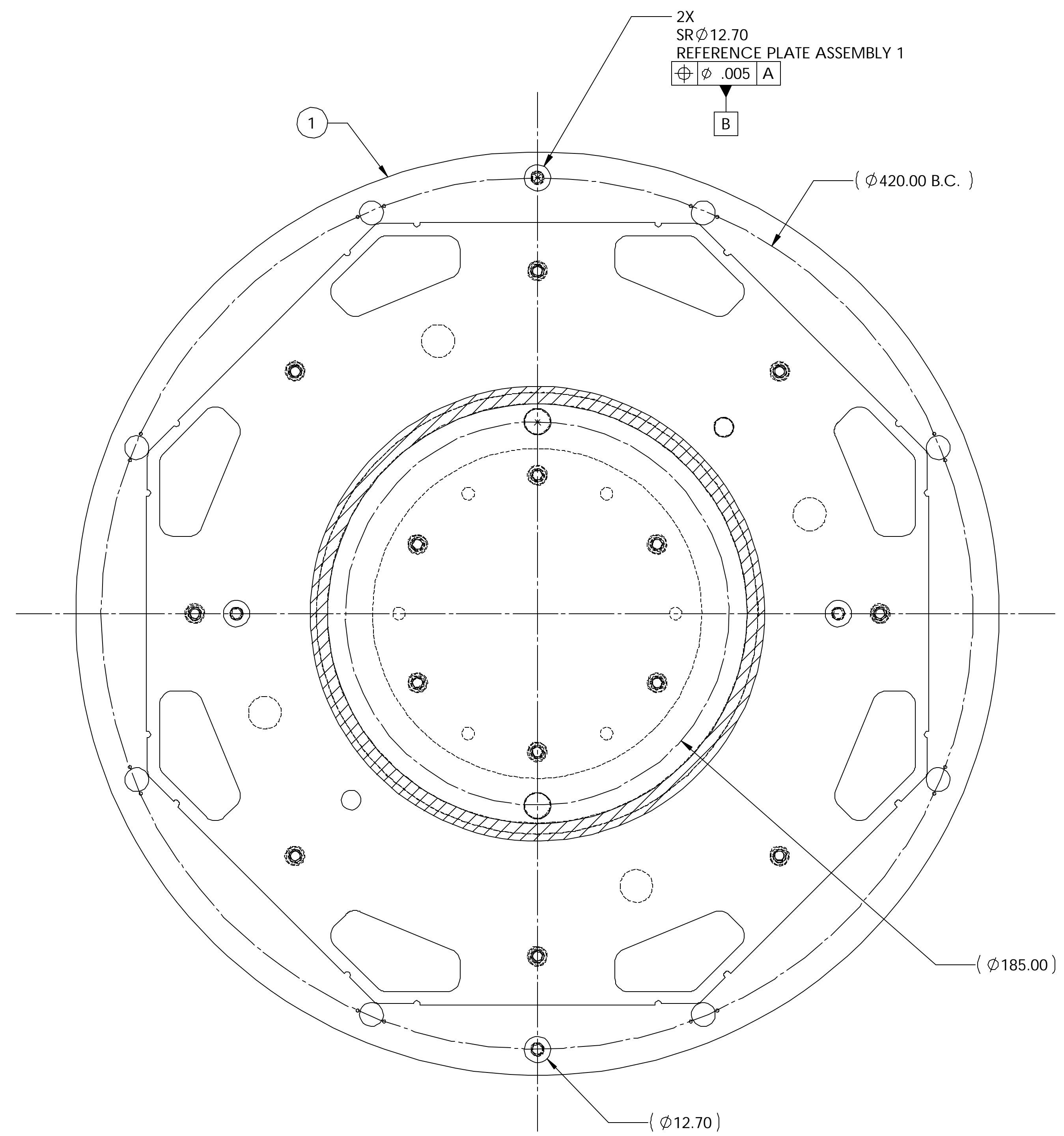


DWG. NO.	21F688 4	SIZE	REV.	SR.
ITEM	PART NO.	REQD	DESCRIPTION	
			MATERIAL	



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°	DEL. TO	DATE REQD		UNIVERSITY OF CALIFORNIA - BERKELEY #	
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT			ATLAS PIXEL DETECTOR	
DO NOT SCALE PRINT			IDEN. 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	DO NOT SCALE PRINTS
BREAK EDGES .016 MAX. ON MACHINED WORK			DWG. BY W. K. MILLER	ASSEM	N/A	SHEET 2 OF 2	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			CHK BY BILL WILDS	DATE 4/16/2002	PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CIDE
IN ACCORDANCE WITH ASME Y14.5m & B46.1			APR BY E. ANDERSSSEN	DATE 4/16/2002	P1AP-11	AP6250	DWG. NO. 21F688 4
REV	DWG	CHK	ZONE	DATE	CHANGES		

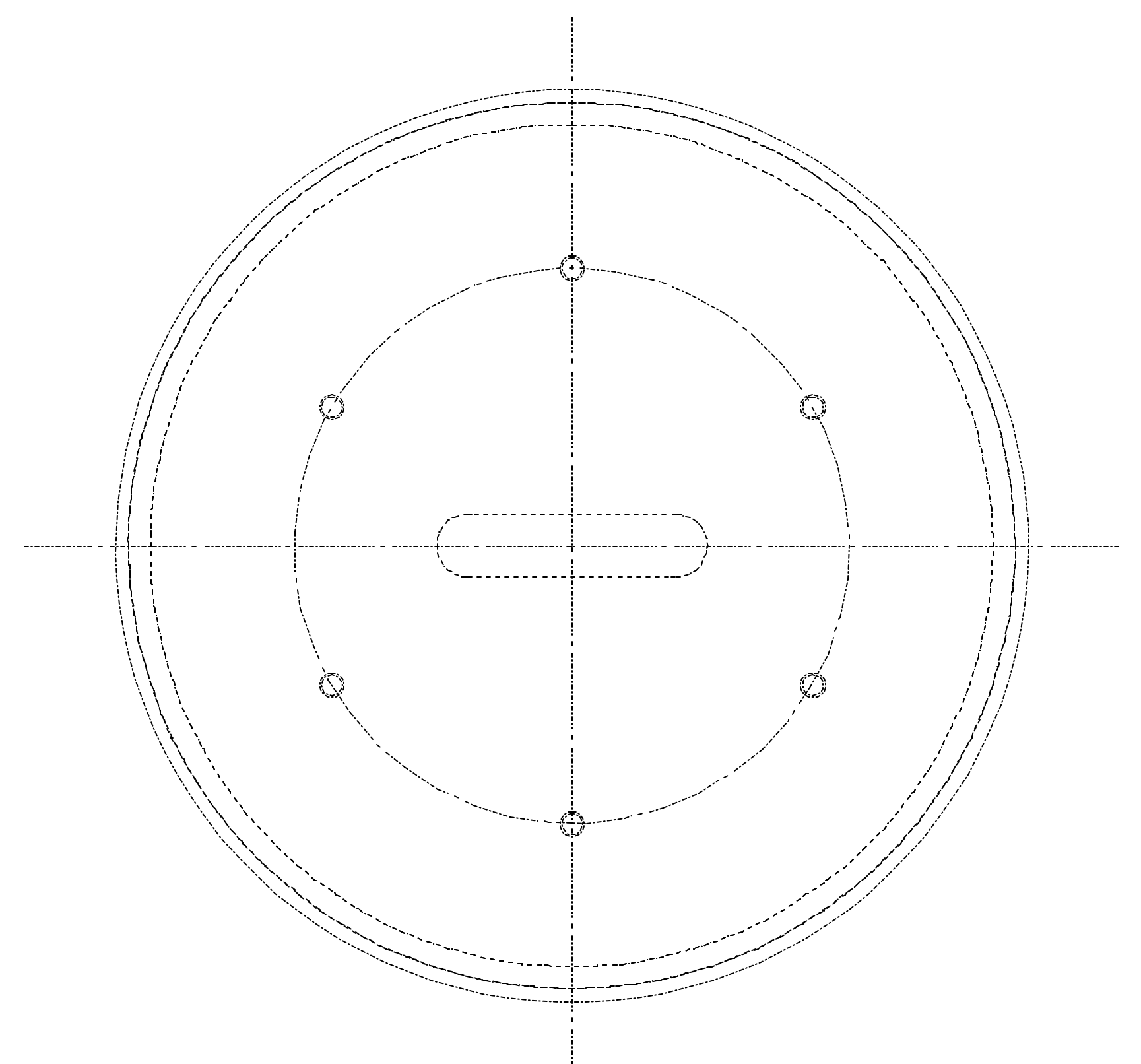
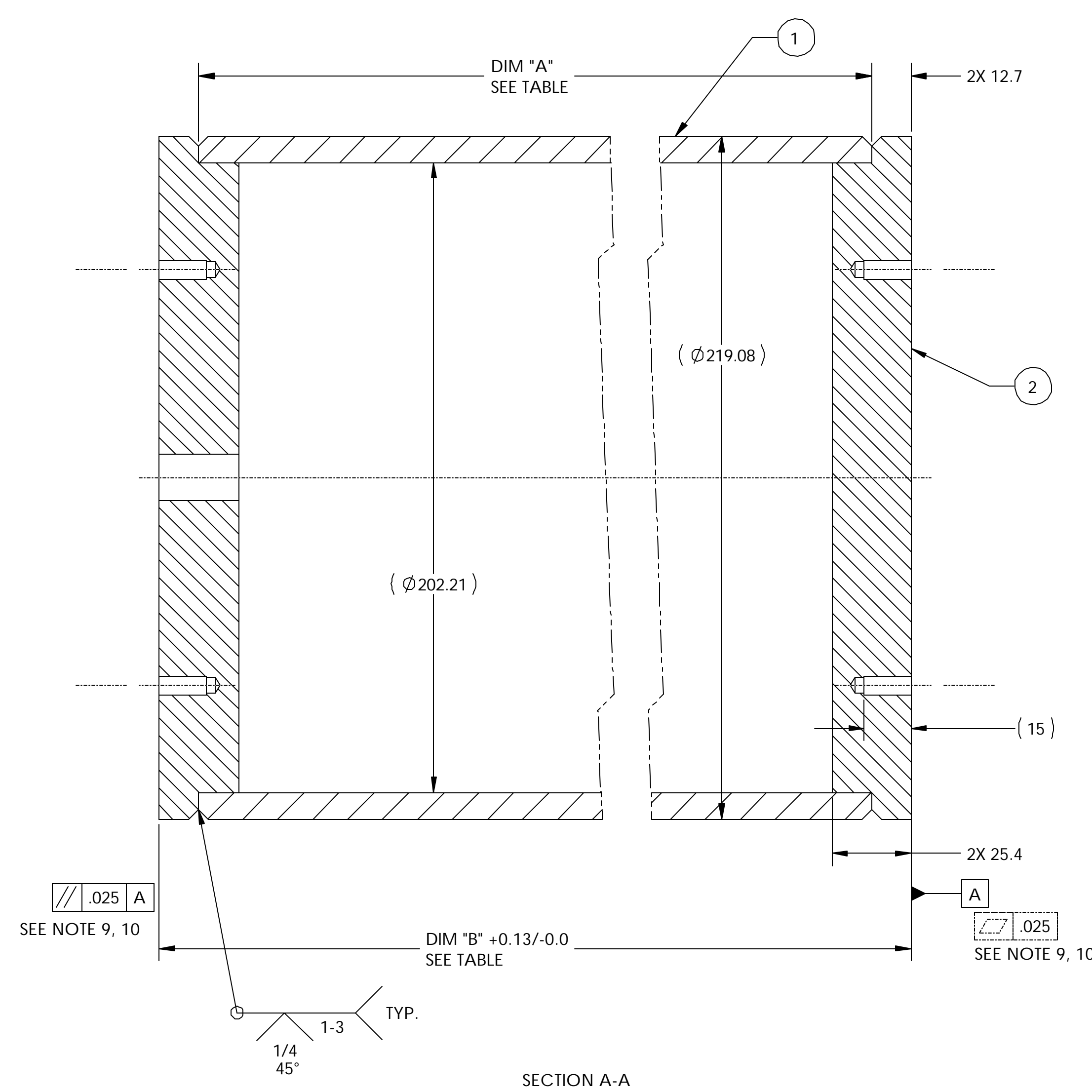
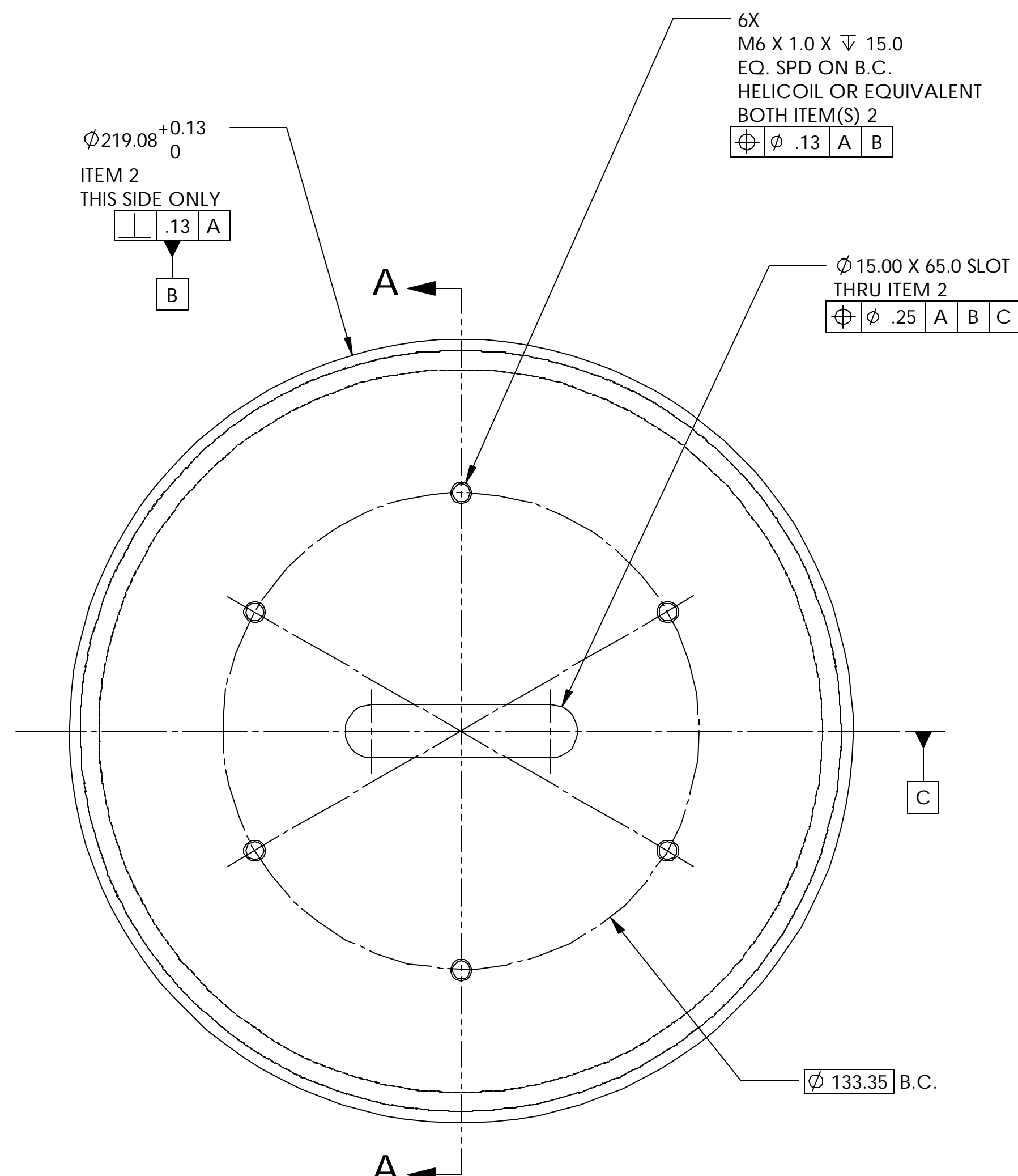
8 7 6 5 4 3 1

D
C
B
A

D
C
B
A

8 7 6 5 4 3 2 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	PROJECT NUMBER	
CHAMFER ENDS OF ALL SCREW THREADS 30°		PROJECT: US ATLAS SILICON SUBSYSTEM		
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS		DWG BY	DATE	
BREAK EDGES, .016 MAX. ON MACHINED WORK		CHK BY	DATE	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		APR BY	DATE	
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: ASSEM
SHOWS ON: 21F688
SCALE: 1:1.25
DO NOT SCALE PRINTS

PATENT CLEAR: DESIGN ACCT. NO. P1AP-11
CATEGORY CODE: AP6250
DWG. NO.: 21F6894
SHEET 1 OF 1
DATE: 4/16/2002

DWG. NO.	SIZE	REV.	SHEET	
21F7784		1	1	
DESCRIPTION		MATERIAL	MT. LOCATION	

Ø 344.50^{+0.00}_{-0.25}
 ⊕ Ø .13 A B M

Ø 190.50^{+0.25}_{0.00}
 ⊕ Ø .13 A
 B

∥ .25 A
 A
 ▱ .25

12.70±0.50

MATL: ALUMINUM

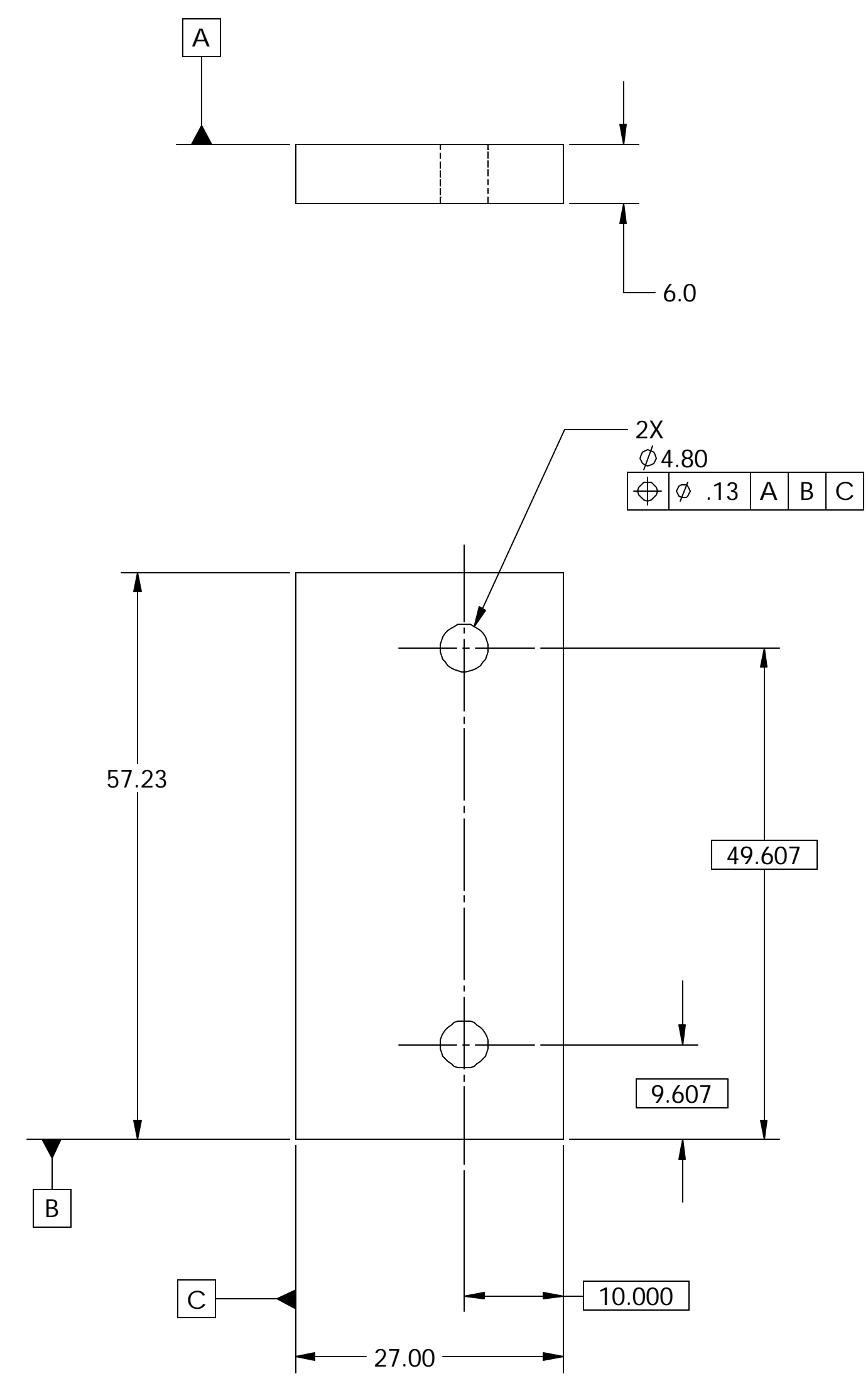
NOTES: UNLESS OTHERWISE SPECIFIED

- 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

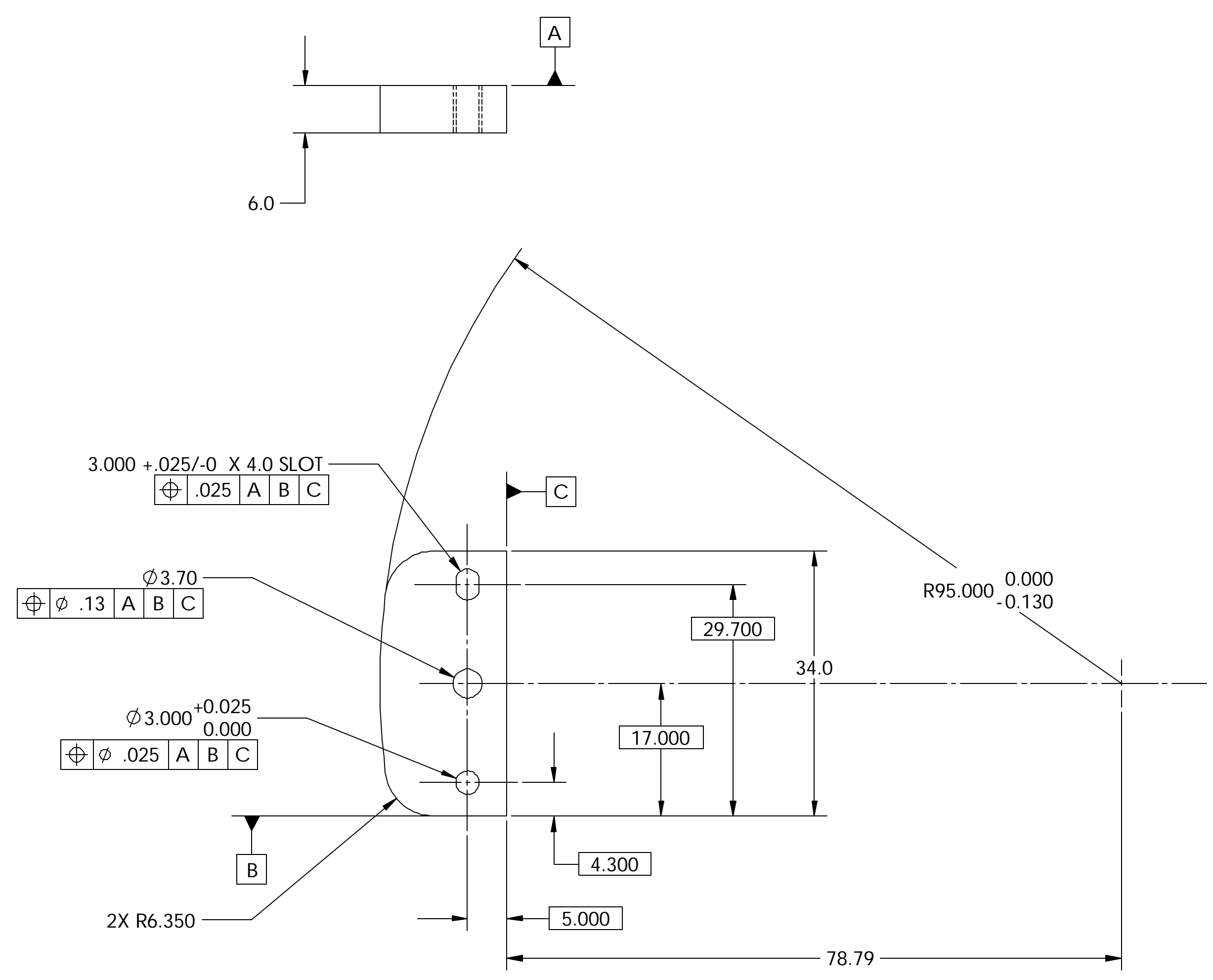
UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.	ERNEST ORLANDO LAWRENCE	
TOLERANCES	X.X ± 0.5	FRAC. ± 1/64	ACCT. NO.	NO. REQD.	DATE ISSD	BERKELEY NATIONAL LABORATORY
	X.XX ± 0.25	ANGLES ± 30°	DEL. TO	DATE REQD.		UNIVERSITY OF CALIFORNIA - BERKELEY #
	X.XXX ± 0.013	FINISH 3.2	SURFACE TREATMENT			ATLAS PIXEL DETECTOR
DO NOT SCALE PRINT			IDEN. METHOD TAG	SPACEFRAME END STIFFENER		
THREADS ARE CLASS 2			PROJECT NUMBER	BOND FIXTURE CAUL PLATE		
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NAME	UNIVERSITY OF CALIFORNIA - BERKELEY #		
CUT ROUND. 1.5 THREAD RELIEF ON MACHINED THREADS			PROJECT US ATLAS SILICON SUBSYSTEM	MICROFILMED:	DWG. TYPE	SHOWS ON
BREAK EDGES .016 MAX. ON MACHINED WORK			DWG. BY W. K. MILLER	DATE 4/16/2002	PART	SCALE: 1: 1.25
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			CHK BY BILL WILDS	DATE 4/16/2002	21F775	DO NOT SCALE PRINTS
IN ACCORDANCE WITH ASME Y14.5m & B46.1			APR BY E. ANDERSSON	DATE 4/16/2002	P1AP-11	
REV	DWG	CHK	ZONE	DATE	CHANGES	

SCALE: 1: 1.25
 SHEET 1 OF 1
 DWG. NO. 21F7784

DWG. NO.	SIZE	REV.	SR.
21F777 4		1	
DESCRIPTION		MATERIAL	MNT. LOCATION



STIFFENER VERTEX PLATE CLAMP
MATL: ALUMINUM



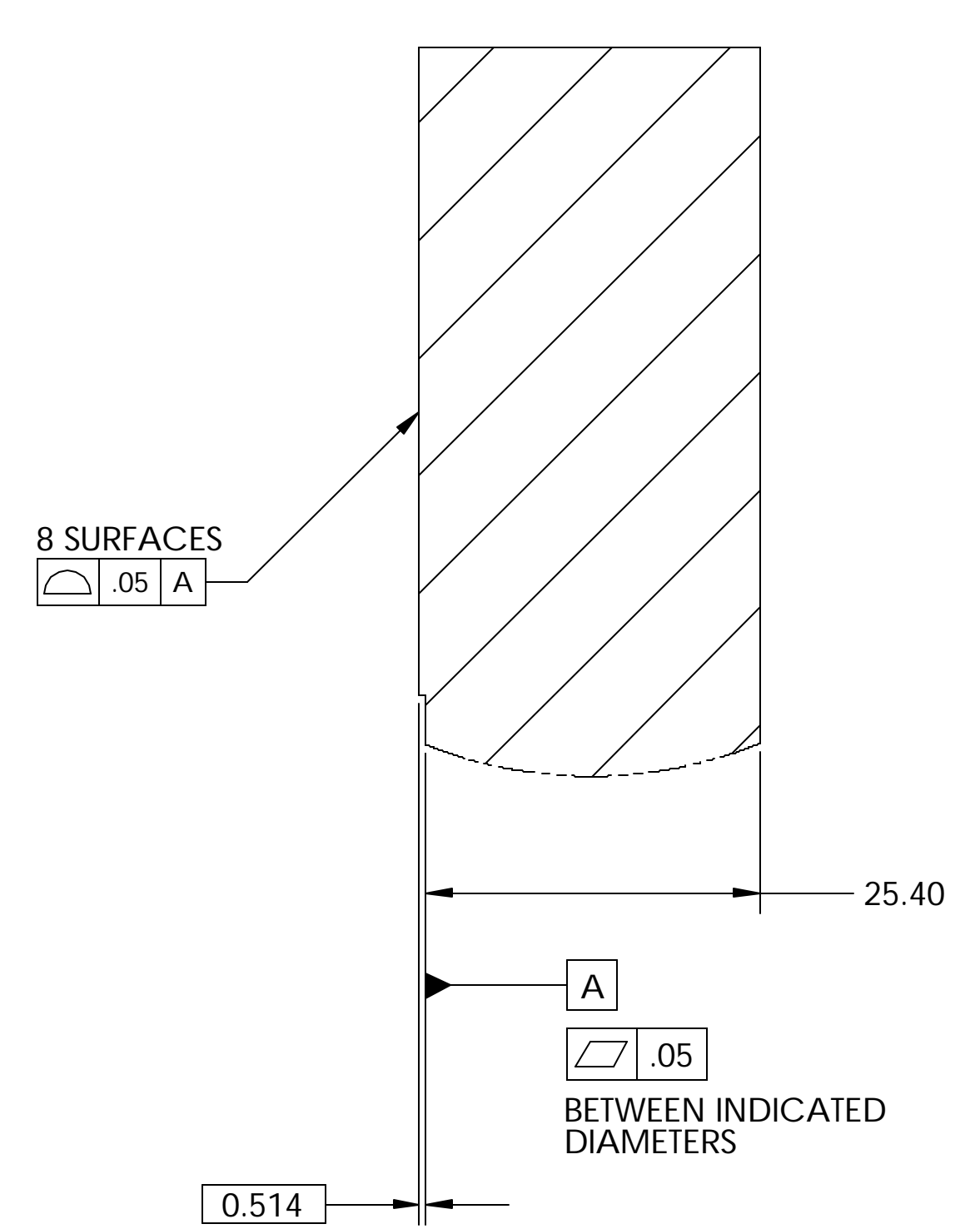
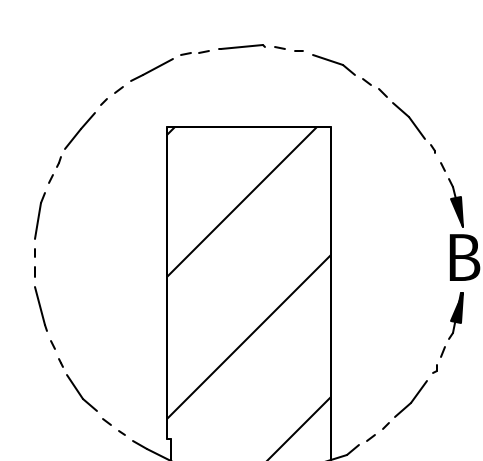
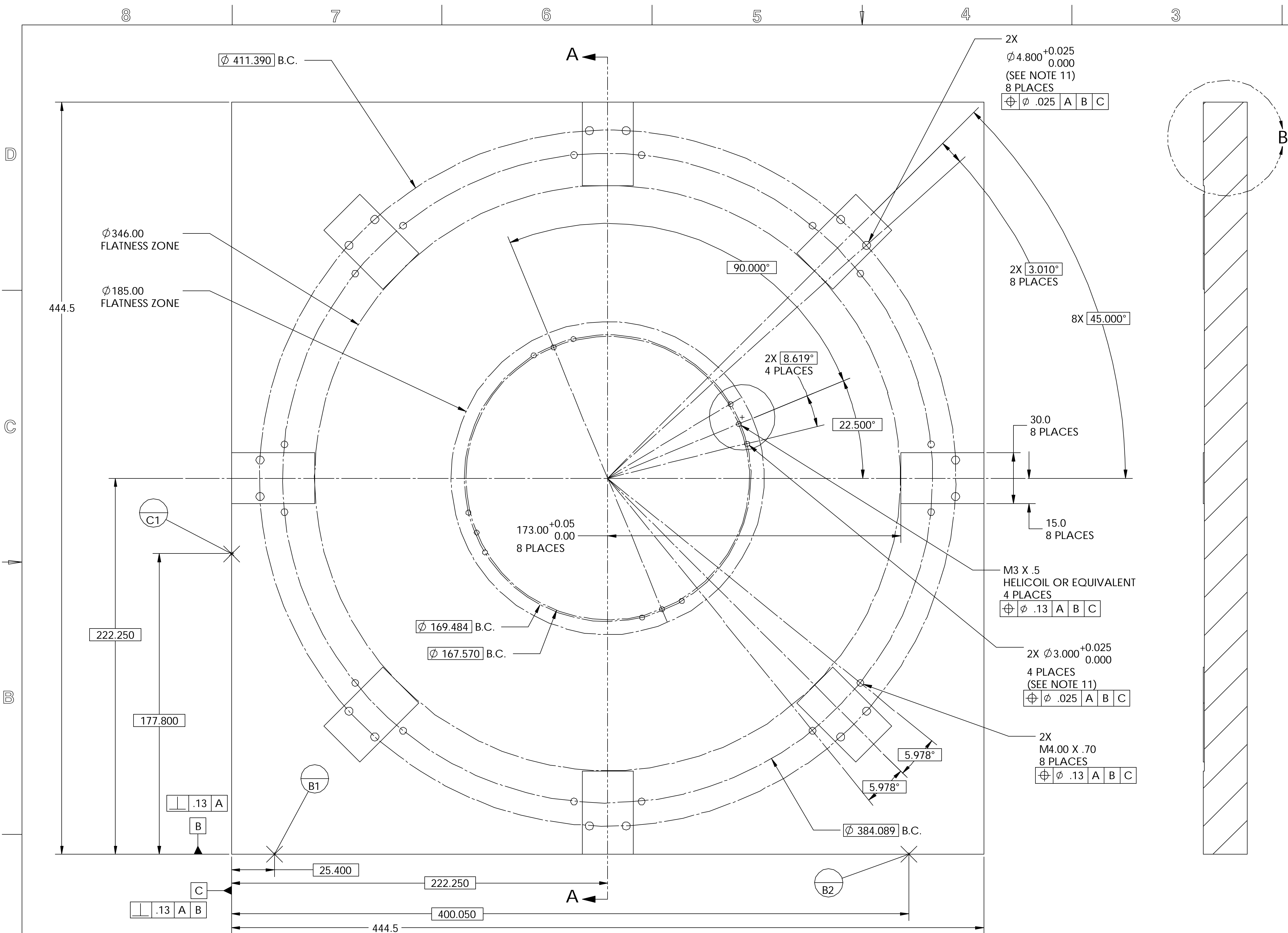
FACESHEET ALIGNMENT BLOCK
MATL: ALUMINUM

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 3.2	SURFACE TREATMENT	ATLAS PIXEL DETECTOR					
DO NOT SCALE PRINT				INDEX METHOD TAG	SPACEFRAME END STIFFENER				
THREADS ARE CLASS 2				PROJECT NUMBER	BONDING FIXTURE CLAMPS				
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NAME	UNIVERSITY OF CALIFORNIA - BERKELEY #				
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS				PROJECT US ATLAS SILICON SUBSYSTEM	MICROFILMED:				
BREAK EDGES .016 MAX. ON MACHINED WORK				DWG. BY W. K. MILLER	DATE 4/16/2002	DWG. TYPE PART	SHOWS ON 21F775	SCALE: 2:1	DO NOT SCALE PRINTS
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				CHK BY BILL WILDS	DATE 4/16/2002	PATENT CLEAR:	DESIGN ACCT. NO. P1AP-11	CATEGORY CIDE AP6250	DWG. NO. 21F777 4
IN ACCORDANCE WITH ASME Y14.5m & B46.1				APR BY E. ANDERSSSEN	DATE 4/16/2002	SHEET 1 OF 1			
REV	DWG	CHK	ZONE	DATE	CHANGES				

DWG. NO.	SIZE	REV.	SER.
21F7764	.05	1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



DETAIL B
SCALE 2:1

SECTION A-A

NOTES: UNLESS OTHERWISE SPECIFIED

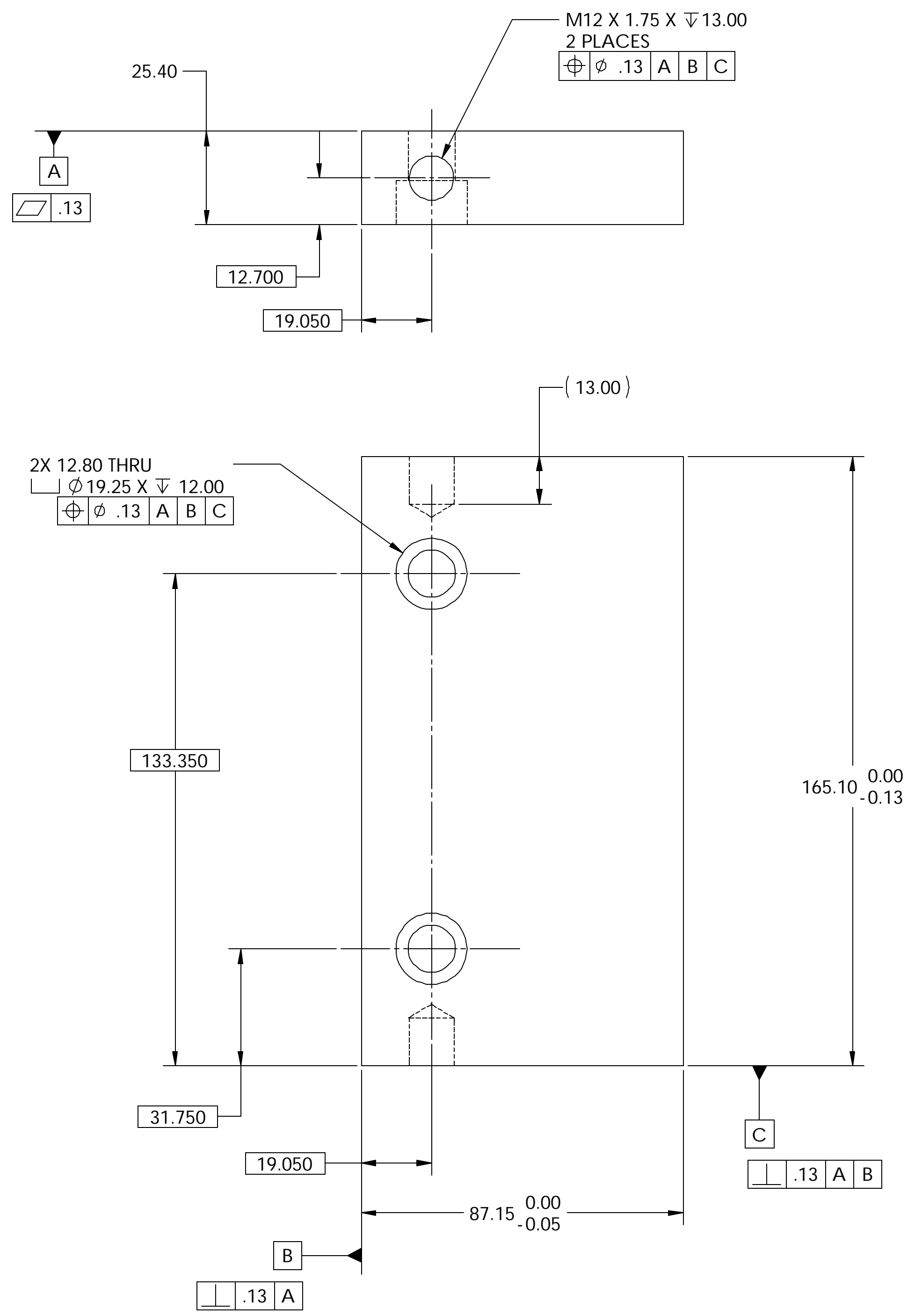
- ALL DIMENSIONS IN MILLIMETERS
- DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
- SURFACE TEXTURE PER ANI/ASME B 46.1-1985
- REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
- ALL INSIDE CORNERS TO BE .38 RADIUS MAX
- COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
- COUNTERSINK 82 DEGREES APPROXIMATELY .38 DEEP ALL DRILLED HOLES
- PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
- 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)
- INSPECTION REPORTS TO BE PROVIDED TO HYTEC
- HOLES ARE THRU HOLES, OR 3X DIA. DEEP WITH A SMALLER PILOT HOLE THRU

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

REV	DWG	CHK	ZONE	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.	
X.X ± 0.5	FRAC. ± 1/64	NO. REQD.	DATE ISSD	ERNEST ORLANDO LAWRENCE	
X.XX ± 0.25	ANGLES ± 30°	DEL. TO	DATE REQD.	BERKELEY NATIONAL LABORATORY	
X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT		UNIVERSITY OF CALIFORNIA - BERKELEY #	
DO NOT SCALE PRINT				ATLAS PIXEL DETECTOR	
THREADS ARE CLASS 2				SPACEFRAME END STIFFENER	
CHAMFER ENDS OF ALL SCREW THREADS 30°				BOND FIXTURE PLATE	
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS				MICROFILMED:	
BREAK EDGES .016 MAX. ON MACHINED WORK				DWG. TYPE	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				PART	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				SHOWS ON	
DWG. W. K. MILLER				SCALE: 1:1.25	
CHK. BILL WILDS				DO NOT SCALE PRINTS	
APR. E. ANDERSSON				SHEET 1 OF 1	
DATE 4/16/2002				SIZE	
DATE 4/16/2002				REV.	
DATE 4/16/2002				21F7764	

DWG. NO.	SIZE	REV.	SHEET
21F7624		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: 4340 ALLOY STEEL (SEE NOTE 9)

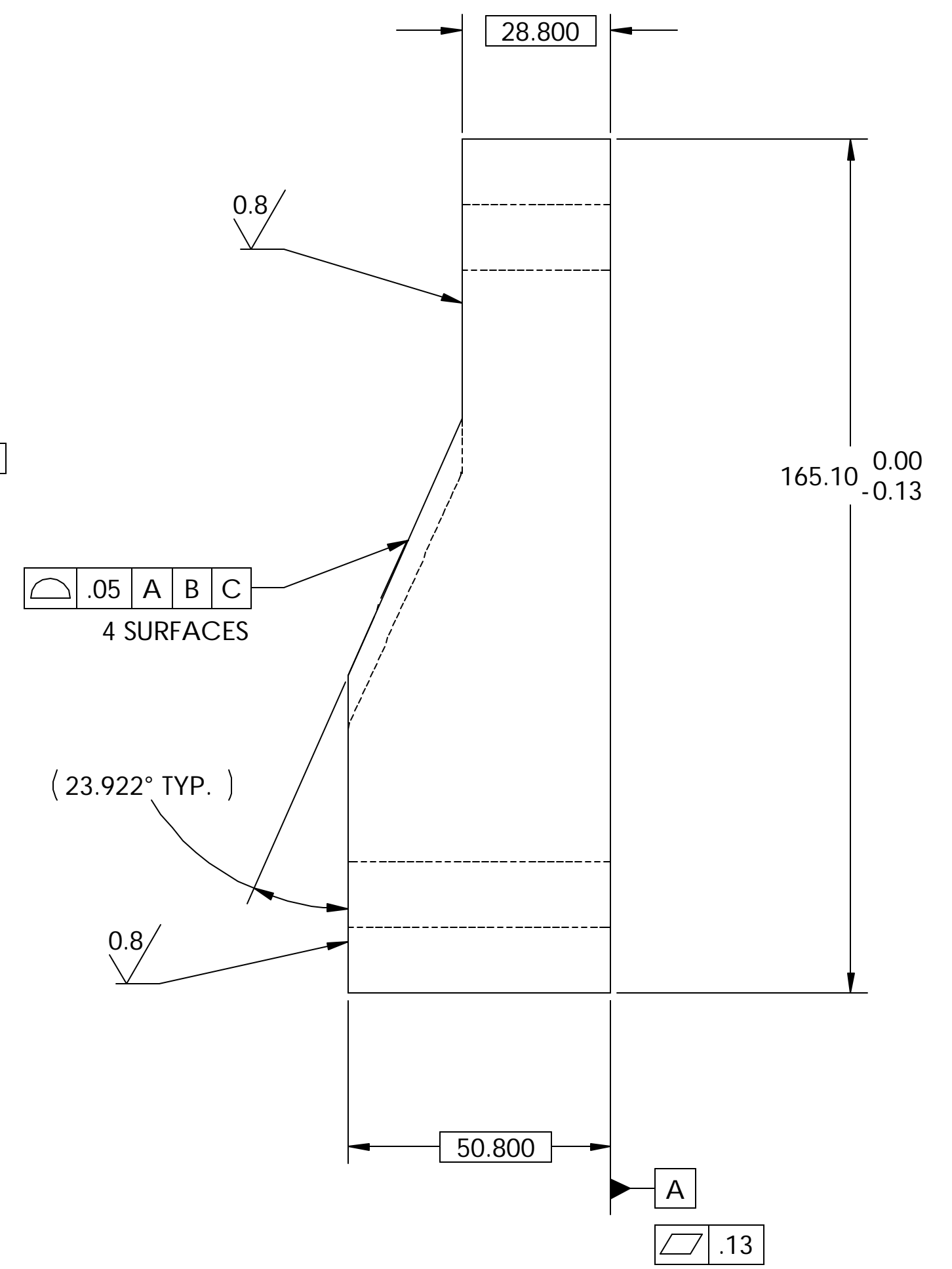
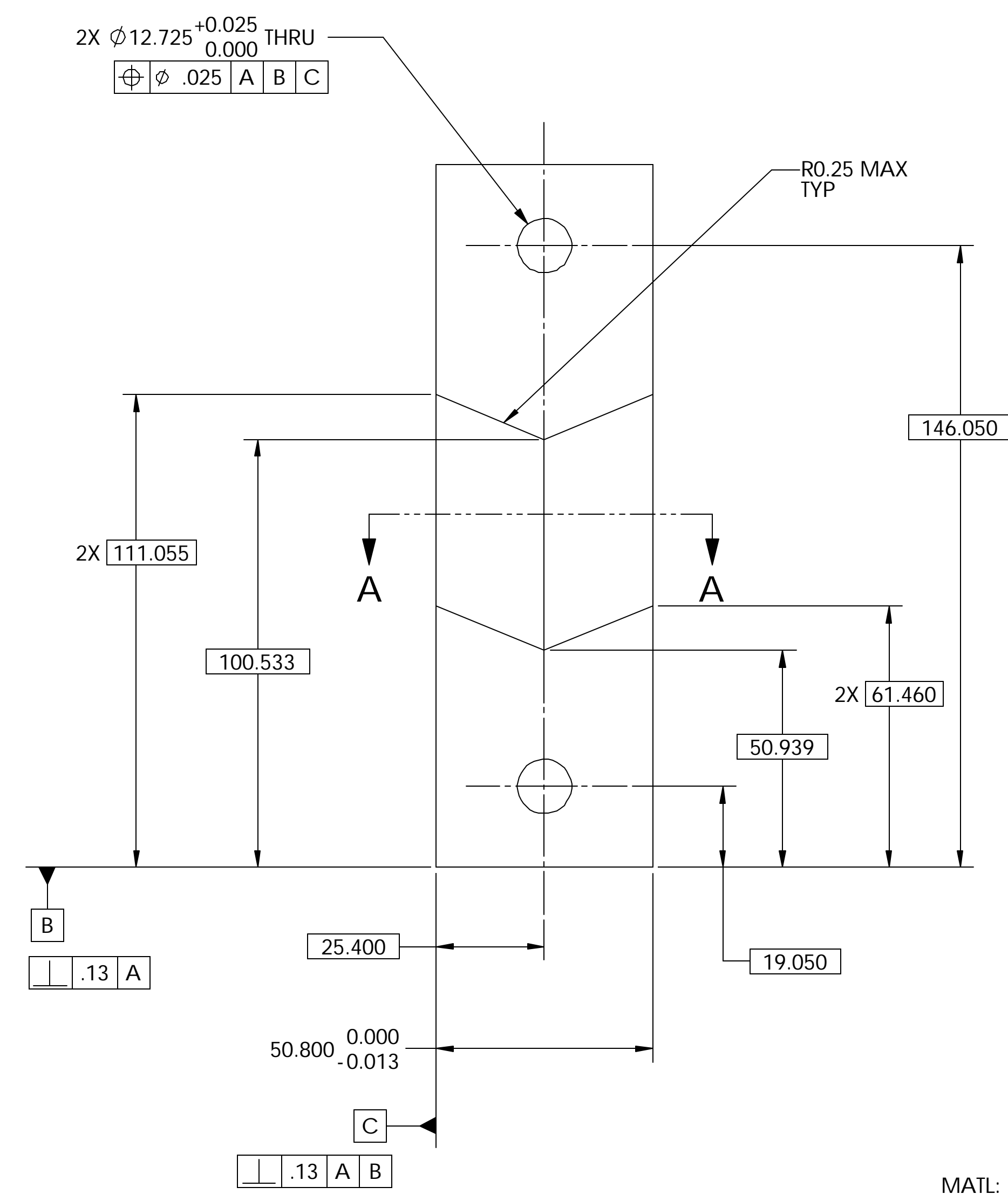
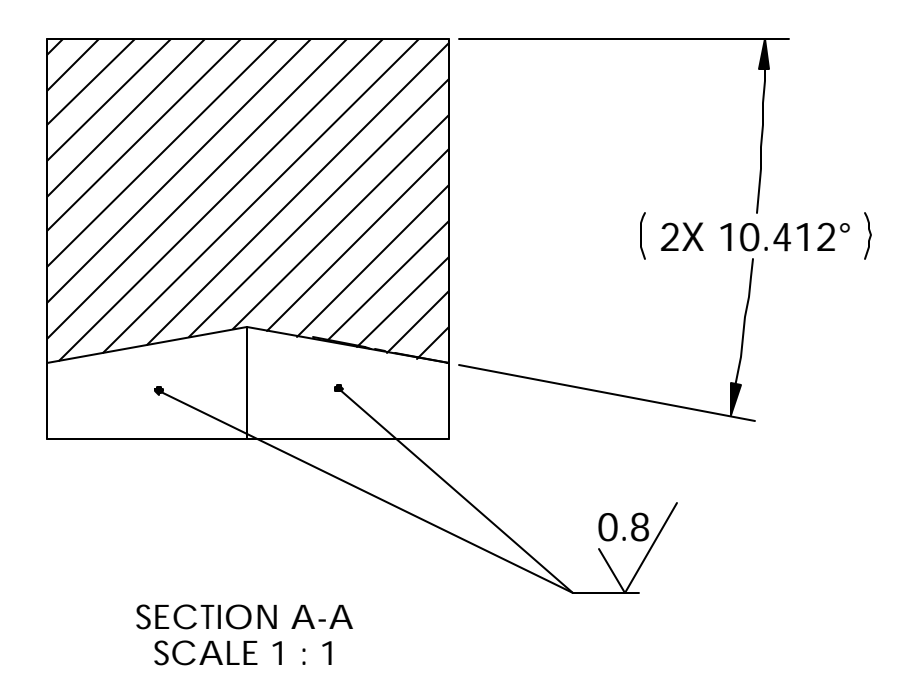
NOTES: UNLESS OTHERWISE SPECIFIED

- 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
- 4340 MATERIAL TO BE CARBORIZED AND OIL QUENCHED TO ACHIEVE Rc50 (HB 475) MINIMUM HARDNESS

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			ENDCONE VERTEX PLATE
THREADS ARE CLASS 2			PROJECT NUMBER	ATL-IP-ED-XXXX		MOLD SIDE PLATE
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NAME	US ATLAS SILICON SUBSYSTEM	MICROFILMED:	DWG. TYPE
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						
REV	DWG	CHK	ZONE	DATE	CHANGES	

PART	21F759	SCALE: 1:1	DO NOT SCALE PRINTS
DESIGN ACCT. NO.	P1AP-11	CATEGORY CIDE	AP6250
DWG. NO.	21F7624	SIZE	SHEET 1 OF 1

DWG. NO.	SIZE	REV.	SHEET
21F7614		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: 4340 ALLOY STEEL (SEE NOTE 9)

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
- 4340 MATERIAL TO BE CARBORIZED AND OIL QUENCHED TO ACHIEVE Rc50 (HB 475) MINIMUM HARDNESS

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.		ERNEST ORLANDO LAWRENCE	
TOLERANCES		ACCT. NO.		DATE ISSD		BERKELEY NATIONAL LABORATORY	
X.X ± 0.5	FRAC. ± 1/64	NO. REQD.		DATE REQD.		UNIVERSITY OF CALIFORNIA - BERKELEY #	
X.XX ± 0.25	ANGLES ± 30°	SURFACE TREATMENT		PROJECT NAME		ATLAS PIXEL DETECTOR	
X.XXX ± 0.013	FINISH 1.6	INDEX METHOD TAG		PROJECT NUMBER		ENDCONE VERTEX PLATE	
DO NOT SCALE PRINT				PROJECT NAME		MOLD PRESS PLATE	
THREADS ARE CLASS 2				PROJECT NUMBER		MICROFILMED:	
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NAME		DWG. TYPE	
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS				PROJECT NUMBER		PART	
BREAK EDGES .016 MAX. ON MACHINED WORK				PROJECT NAME		SHOWS ON	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				PROJECT NUMBER		SCALE: 1:1	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				PROJECT NAME		DO NOT SCALE PRINTS	
REV DWG		CHK ZONE		DATE		SHEET 1 OF 1	
						SIZE REV.	
						21F7614	

8

7

6

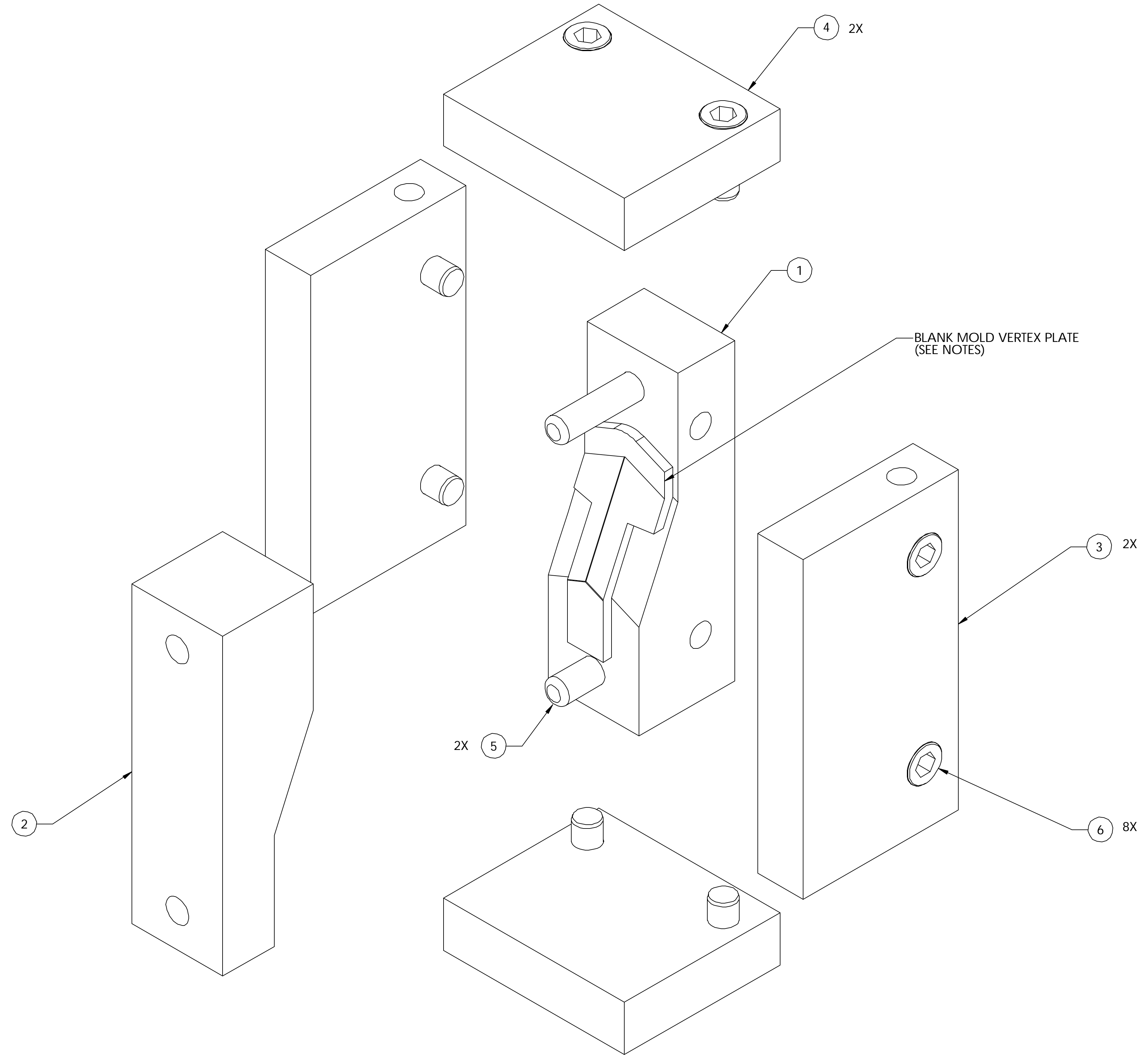
5

4

3

1

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
	21F759 4	-		
6		8	M12 X 1.75 SOCKET HD CAP SCREW X 25.0	STEEL
5		2	12.7 DIA. DOWEL PIN X 63.5 mm LONG	STEEL
4	21F763	2	ENDCONE VERTEX PLATE - MOLD END PLATE	
3	21F762	2	ENDCONE VERTEX PLATE - MOLD SIDE PLATE	
2	21F761	1	ENDCONE VERTEX PLATE - MOLD PRESS PLATE	
1	21F760	1	ENDCONE VERTEX PLATE - MOLD BASEPLATE	



BLANK MOLD VERTEX PLATE
(SEE NOTES)

- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL DIMENSIONS IN MILLIMETERS
 2. MOLD USED TO FABRICATE "A" AND "C" SIDE ENDCONE VERTEX OUTER AND INNER PLATES
21F725, 21F727, 21F728, 21F729, 21F730, 21F736, 21F737
 3. MATERIAL IS CALLED OUT ON INDIVIDUAL PART DRAWINGS

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. DATE	DATE REQD	UNIVERSITY OF CALIFORNIA - BERKELEY #		
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT	IDEN METHOD TAG	ATLAS PIXEL DETECTOR		
DO NOT SCALE PRINT				PROJECT NUMBER	ENDCONE VERTEX PLATE		
TRENDS ARE CLASS 2				PROJECT NAME	MLD FIXTURE		
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT IS ATLAS SILICON SUBSYSTEM	MICROFILMED:	DWG. TYPE	SHOWN ON
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS				DWG. W. K. MILLER	DATE 4/16/2002	ASSEM	N/A
BREAK EDGES, 0.16 MAX. ON MACHINED WORK				CHK BILL WILDS	DATE 4/16/2002	SCALE: 1:1	DO NOT SCALE PRINTS
REMOVE BUBBS, WELD SPLATTER & LOOSE SCALE				BY E. ANDERSSON	DATE 4/16/2002	PATENT CLEAR:	DESIGN ACCT. NO.
IN ACCORDANCE WITH ASME Y14.5m & B46.1				APR E. ANDERSSON	DATE 4/16/2002	P1AP-11	AP6250
REV DWG				CHK ZONE	DATE	DWG. NO. SIZE REV.	
				CHANGES		SHEET 1 OF 1	
						21F759 4 -	

8

7

6

5

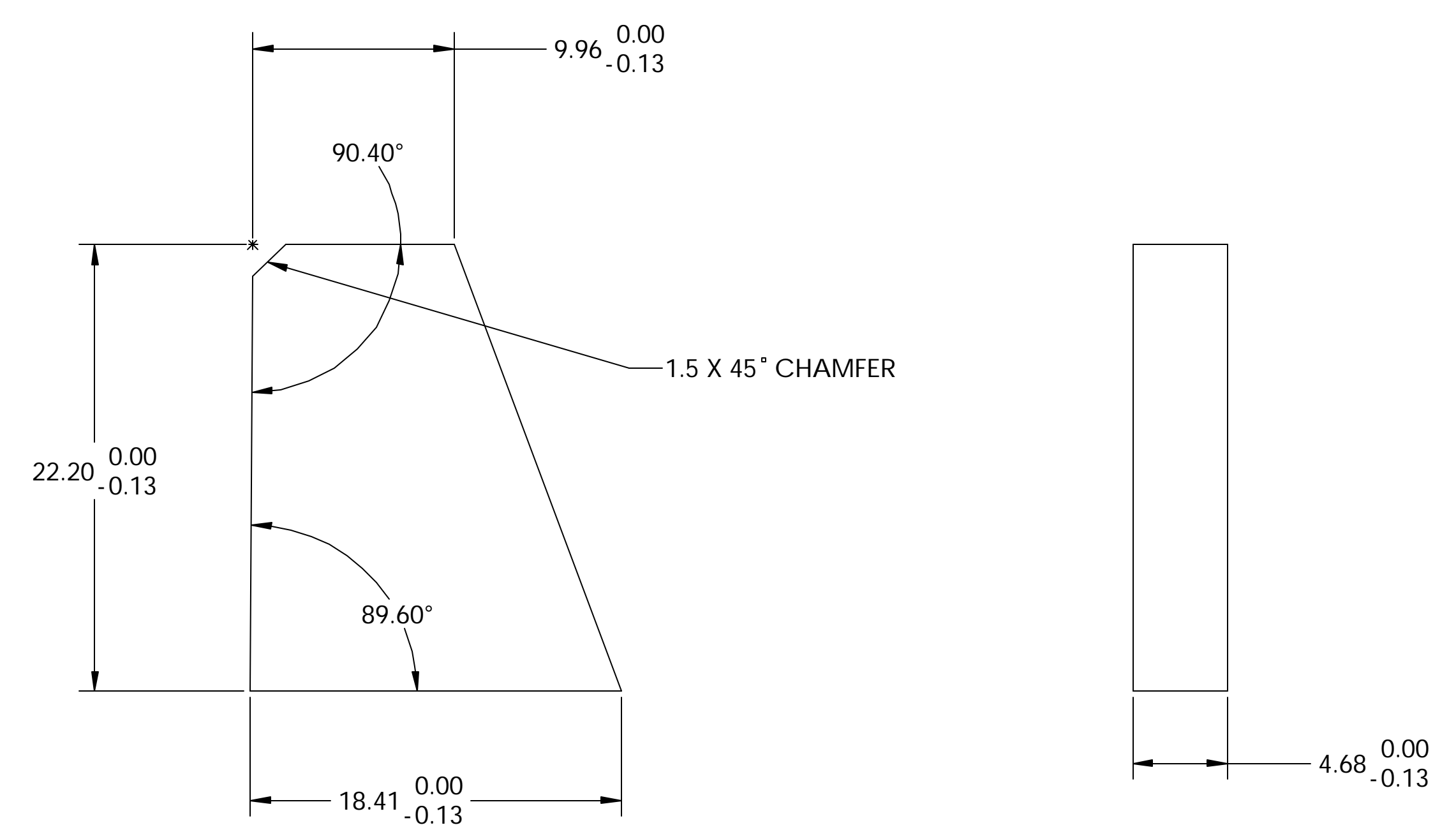
4

3

2

1

DWG. NO.	SIZE	REV.	SHEET	1
21F7564				
DESCRIPTION		MATERIAL	MT. LOCATION	



TEMPORARY BOND INSERT #1
MATL: ALUMINUM

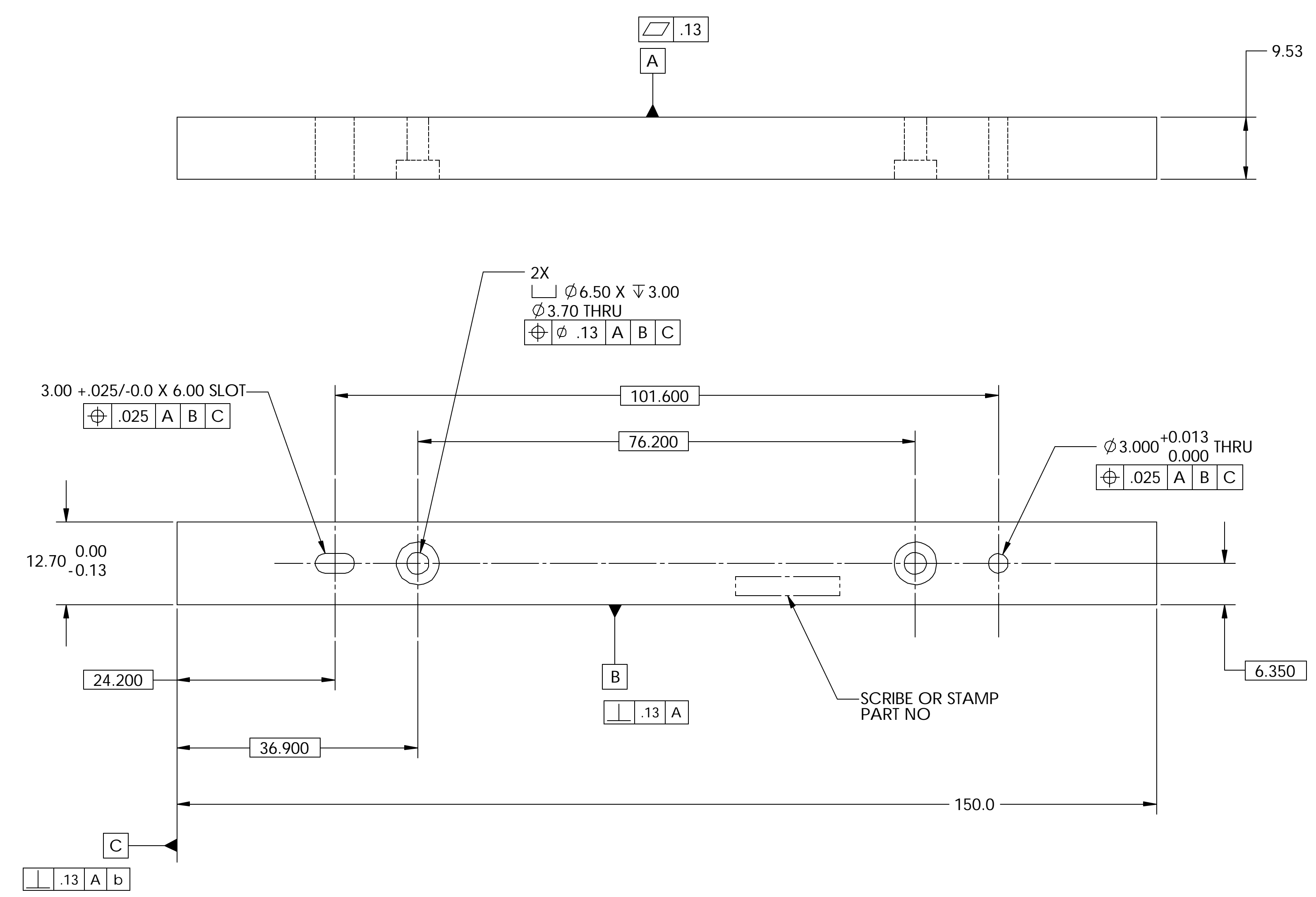
NOTES: UNLESS OTHERWISE SPECIFIED

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

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			IDEN. METHOD TAG	ENDCONE PANEL		
THREADS ARE CLASS 2			PROJECT NUMBER	BOND FIXTURE TEMPORARY INSERTS		
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NAME	US ATLAS SILICON SUBSYSTEM		
CUT ROUNDS: 1.5 THREAD RELIEF ON MACHINED THREADS			DWG. BY	DATE	MICROFILMED:	
BREAK EDGES: .016 MAX. ON MACHINED WORK			W. K. MILLER	4/16/2002	DWG. TYPE	SHOWS ON
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			CHK BY	DATE	PART	SCALE: 4:1
IN ACCORDANCE WITH ASME Y14.5m & B46.1			BILL WILDS	4/16/2002	P1AP-11	21F750
APR BY			E. ANDERSSON	DATE	AP6250	21F7564
REV. DWG. CHK. ZONE. DATE			CHANGES		DESIGN ACCT. NO.	SCALE PRINTS
					CATEGORY CIDE	DO NOT SCALE PRINTS
					DWG. NO.	SIZE
					21F7564	REV.

SHEET 1 OF 2

DWG. NO.	SIZE	REV.	SHEET
21F7544		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: 6061-T6 ALUM

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

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 PANEL BONDING FIXTURE CAVITY PLATE	
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT			SCALE: 2:1	
DO NOT SCALE PRINT			IDEN. METHOD TAG	PROJECT NO.		SHEET 1 OF 1	
THREADS ARE CLASS 2			PROJECT NAME	ATL-IP-ED-XXXX		SCALE PRINTS	
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NO.	US ATLAS SILICON SUBSYSTEM		MICROFILMED:	
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS			DATE	4/16/2002		DWG. TYPE	
BREAK EDGES .016 MAX. ON MACHINED WORK			CHK BY	W. K. MILLER		PART	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			DATE	4/16/2002		SHOWS ON	
IN ACCORDANCE WITH ASME Y14.5m & B46.1			APR BY	E. ANDERSSON		DATE	
REV	DWG	CHK	ZONE	DATE	CHANGES		PATENT CLEAR:
							DESIGN ACCT. NO.
							CATEGORY CIDE
							DWG. NO.
							SIZE
							REV.
							21F7544

8 7 6 5 4 3 2 1

D

D

C

C

B

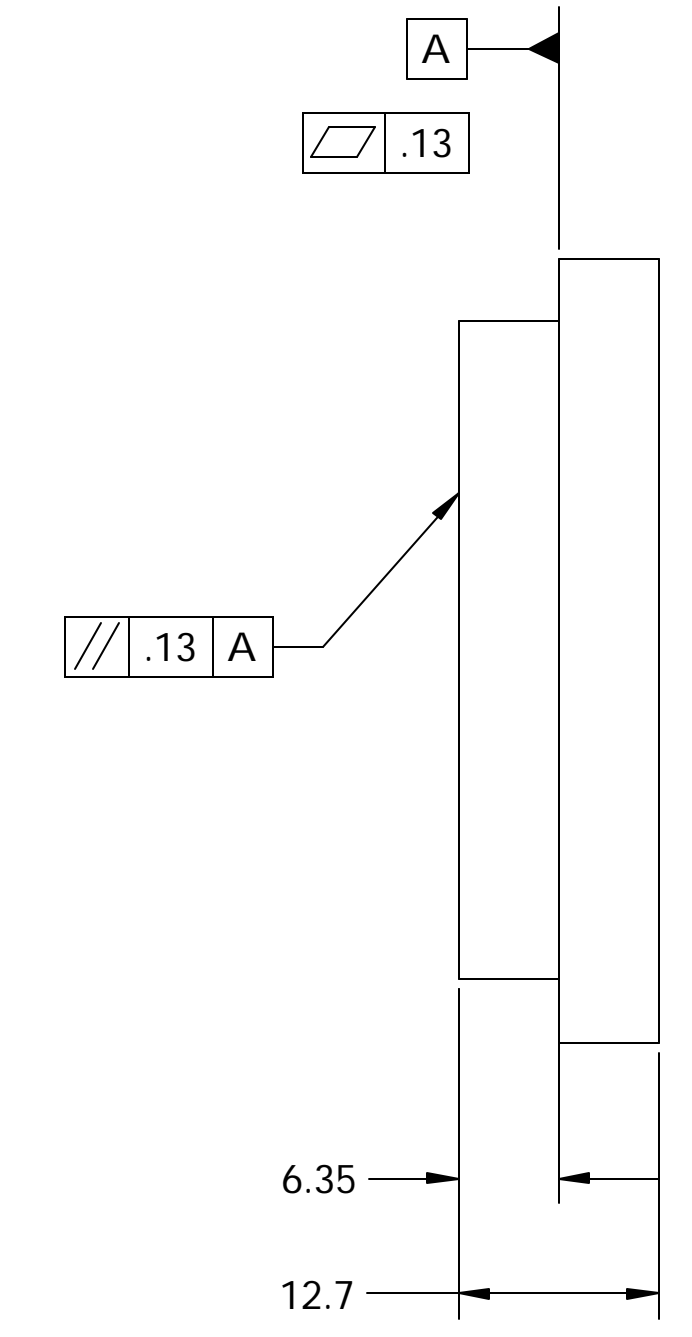
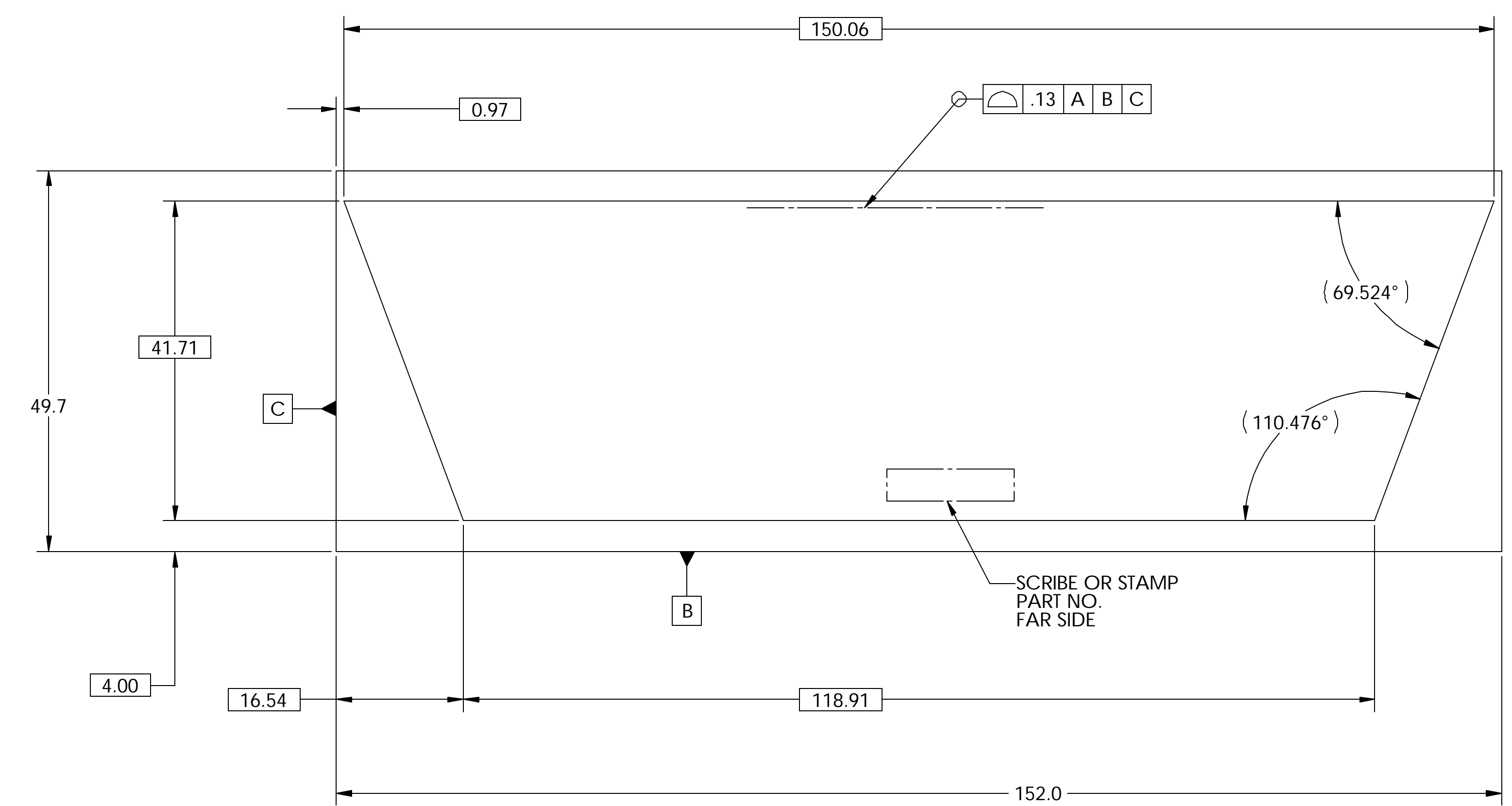
B

A

A

8 7 6 5 4 3 2 1

DWG. NO. 21F7524	SIZE =	REV. 1	SHEET NO. 1
DESCRIPTION		MATERIAL	MAT. LOCATION



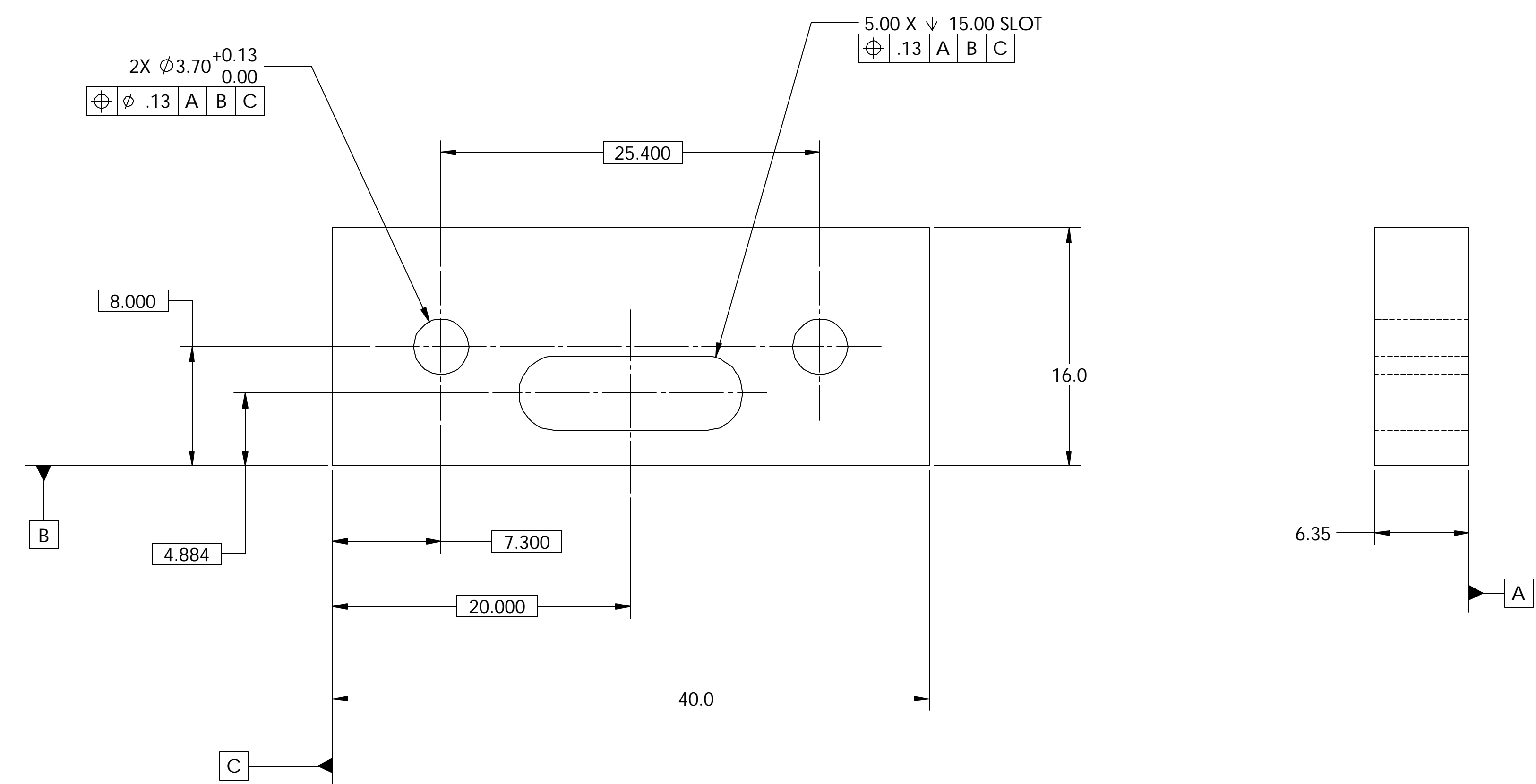
MATL: 6061-T6 ALUM

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

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.		
	X, XXX ± 0.013	FINISH	1.6	SURFACE TREATMENT			
DO NOT SCALE PRINT				IDEN. METHOD	TAG	ATLAS PIXEL DETECTOR ENDCONE PANEL BOND FIXTURE PRESSURE PLATE	
THREADS ARE CLASS 2				PROJECT NUMBER	ATL-IP-ED-XXXX	MICROFILMED:	
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NAME	US ATLAS SILICON SUBSYSTEM	DWG. TYPE	SHOWS ON
CUT ROUNDS, 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				PATENT CLEAR:		DESIGN ACCT. NO.	P1AP-11
REV		DWG	CHK	ZONE	DATE	CATEGORY CIDE	AP6250
CHANGES				SCALE: 2:1		DO NOT SCALE PRINTS	
				SHEET 1 OF 1		DWG. NO. 21F7524	

DWG. NO.	SIZE	REV.	SHEET	
21F749 4	=	1	1	
DESCRIPTION		MATERIAL	MT. LOCATION	

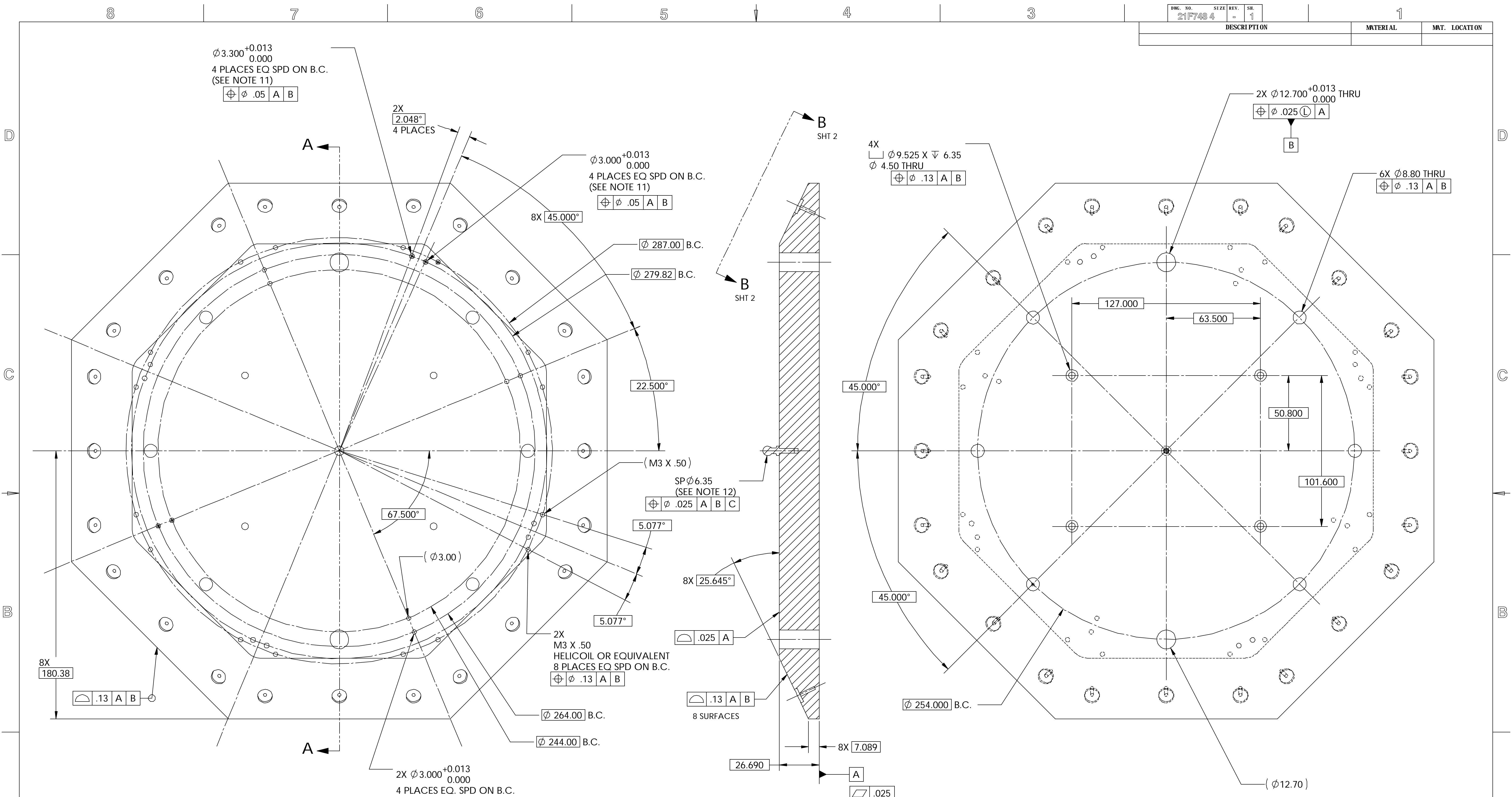


MATL: ALUM

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

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 3.2	SURFACE TREATMENT			ATLAS PIXEL DETECTOR
DO NOT SCALE PRINT			IDEN. METHOD	TAG	ENDCONE BOND FIXTURE	
THREADS ARE CLASS 2			PROJECT NUMBER	ATL-IP-ED-XXXX	INNER VERTEX PLATE CLAMP	
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NAME	US ATLAS SILICON SUBSYSTEM	MICROFILMED:	DWG. TYPE
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. ANDERSSON	DATE	4/16/2002
IN ACCORDANCE WITH ASME Y14.5m & B46.1			PATENT CLEAR:		DESIGN ACCT. NO.	P1AP-11
REV	DWG	CHK	ZONE	DATE	CHANGES	SCALE: 4:1
						DO NOT SCALE PRINTS
						SHOWS ON: 21F746
						CATEGORY CIDE: AP6250
						SCALE: 4:1
						SHEET 1 OF 1
						DWG. NO. 21F749 4
						SIZE
						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

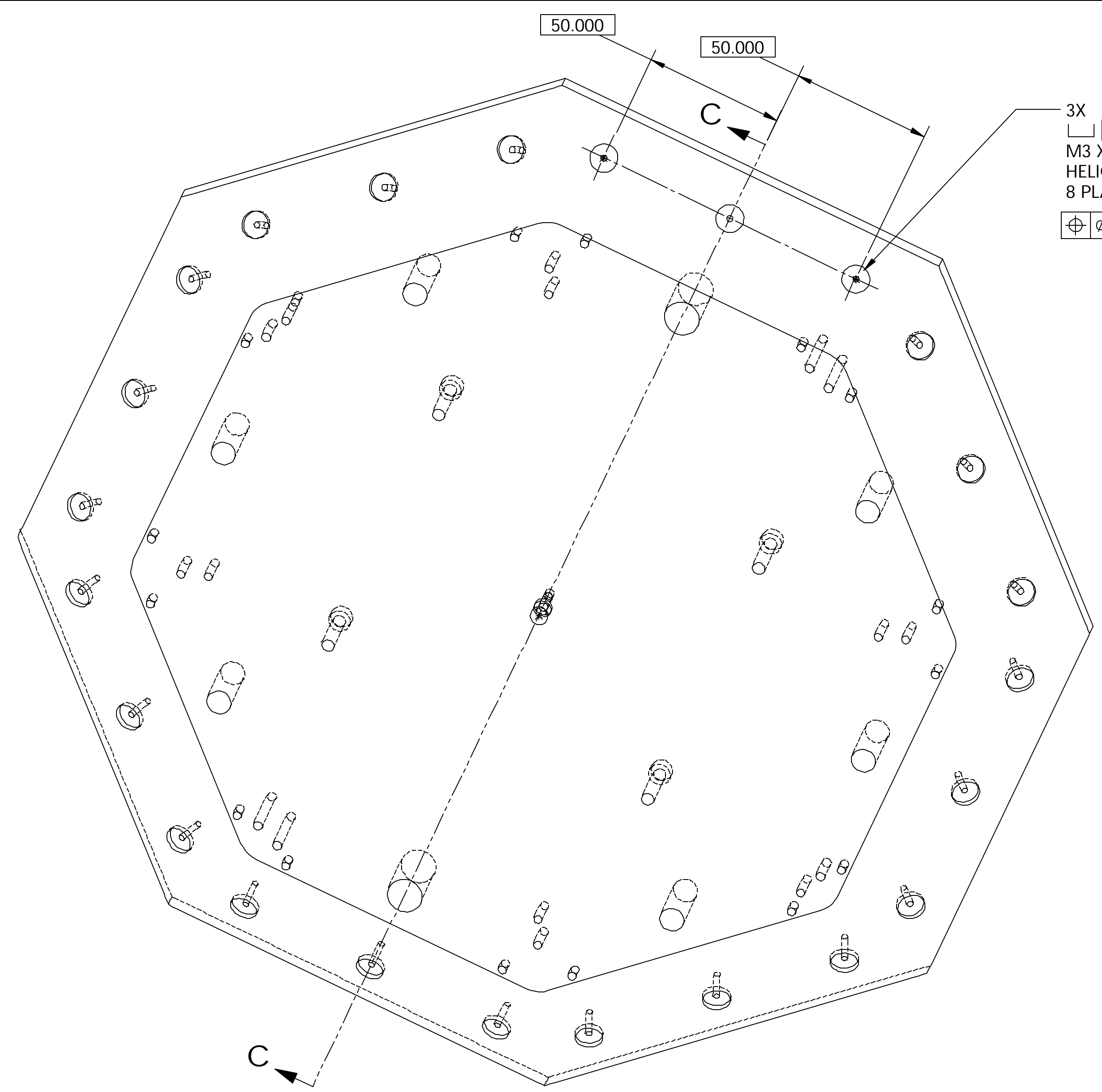
MATL: ISOTROPIC GRAPHITE; CTE LESS THAN OR EQUAL TO 6μIN/IN/°F OR EQUIVALENT (SEE NOTE 9, 10)

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		APR 16 2002	
IN ACCORDANCE WITH ASME Y14.5m & B46.1			BY E. ANDERSSON	DATE 4/16/2002		REV.	
REV	DWG	CHK	ZONE	DATE	CHANGES		

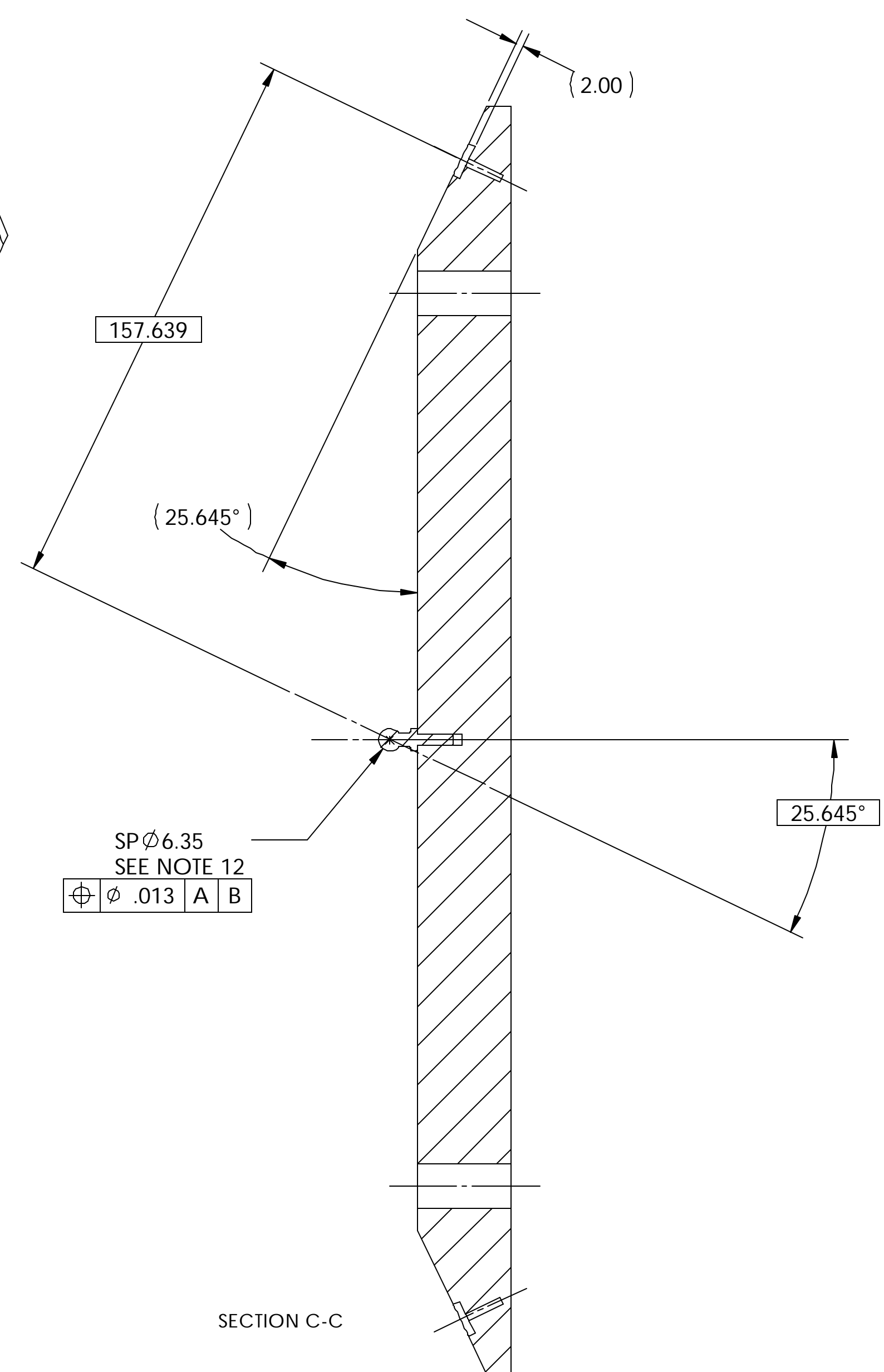
A

A

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



3X
 $\square \phi 8.500 \times \nabla 2.20$
 M3 X .5
 HELICOIL OR EQUIVALENT
 8 PLACES
 $\oplus \phi .13 \text{ A B}$



SP $\phi 6.35$
 SEE NOTE 12
 $\oplus \phi .013 \text{ A B}$

VIEW B-B
 (SEE SHT 1)

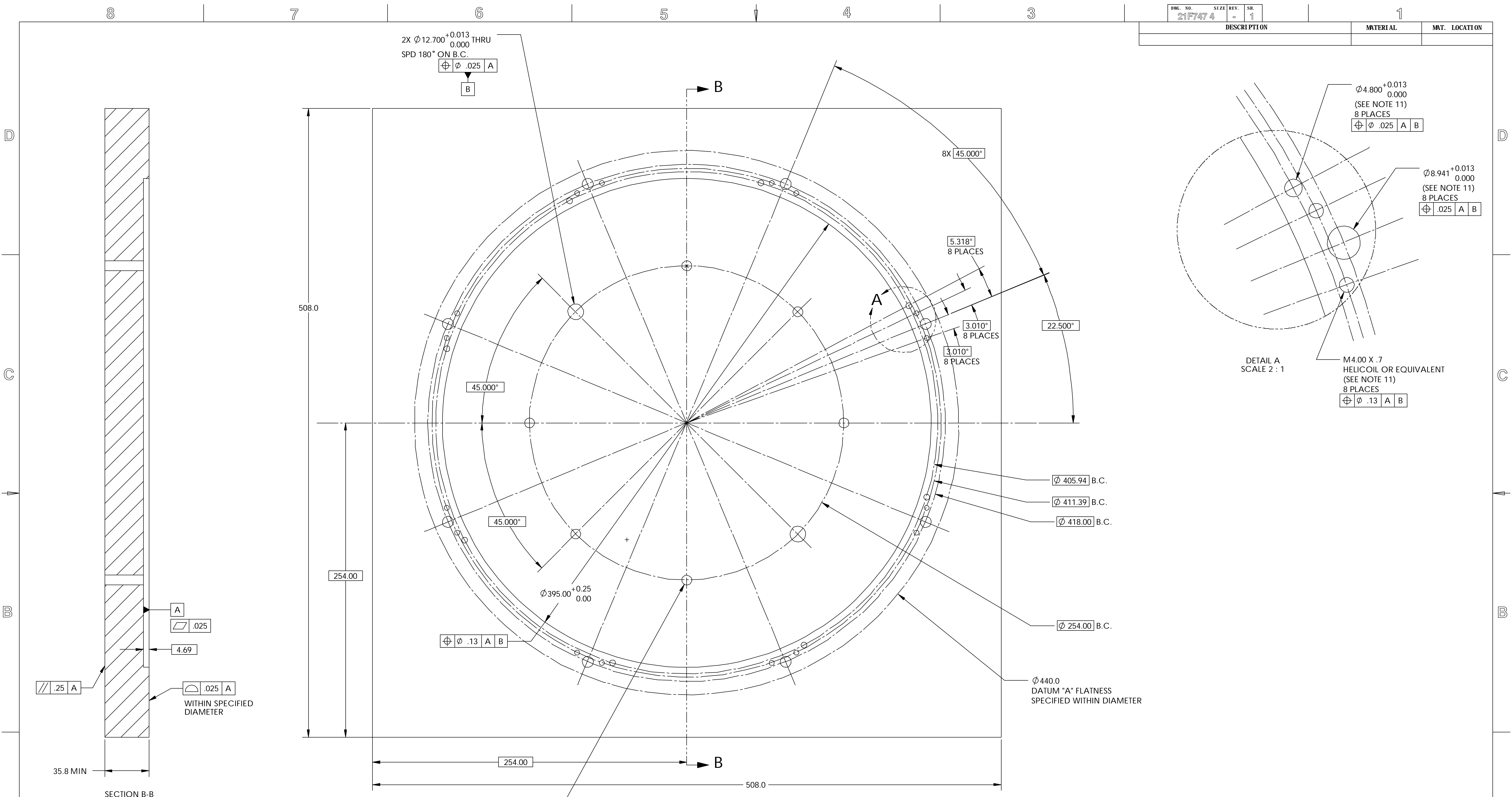
SECTION C-C

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 HYTEC; 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
- 6.35 DIA. TOOLING BALL PERMANENTLY INSTALLED

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°	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		ENDCONE BOND FIXTURE	
THREADS ARE CLASS 2				PROJECT NAME		TOP GRAPHITE PLATE	
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NO. ATL-IP-ED-XXXX		MICROFILMED:	
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS				DWG. W. K. MILLER		DWG. TYPE	
BREAK EDGES, .016 MAX. ON MACHINED WORK				DATE 4/16/2002		PART	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				CHK BILL WILDS		SHOWS ON	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				DATE 4/16/2002		SCALE: 1:1.25	
REV DWG		CHK ZONE		DATE		DO NOT SCALE PRINTS	
CHANGES							
P1AP-11		AP6250		21F746		SHEET 2 OF 2	
21F748 4							

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



NOTES: UNLESS OTHERWISE SPECIFIED

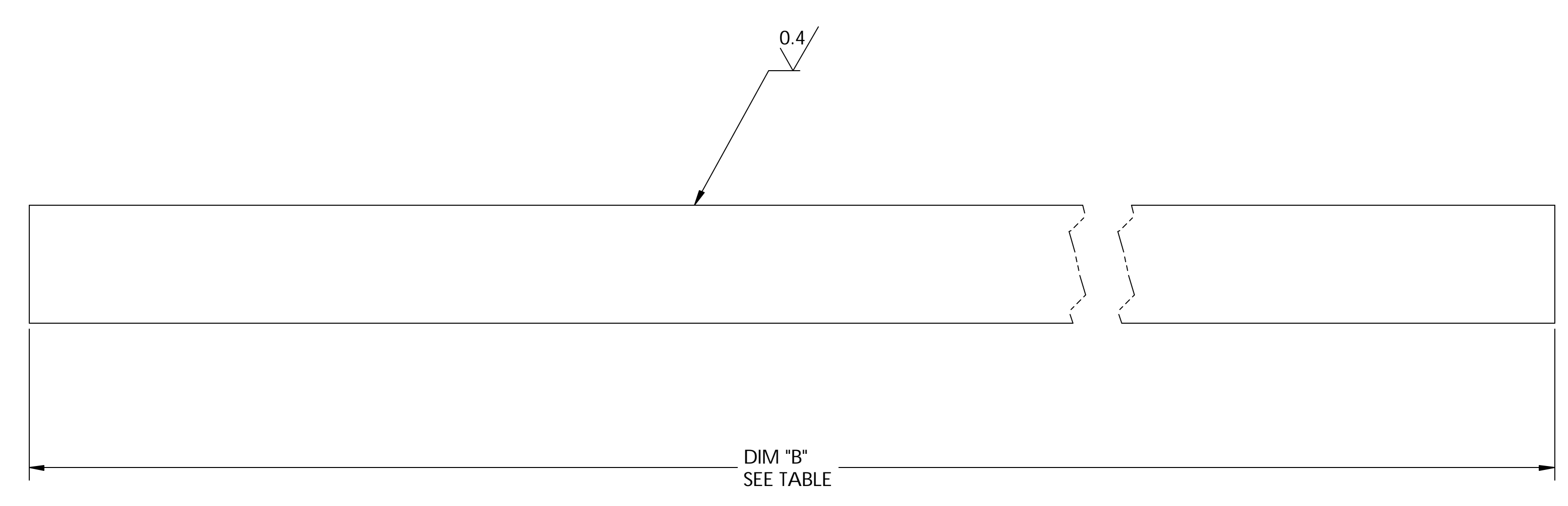
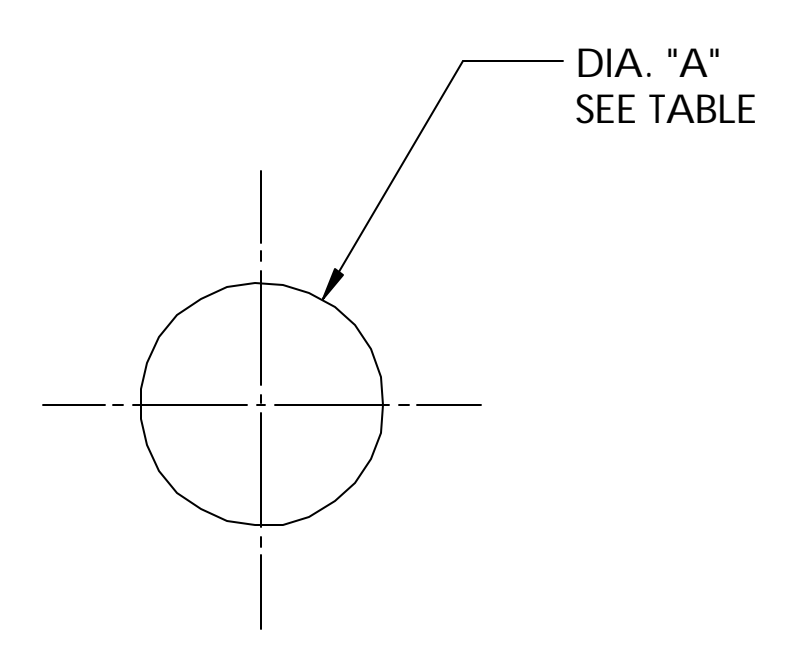
- ALL DIMENSIONS IN MILLIMETERS
- DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
- SURFACE TEXTURE PER ANI/ASME B 46.1-1985
- REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
- ALL INSIDE CORNERS TO BE .38 RADIUS MAX
- COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
- COUNTERSINK 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		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		
CHAMFER ENDS OF ALL SCREW THREADS 30°		PROJECT NO. ATL-IP-ED-XXXX		
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS		PROJECT US ATLAS SILICON SUBSYSTEM		
BREAK EDGES .016 MAX. ON MACHINED WORK		DWG. BY	DATE	DATE
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		CHK BY	DATE	DATE
IN ACCORDANCE WITH ASME Y14.5m & B46.1		APR BY	DATE	DATE

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	SCALE PRINTS
PATENT CLEAR:	DESIGN ACCT. NO.	AP6250	SHEET 1 OF 1
	DWG. NO.	21F747 4	SIZE
	REV.	1	REV.

DWG. NO.	SIZE	REV.	SHEET
21F7154		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: STEEL GROUND ROUNDSTOCK

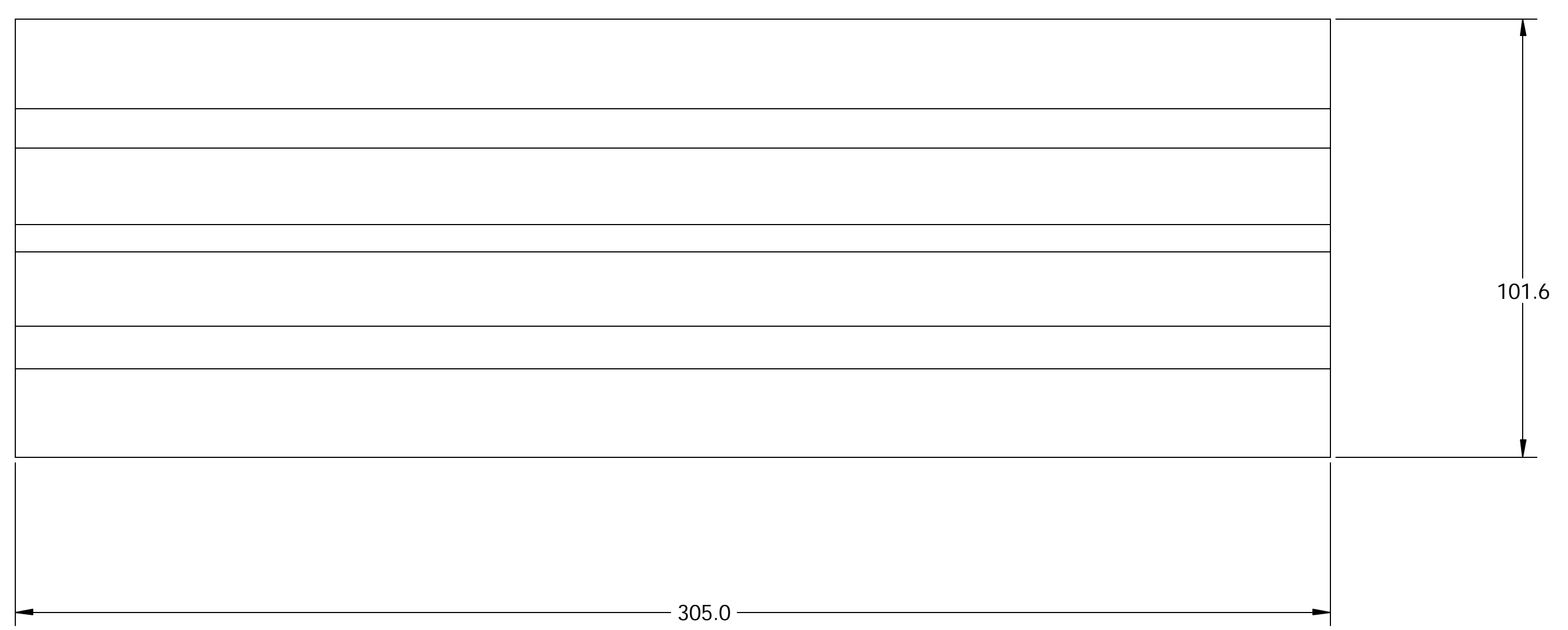
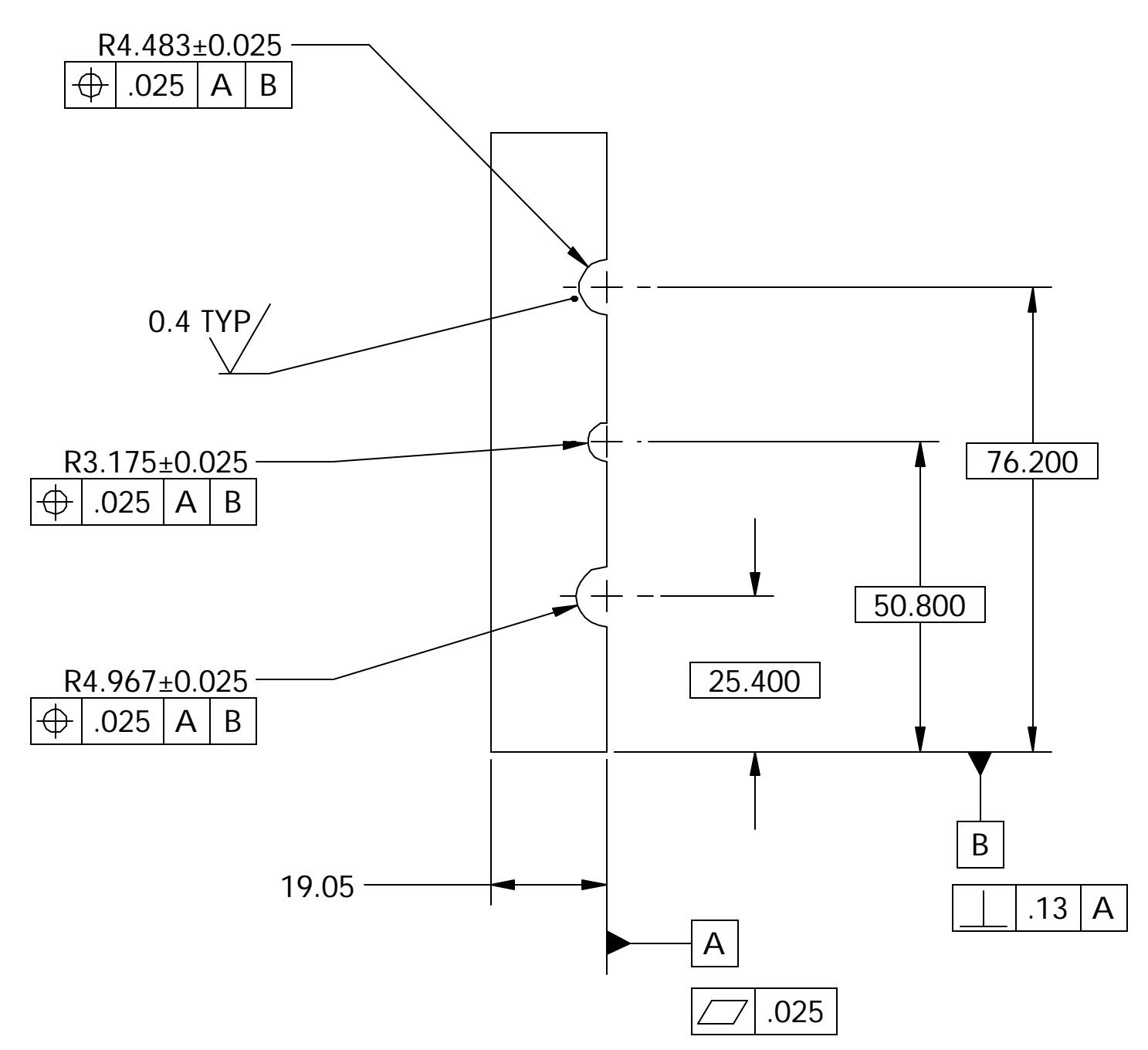
PARTNO.	DIM "A"	"A" TOL.	DIM "B"	PART/PURPOSE
21F715-1	8.965	+/-0.025	305.00	JOINT INSERT MANDREL
21F715-3	6.35	+/-0.025	305.00	MOLD ALIGNMENT ROD
21F715-5	7.72	+/-0.025	305.00	JOINING PIN MANDREL
21F715-7	10.11	+/-0.025	857.00	STIFFENING TUBE MANDREL
21F715-9	6.35	+/-0.025	857.00	MOLD ALIGNMENT ROD

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	
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		
THREADS ARE CLASS 2			PROJECT NUMBER	VERTEX STIFFENER TUBE MOLD MANDREL		
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NAME	US ATLAS SILICON SUBSYSTEM		
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS			DWG. BY	DATE	MICROFILMED:	
BREAK EDGES .016 MAX. ON MACHINED WORK			CHK BY	DATE	DWG. TYPE	SHOWS ON
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			APR BY	DATE	PART	N/A
IN ACCORDANCE WITH ASME Y14.5m & B46.1				DATE	PATENT CLEAR:	DESIGN ACCT. NO.
REV	DWG	CHK	ZONE	DATE	CATEGORY CIDE	
CHANGES					DWG. NO.	SCALE: 4:1
					SIZE	DO NOT SCALE PRINTS
					21F7154	SHEET 1 OF 1
					REV.	

DWG. NO.	SIZE	REV.	SHEET
21F7144		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: STEEL GROUND FLATSTOCK

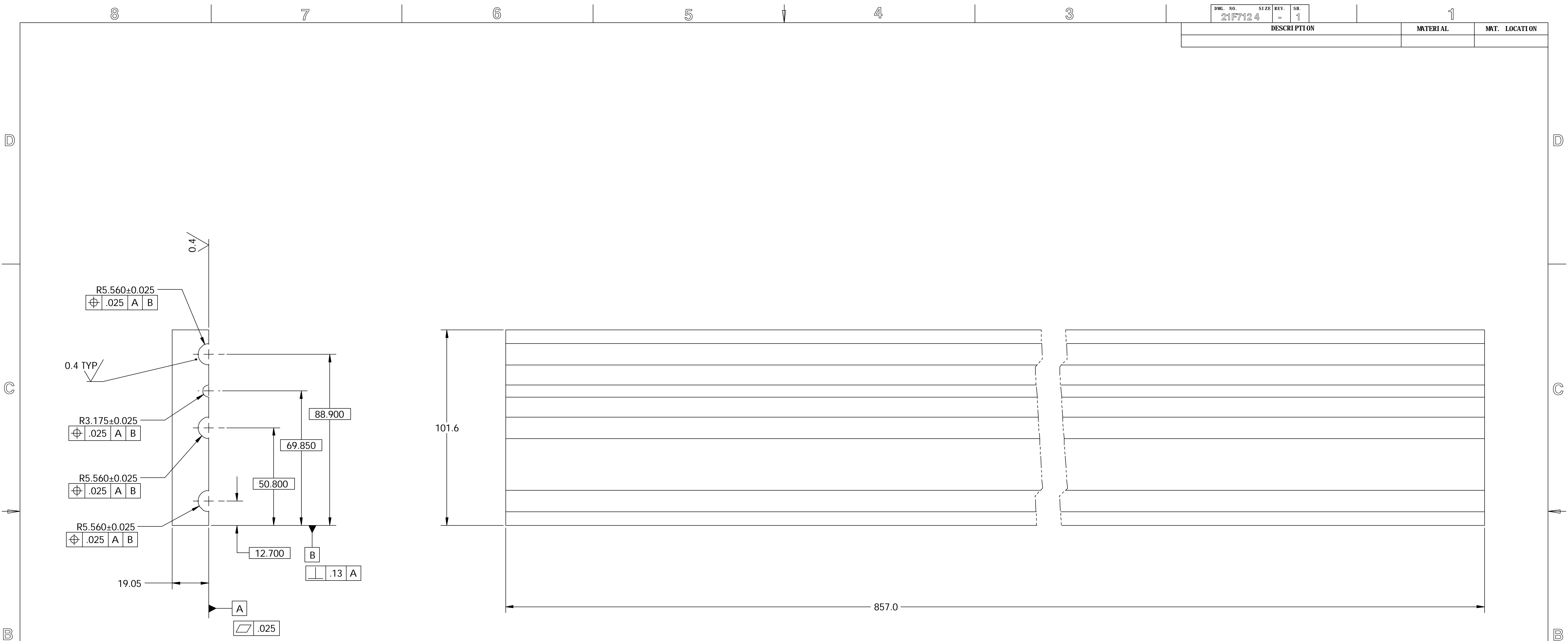
- NOTES: UNLESS OTHERWISE SPECIFIED
- DIMENSIONS IN MILLIMETERS
 - DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
 - SURFACE TEXTURE PER ANI/ASME B 46.1-1985
 - REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
 - ALL INSIDE CORNERS TO BE .38 RADIUS MAX
 - COUNTERSINK 82 DEGREES ALL TAPPED 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		
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				
THREADS ARE CLASS 2			PROJECT NAME	VERTEX TUBE MOLD CAVITY				
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NO.	ATL-IP-ED-XXXX				
CUT ROUND. 1.5 THREAD RELIEF ON MACHINED THREADS			PROJECT SUBSYSTEM	US ATLAS SILICON SUBSYSTEM				
BREAK EDGES .016 MAX. ON MACHINED WORK			DWG. BY	DATE	MICROFILMED:			
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			W. K. MILLER	4/16/2002	DWG. TYPE	SHOWS ON	SCALE: 1:1	
IN ACCORDANCE WITH ASME Y14.5m & B46.1			CHK BY	DATE	PART	21F713	DO NOT SCALE PRINTS	
			BILL WILDS	4/16/2002	P1AP-11	AP6250		
			APR BY	DATE	PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CIDE	
			E ANDERSSSEN	4/16/2002			DWG. NO.	
							SIZE	
							REV.	
REV	DWG	CHK	ZONE	DATE	CHANGES			

SHEET 1 OF 1

21F7144

DWG. NO.	SIZE	REV.	SHEET
21F7124		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: STEEL GROUND FLATSTOCK

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	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
THREADS ARE CLASS 2			PROJECT NAME	ATL-IP-ED-XXXX		VERTEX STIFFENER TUBE MOLD CAVITY
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NO.	US ATLAS SILICON SUBSYSTEM	MICROFILMED:	DWG. TYPE
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						
REV	DWG	CHK	ZONE	DATE	CHANGES	

SCALE: 1:1

DO NOT SCALE PRINTS

PART 21F711

SHOWS ON 21F711

SCALE: 1:1

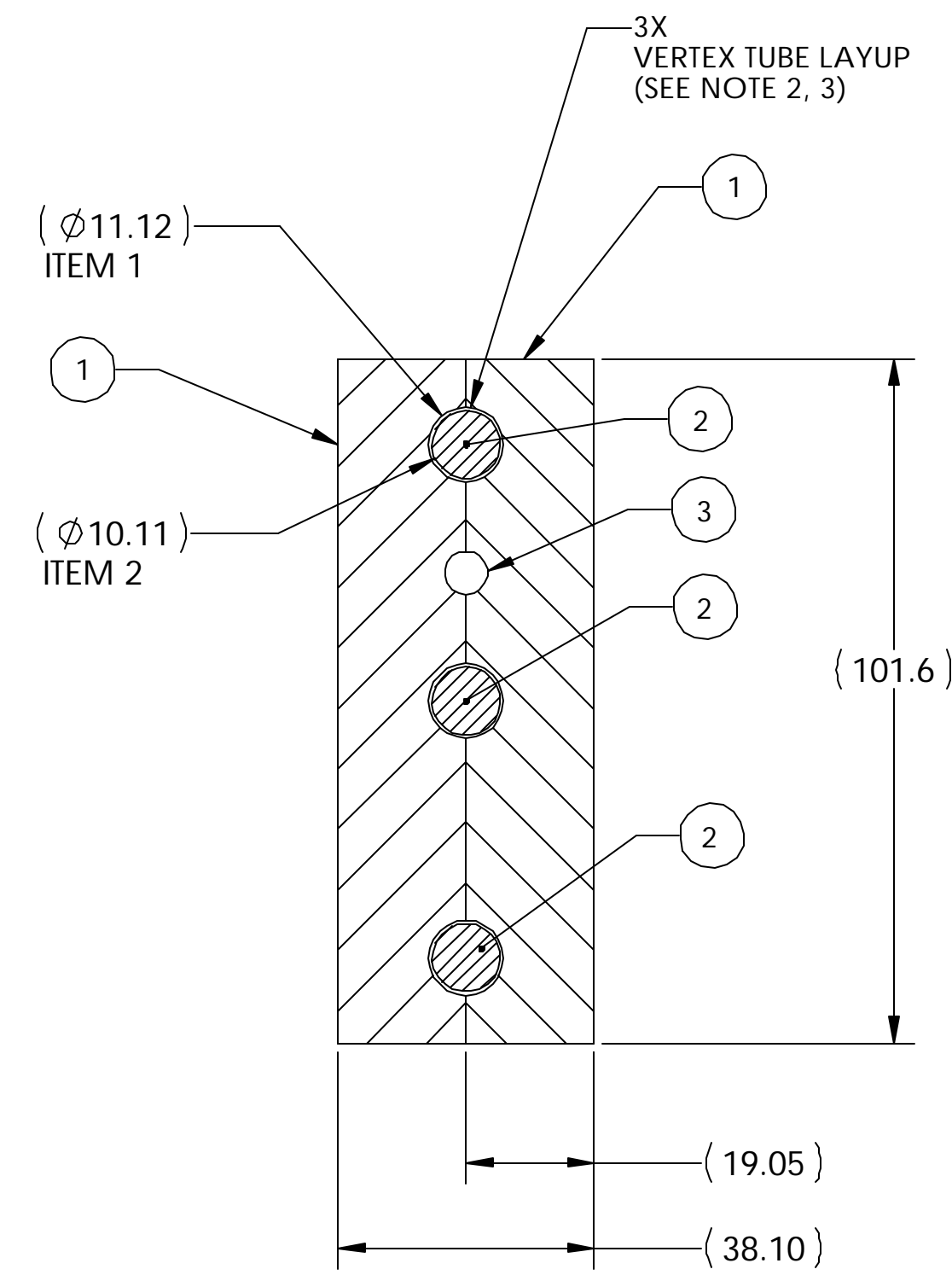
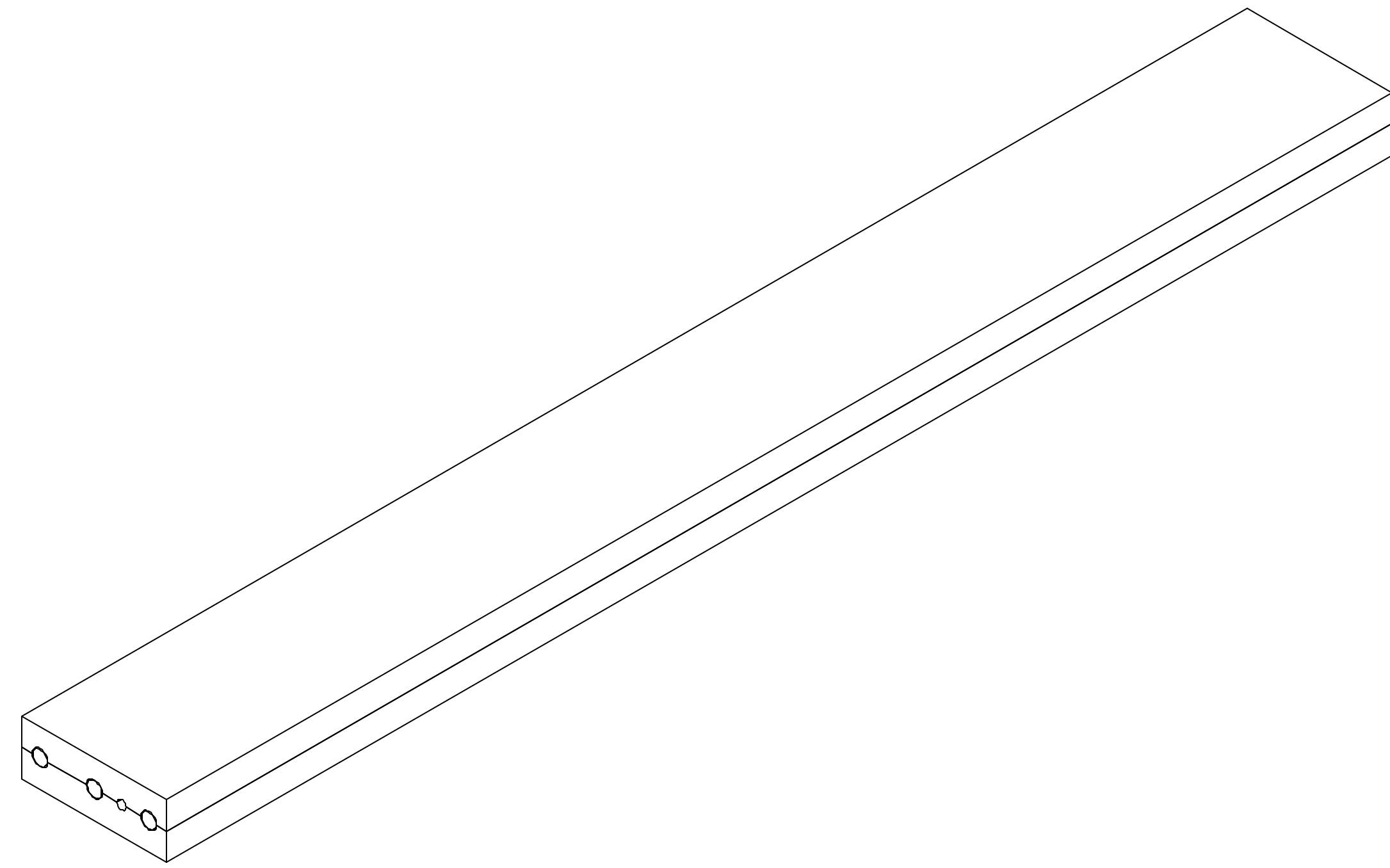
SHEET 1 OF 1

P1AP-11

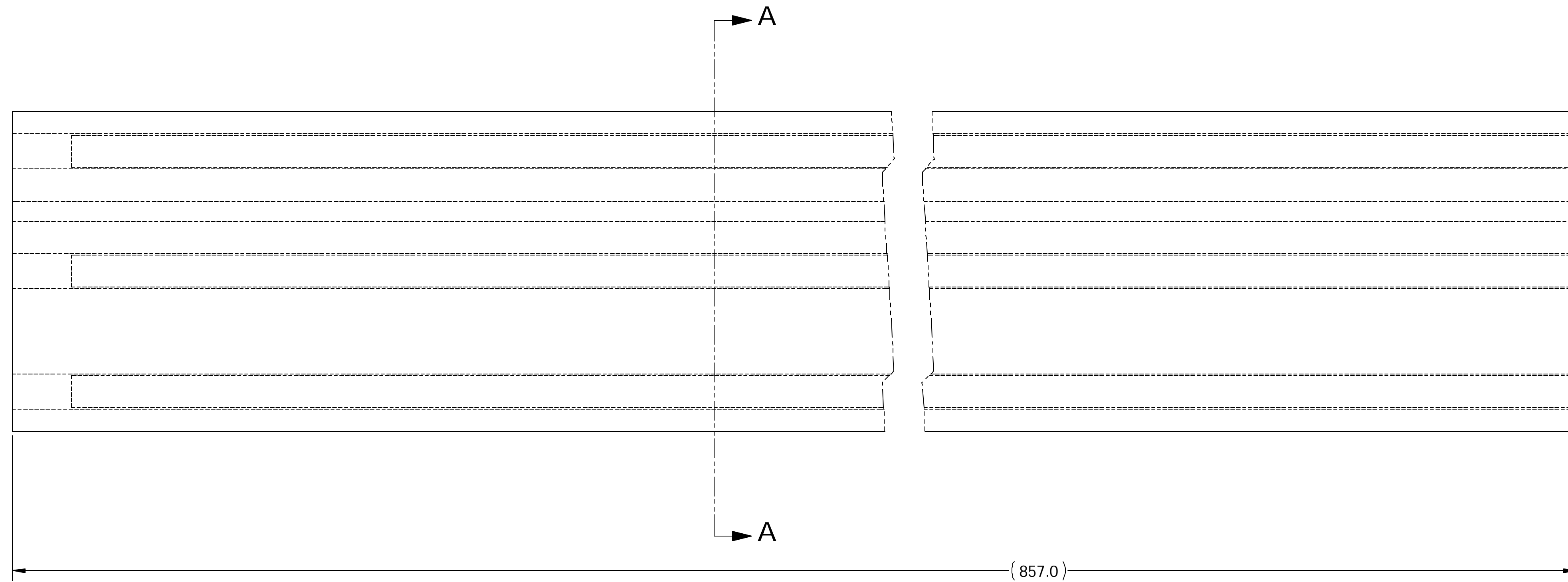
AP6250

21F7124

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
3	21F715-9	1	6.35 DIA. MOLD ALIGNMENT ROD	STEEL
2	21F715-7	3	VERTEX STIFFENING TUBE MANDREL	STEEL
1	21F712	2	VERTEX STIFFENING TUBE MOLD CAVITY	STEEL



SECTION A-A
SCALE 1:1

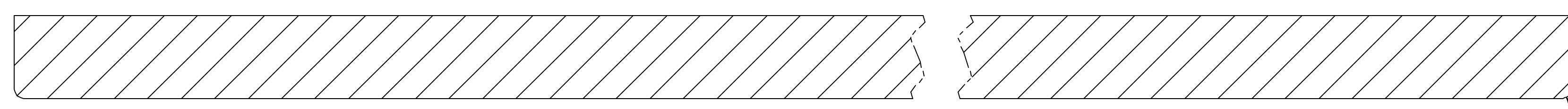
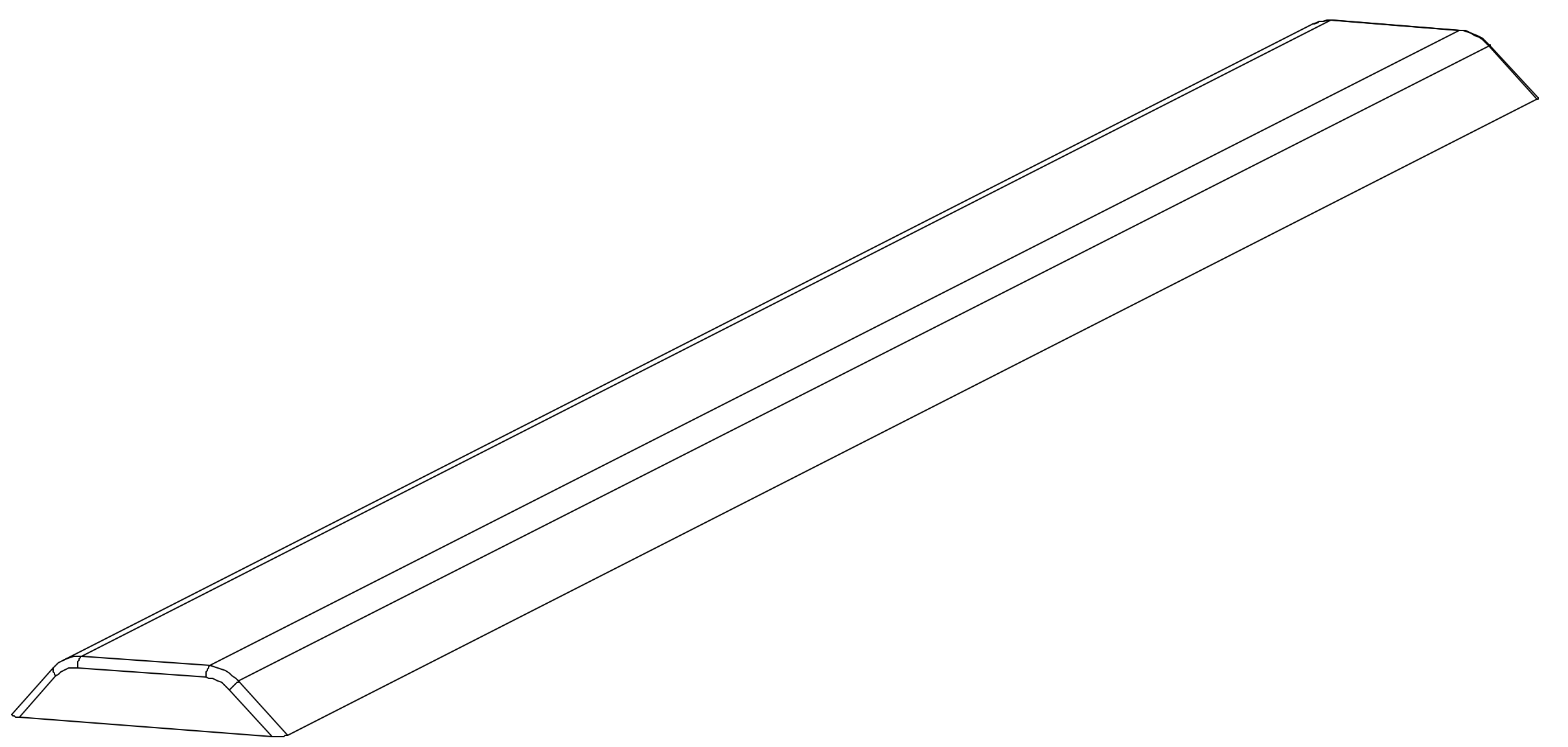


NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS IN MILLIMETERS
2. MOLD USED TO FORM CENTRAL AND END SECTION VERTEX STIFFENER TUBES (PART 21F653 AND 21F673)
3. SEE PART DRAWINGS FOR MATERIAL SPECIFICATION

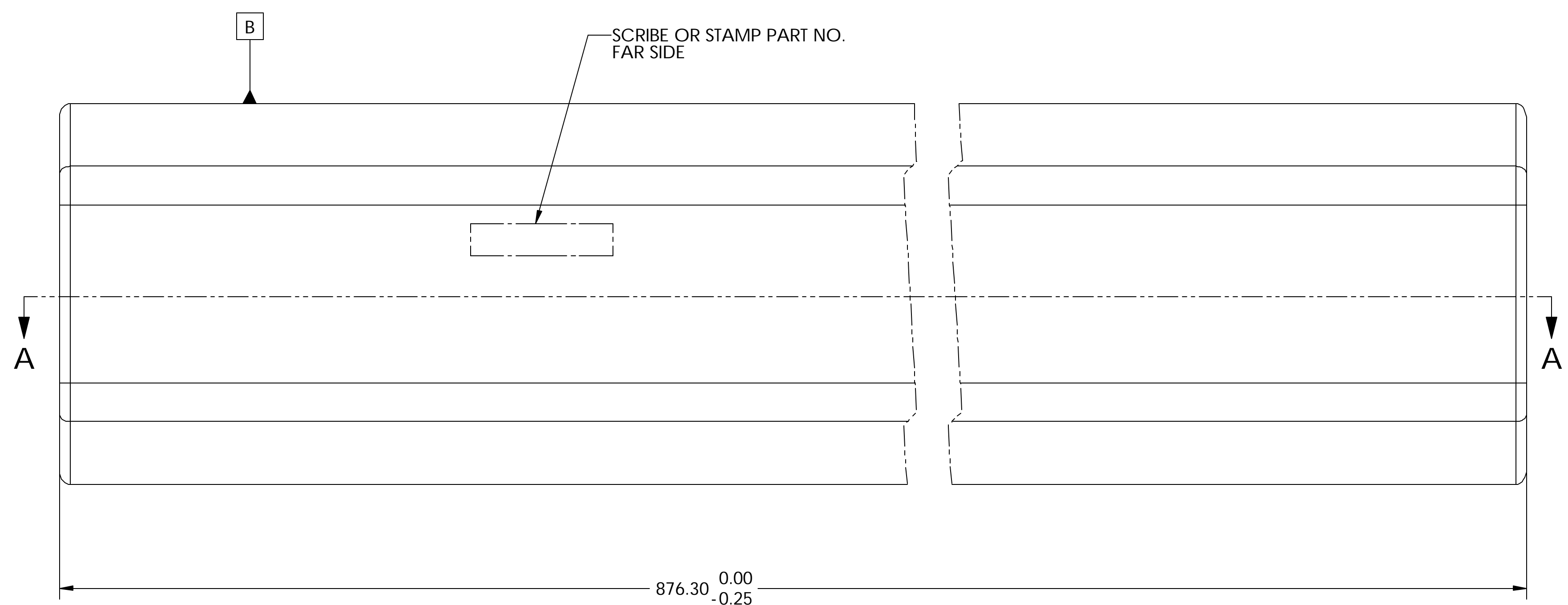
REV	DWG	CHK	ZONE	DATE	CHANGES	TOLERANCES	UNLESS OTHERWISE SPECIFIED	SHOP ORDERS	SER. NO.	ACCT. NO.	DATE ISSD	ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY #
						X.X ± 0.5	FRAC. ± 1/64	NO. REQD				ATLAS PIXEL DETECTOR SPACEFRAME STIFFENING TUBE MOLD ASSEMBLY MICROFILMED: DWG. TYPE: ASSEM, SHOWS ON: N/A, SCALE: 1:1, DO NOT SCALE PRINTS PATENT CLEAR: DESIGN ACCT. NO. P1AP-11, CATEGORY CIDE: AP6250, DWG. NO.: 21F7114, SHEET 1 OF 1
						X.XX ± 0.25	ANGLES ± 30°	DEL. TO				
						X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT				
								INDEX METHOD TAG				
								PROJECT NUMBER				
								PROJECT NAME				
								DWG. BY: W. K. MILLER				
								CHK BY: BILL WILDS				
								APR BY: E. ANDERSSSEN				
								DATE 5/8/2001				
								DATE 5/31/2001				
								DATE ????				

DWG. NO.	SIZE	REV.	SHEET
21F7104		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION

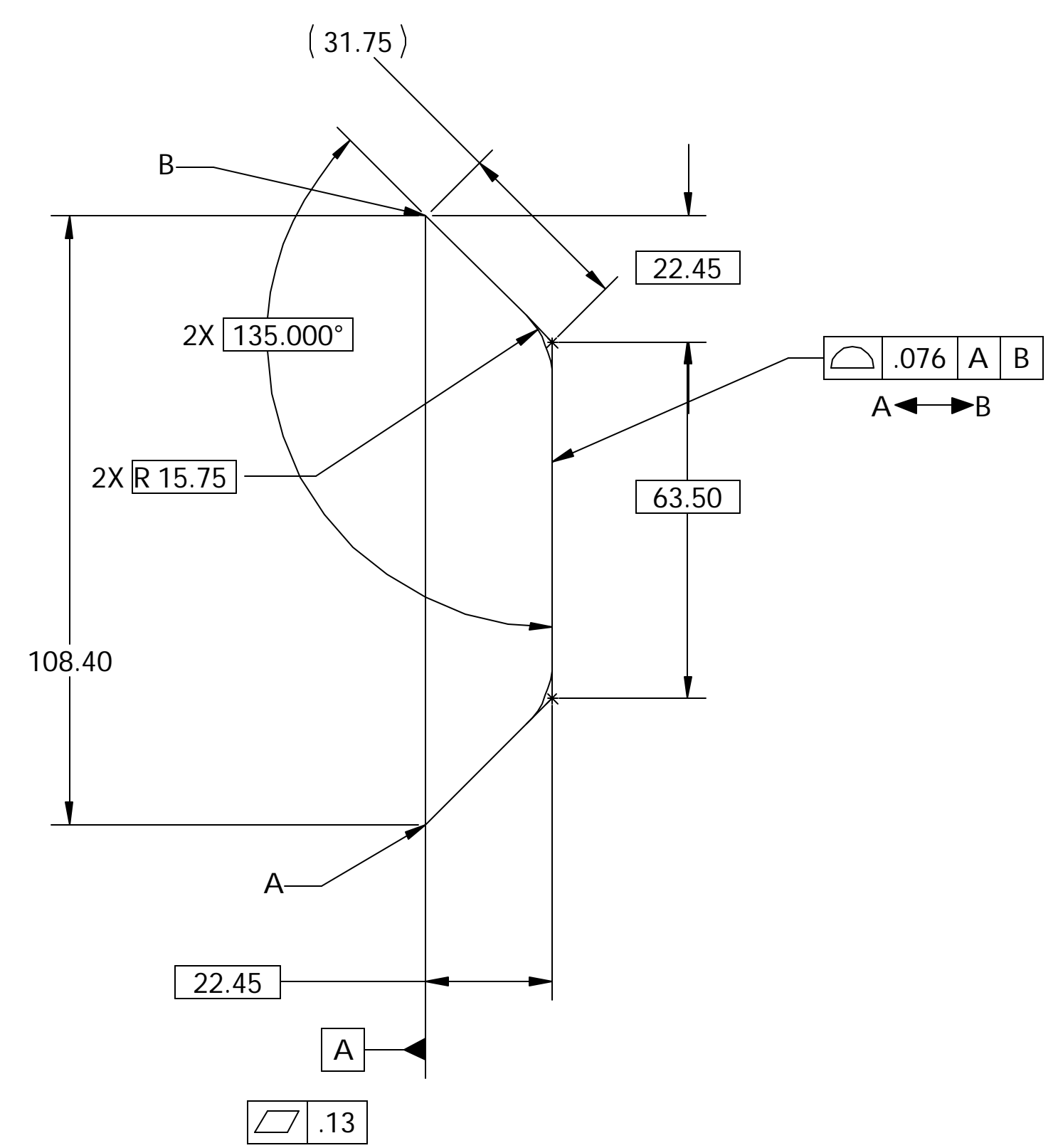


SECTION A-A
SCALE 1:1

R3.18
ALL AROUND
BOTH SIDES



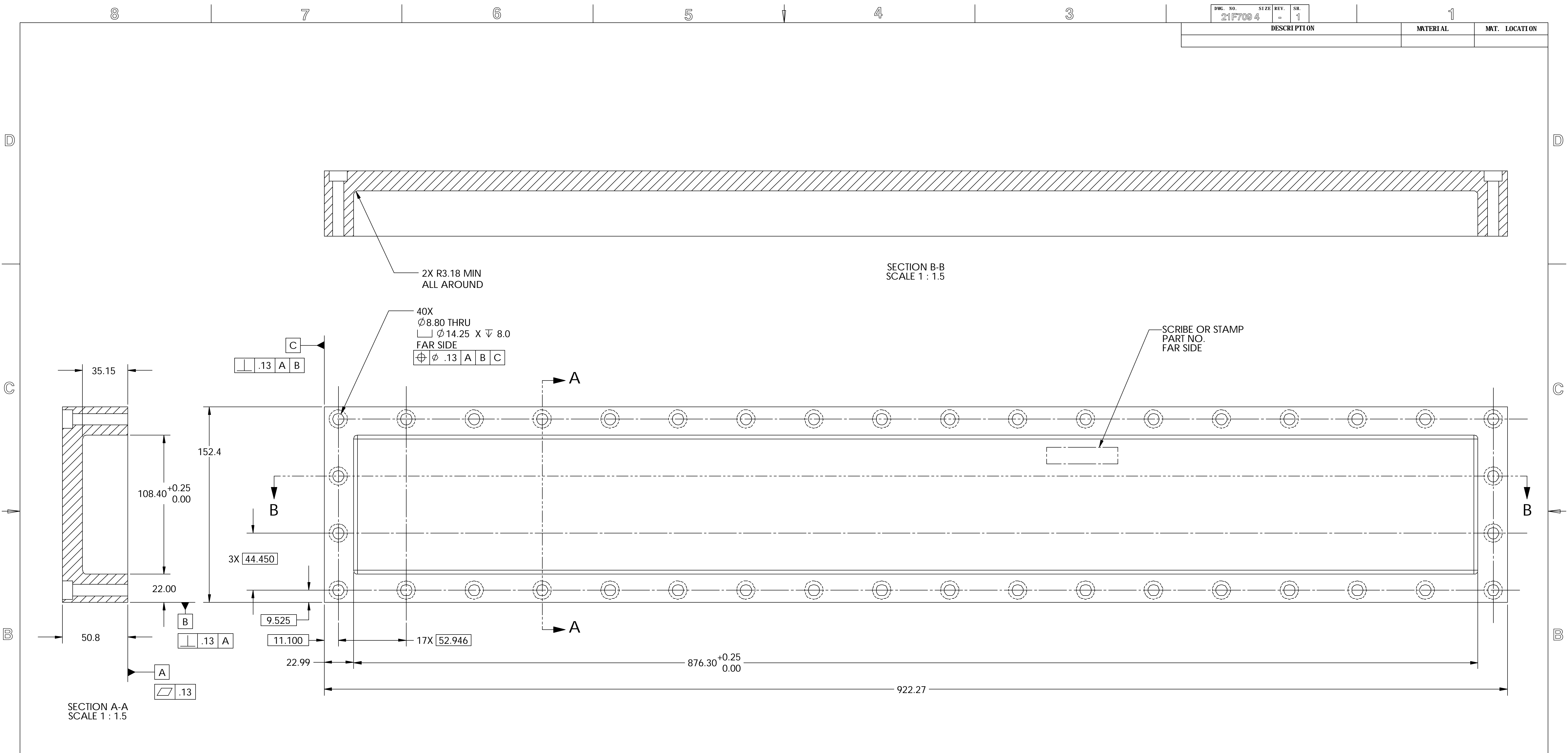
MATL: STEEL GROUND FLATSTOCK



- 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

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				INDEX METHOD TAG	SPACEFRAME CENTRAL AND END SECTION		
THREADS ARE CLASS 2				PROJECT NUMBER	PANEL OUTER CORNER MOLD INSERT		
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: 1:1
BREAK EDGES .016 MAX. ON MACHINED WORK				DWG. BY W. K. MILLER	DATE 4/16/2002	PART	21F708
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				CHK BY BILL WILDS	DATE 4/16/2002	DESIGN ACCT. NO.	P1AP-11
IN ACCORDANCE WITH ASME Y14.5m & B46.1				APR BY E. ANDERSSON	DATE 4/16/2002	PATENT CLEAR:	AP6250
REV	DWG	CHK	ZONE	DATE	CHANGES		

DWG. NO.	SIZE	REV.	SHEET	
21F709 4		1	1	
DESCRIPTION		MATERIAL	MT. LOCATION	



MATL: STEEL GROUND FLATSTOCK

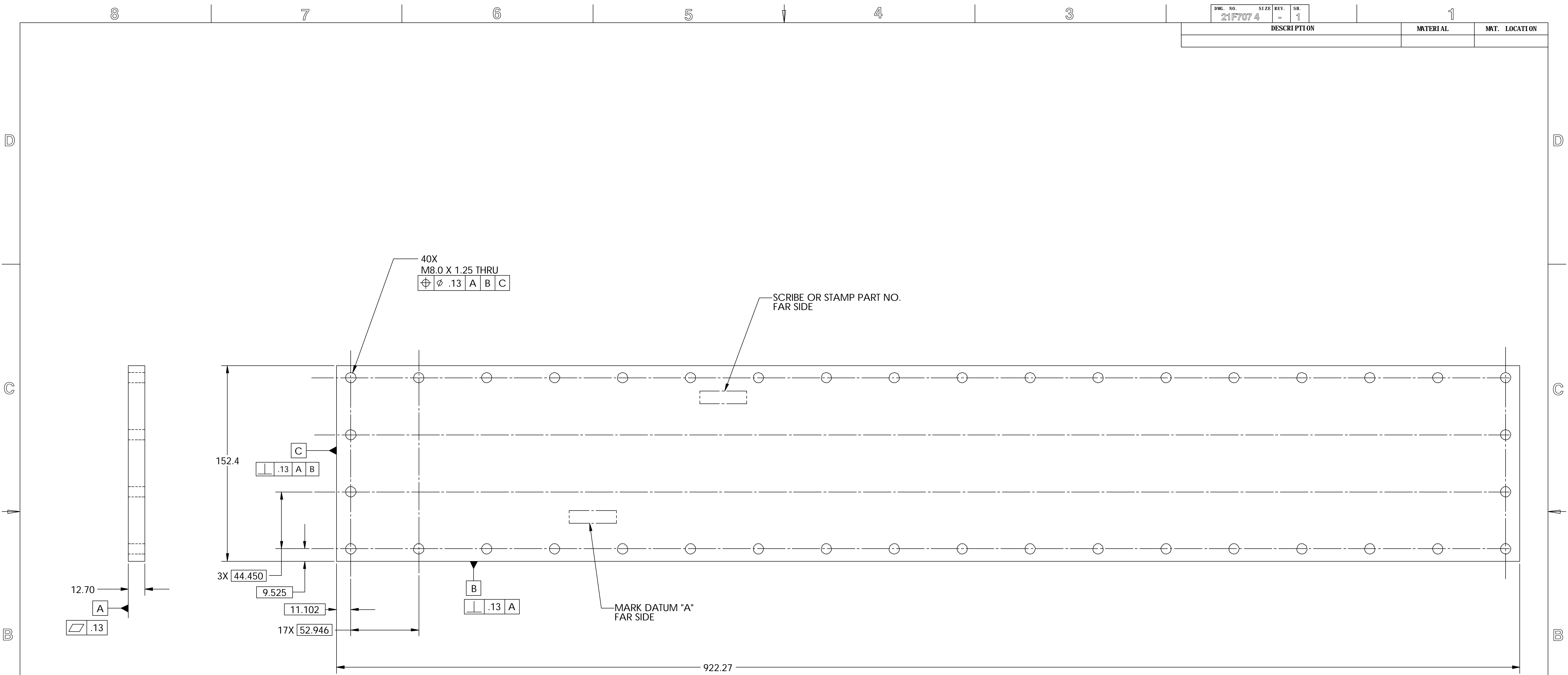
- NOTES: UNLESS OTHERWISE SPECIFIED
1. DIMENSIONS IN MILLIMETERS
 2. DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
 3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
 4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
 5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
 6. COUNTERSINK 82 DEGREES ALL TAPPED 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	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
				INDEX METHOD TAG			SPACEFRAME CENTRAL AND END SECTION
				PROJECT NAME			PANEL OUTER CORNER MOLD CAVITY
				PROJECT NO.			
				PROJECT US ATLAS SILICON SUBSYSTEM			
				DWG. BY	DATE		
				CHK BY	DATE		
				APR BY	DATE		
REV	DWG	CHK	ZONE	DATE	CHANGES		

MICROFILMED:	DWG. TYPE	SHOWS ON	SCALE:	DO NOT SCALE PRINTS
	PART	21F708	1: 1.5	
PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CIDE	DWG. NO.	SIZE
	P1AP-11	AP6250	21F709 4	REV.

SHEET 1 OF 1

DWG. NO.	SIZE	REV.	SHEET
21F707 4		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



MATL: STEEL GROUND FLATSTOCK

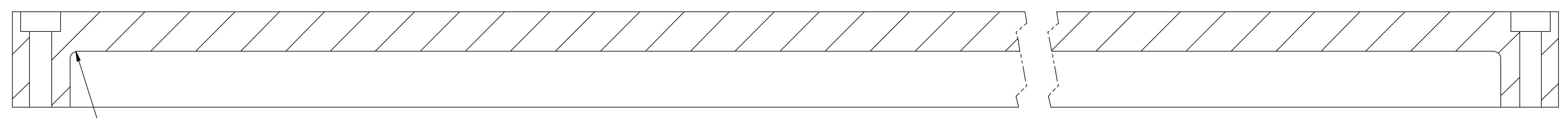
NOTES: UNLESS OTHERWISE SPECIFIED

- 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	
TOLERANCES	X.X ± 0.5	FRAC.	± 1/64	NO. REQD.	DATE ISSD	BERKELEY NATIONAL LABORATORY	
	X.XX ± 0.25	ANGLES	± 30'	DATE REQD.		UNIVERSITY OF CALIFORNIA - BERKELEY #	
	X.XXX ± 0.013	FINISH	1.6			ATLAS PIXEL DETECTOR	
DO NOT SCALE PRINT				PROJECT NUMBER		SPACEFRAME CENTRAL AND END SECTION	
THREADS ARE CLASS 2				PROJECT NAME		MOLD COVERPLATE	
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT US ATLAS SILICON SUBSYSTEM		SCALE: 1:1.5	
CUT ROUNDS: 1.5 THREAD RELIEF ON MACHINED THREADS				DWE W. K. MILLER		DO NOT SCALE PRINTS	
BREAK EDGES: .016 MAX. ON MACHINED WORK				DATE 4/16/2002		PART 21F705	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				CHK BILL WILDS		SCALE: 1:1.5	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				DATE 4/16/2002		SHEET 1 OF 1	
REV	DWG	CHK	ZONE	DATE	CHANGES		

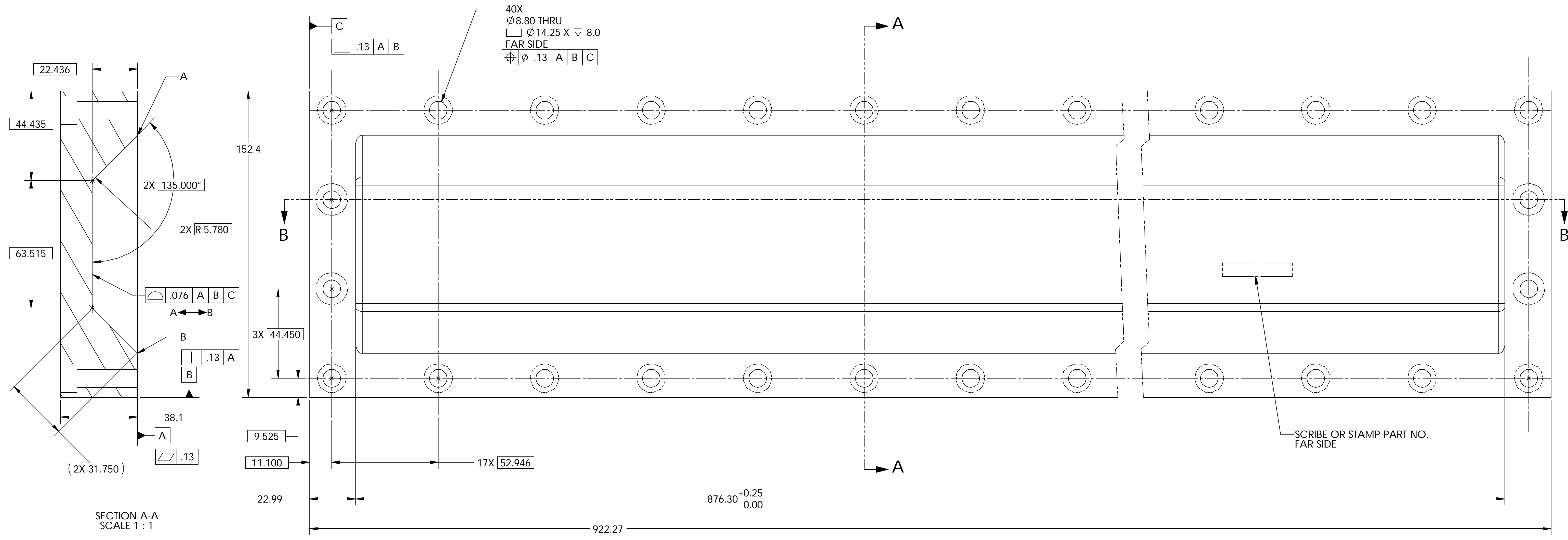
PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CIDE	DWG. NO.	SIZE	REV.
	P1AP-11	AP6250	21F707 4		

DWG. NO.	SIZE	REV.	SHEET
21F706 4		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



R3.18
AROUND PROFILE
BOTH SIDES

SECTION B-B
SCALE 1:1



SECTION A-A
SCALE 1:1

MATL: STEEL GROUND FLATSTOCK

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	
TOLERANCES	X.X ± 0.5	FRAC.	± 1/64	NO. REQD.	DATE ISSD	BERKELEY NATIONAL LABORATORY	
	X.XX ± 0.25	ANGLES	± 30°	DATE REQD.		UNIVERSITY OF CALIFORNIA - BERKELEY #	
	X.XXX ± 0.013	FINISH	1.6			ATLAS PIXEL DETECTOR	
DO NOT SCALE PRINT				INDEX METHOD TAG		SPACEFRAME CENTRAL AND END SECTION	
THREADS ARE CLASS 2				PROJECT NAME		PANEL INNER CORNER MOLD CAVITY	
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NUMBER		MICROFILMED:	
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS				PROJECT US ATLAS SILICON SUBSYSTEM		DWG. TYPE	
BREAK EDGES .016 MAX. ON MACHINED WORK				DWE W. K. MILLER		PART	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				DATE 4/16/2002		21F705	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				CHK BILL WILDS		SCALE: 1:1.25	
				APR E. ANDERSSSEN		SHEET 1 OF 1	
				DATE 4/16/2002		SIZE REV.	
						21F706 4	

REV	DWG	CHK	ZONE	DATE	CHANGES

8

7

6

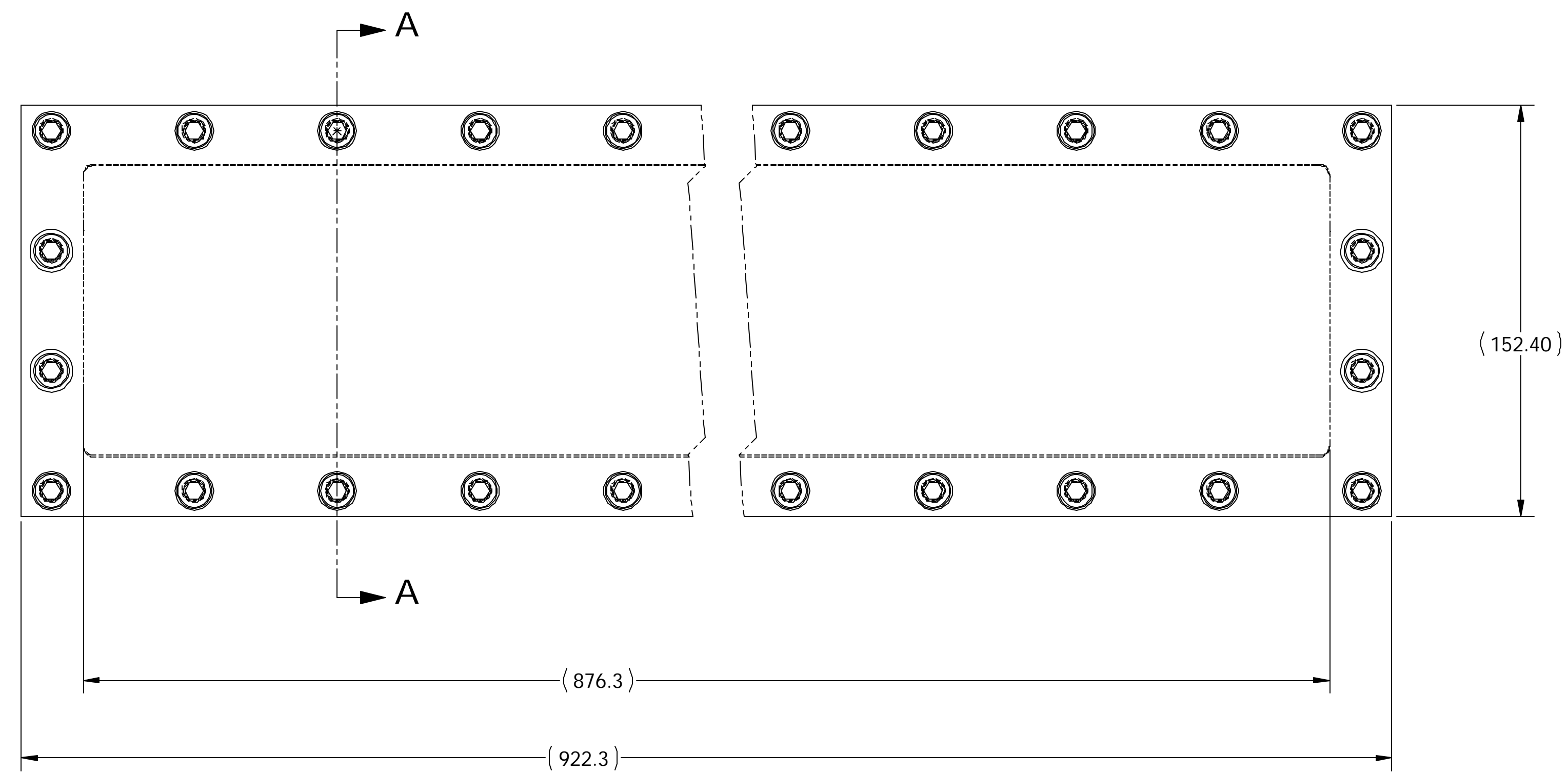
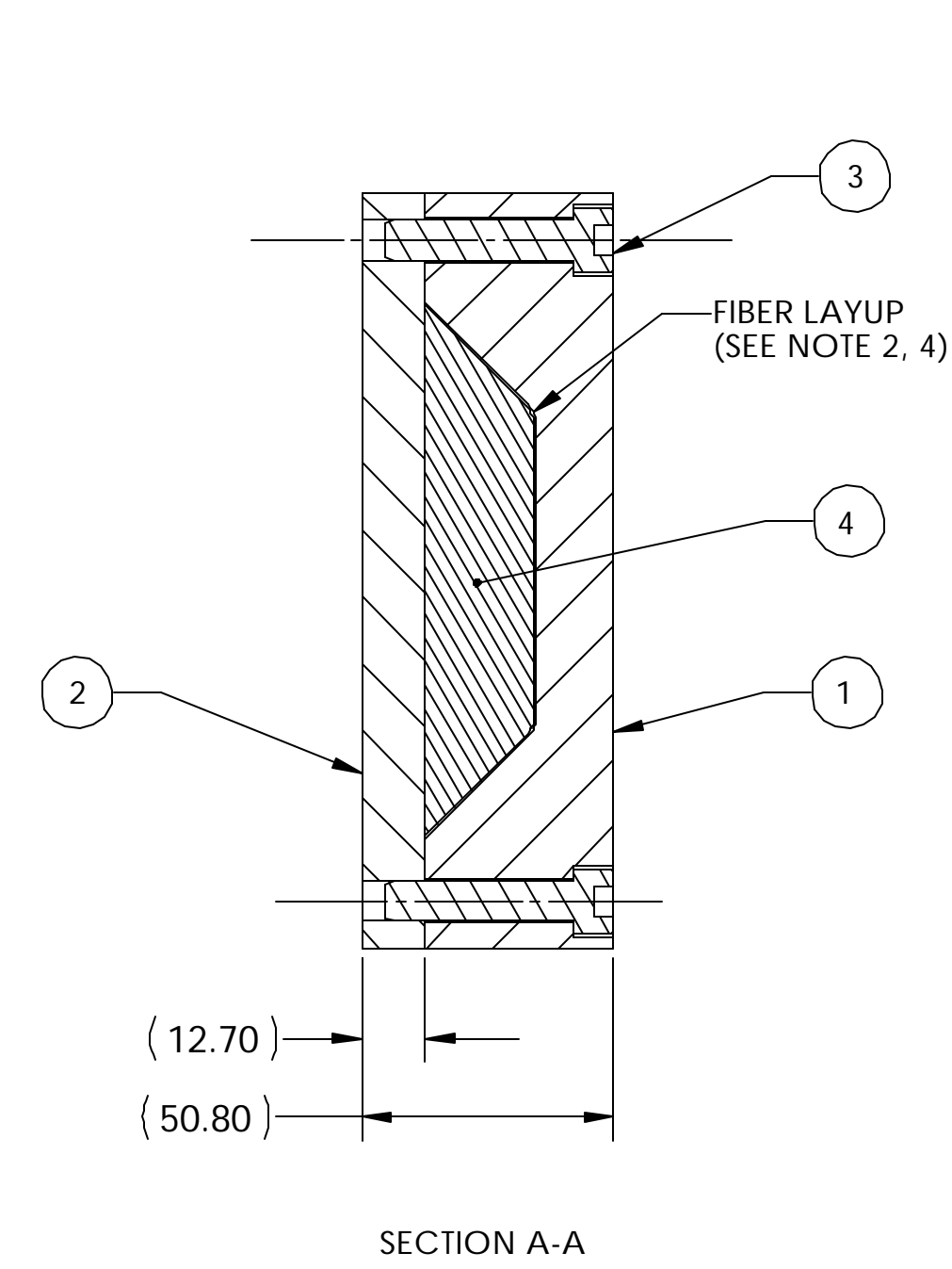
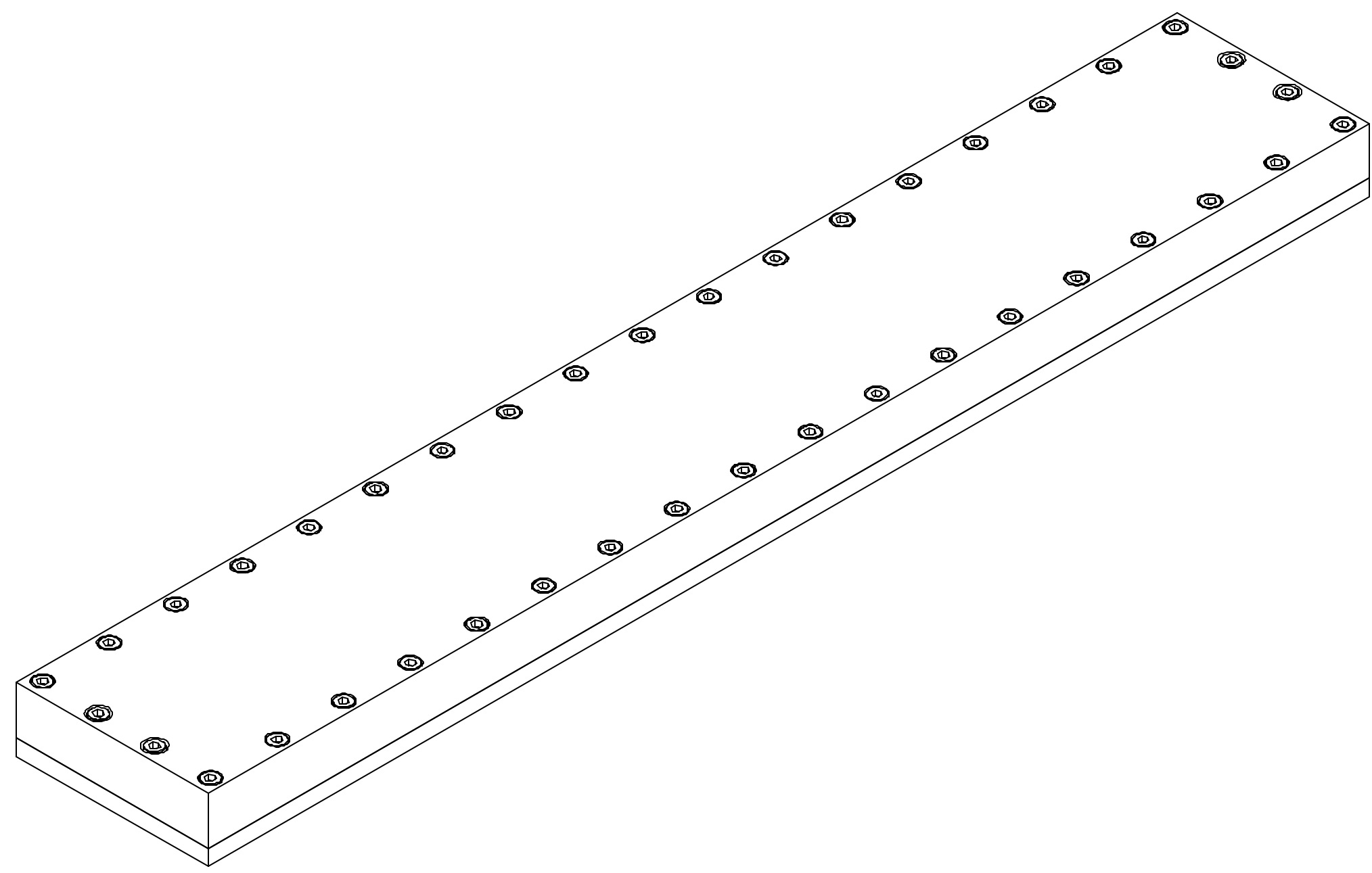
5

4

3

1

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
	21F705 4	= 1		
4		1	INNER VERTEX STIFFENER SILICONE MOLD INSERT	
3		40	M8.0 X 1.25 SOCKET HD CAP X 38.1	STEEL
2	21F707	1	MOLD COVERPLATE	
1	21F706	1	PANEL INNER CORNER MOLD CAVITY	



NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS IN MILLIMETERS
2. ASSEMBLY USED TO MOLD THE INNER CORNERS FOR SPACEFRAME CENTRAL AND END SECTION (PARTS 21F655 AND 21F671)
3. ASSEMBLY WEIGHS 100 Lbs.
4. SEE PART DRAWINGS FOR MATERIAL SPECIFICATIONS

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 AND END SECTION		
THREADS ARE CLASS 2				PROJECT NUMBER	PANEL INNER CORNER MOLD ASSEMBLY		
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NAME	UNIVERSITY OF CALIFORNIA - BERKELEY #		
CUT ROUNDS: 1.5 THREAD RELIEF ON MACHINED THREADS				DWG. BY	DATE	MICROFILMED:	
BREAK EDGES: .016 MAX. ON MACHINED WORK				W. K. MILLER	4/16/2002	DWG. TYPE	ASSEM
REMOVE BURS, WELD SPATTER & LOOSE SCALE				CHK BY	DATE	SHOWS ON	N/A
IN ACCORDANCE WITH ASME Y14.5m & B46.1				E. ANDERSSON	4/16/2002	PATENT CLEAR:	DESIGN ACCT. NO.
REV	DWG	CHK	ZONE	DATE	CATEGORY CIDE		P1AP-11
CHANGES					DWG. NO.	SIZE	21F705 4
					SCALE:	1:1.5	DO NOT SCALE PRINTS
					SHEET 1 OF 1		

8

7

6

5

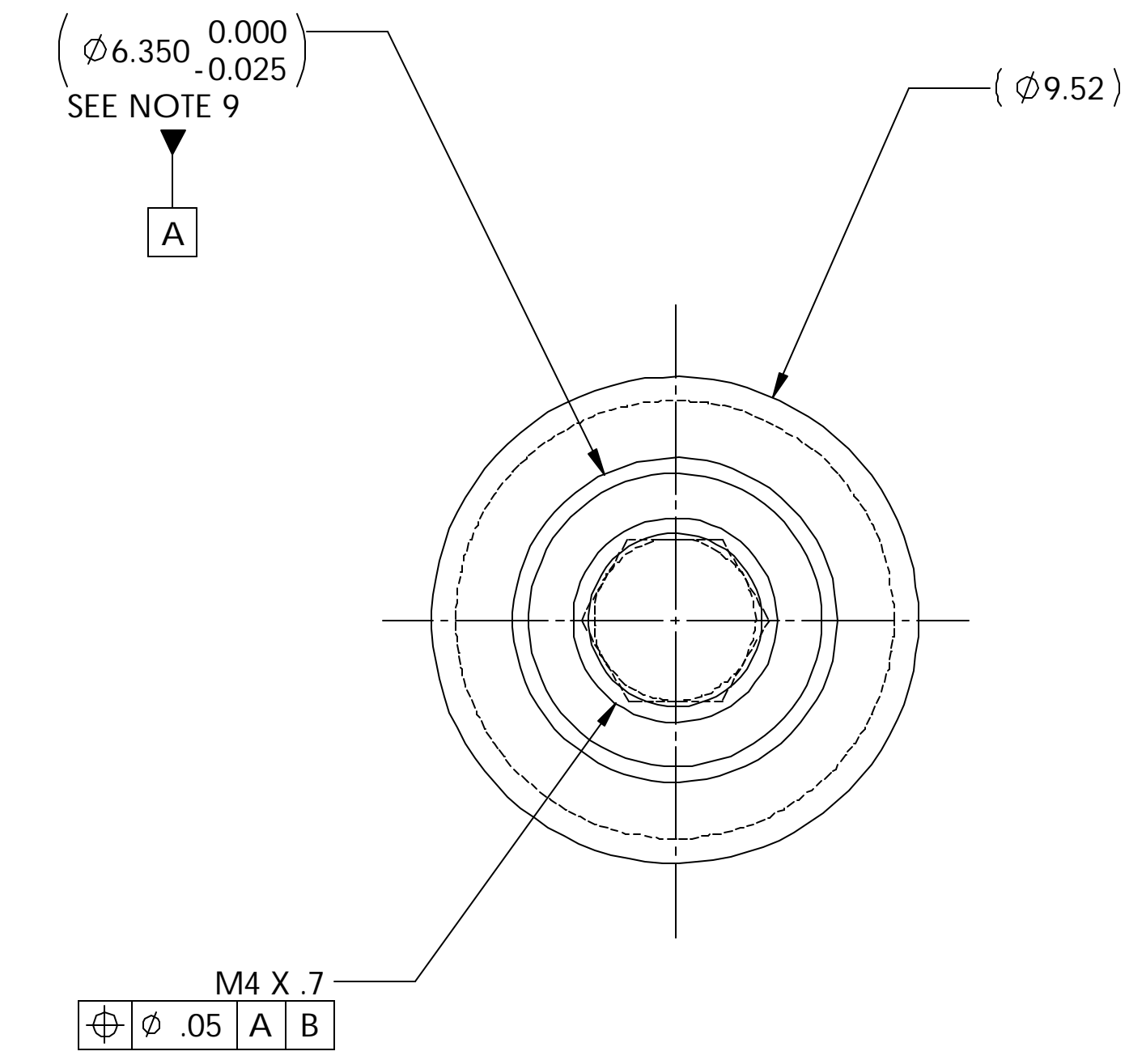
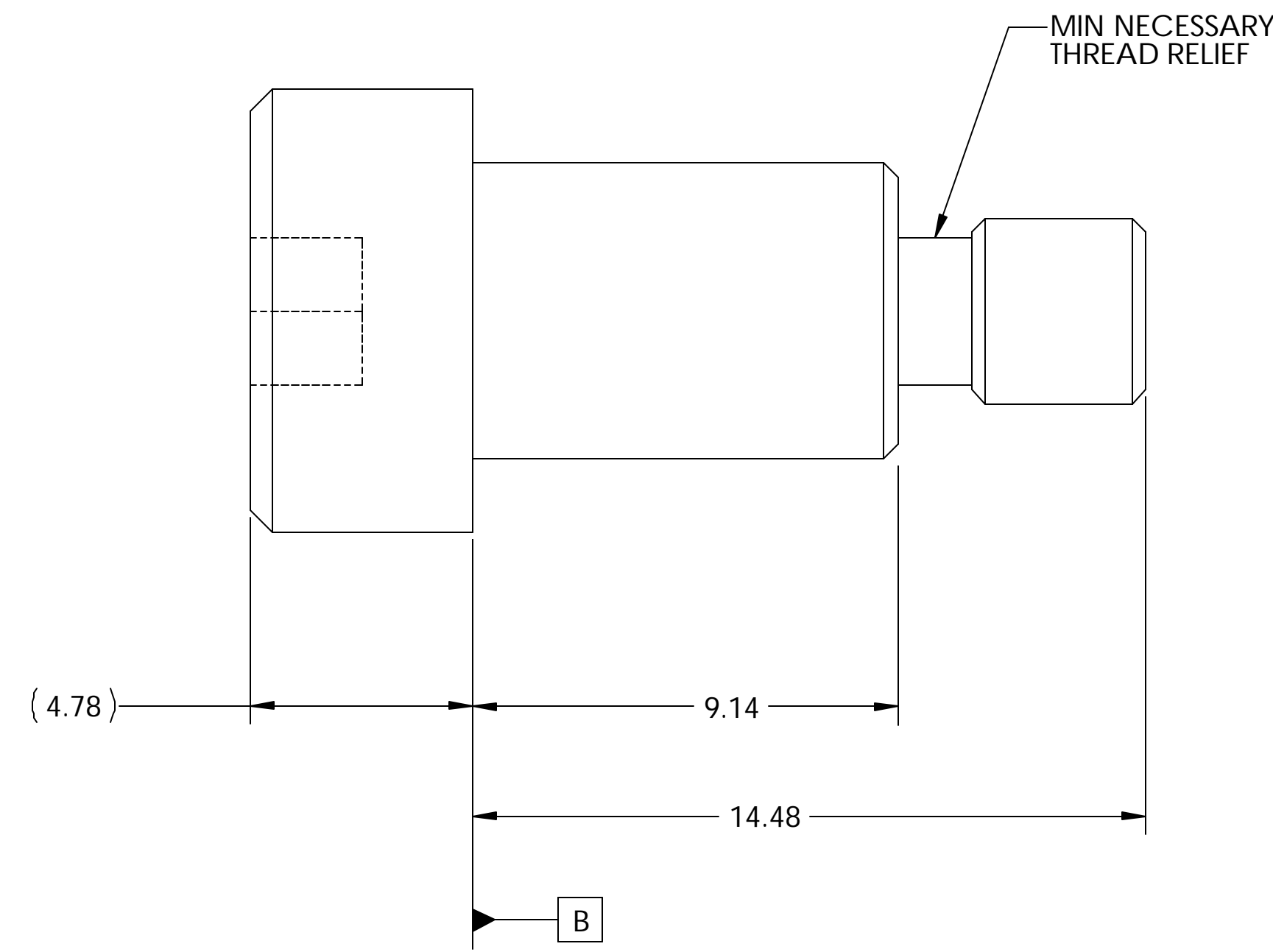
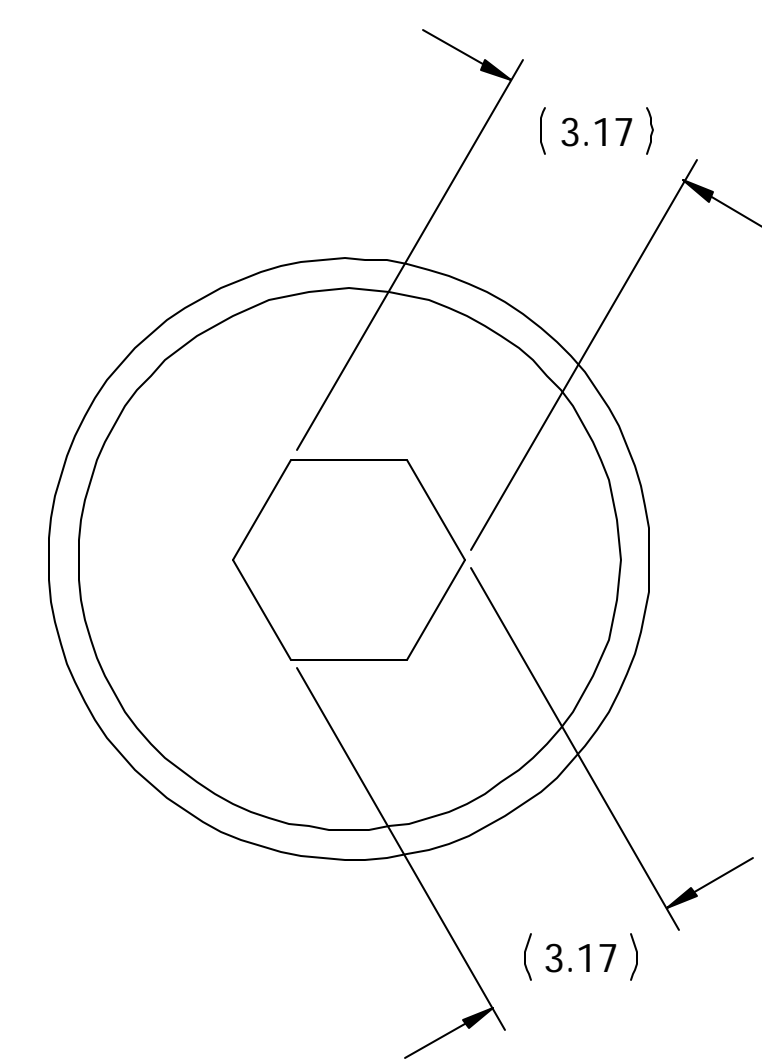
4

3

2

1

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



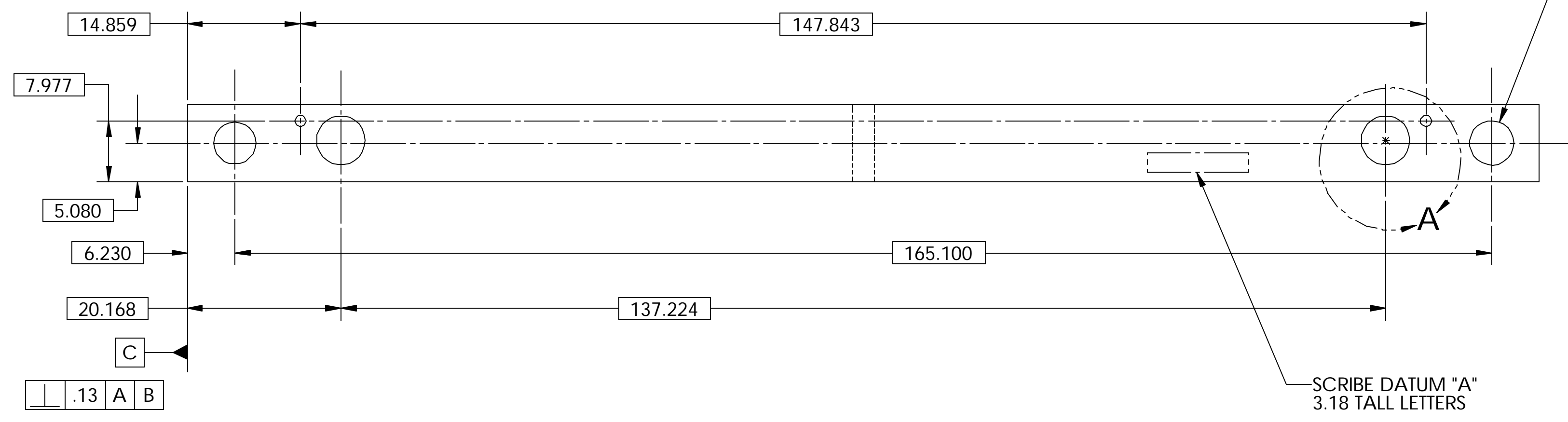
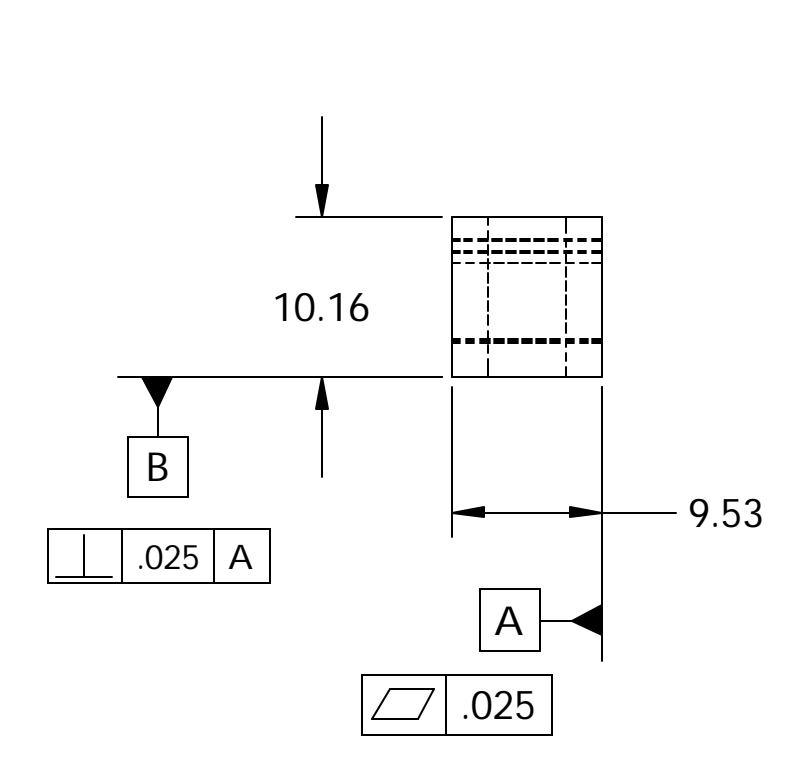
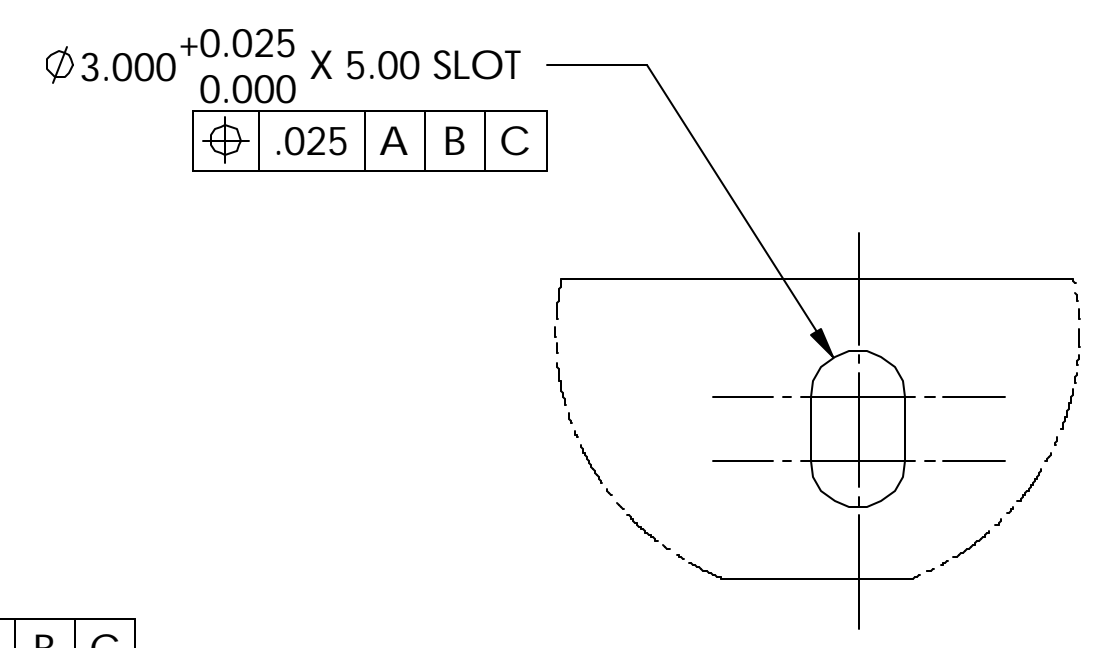
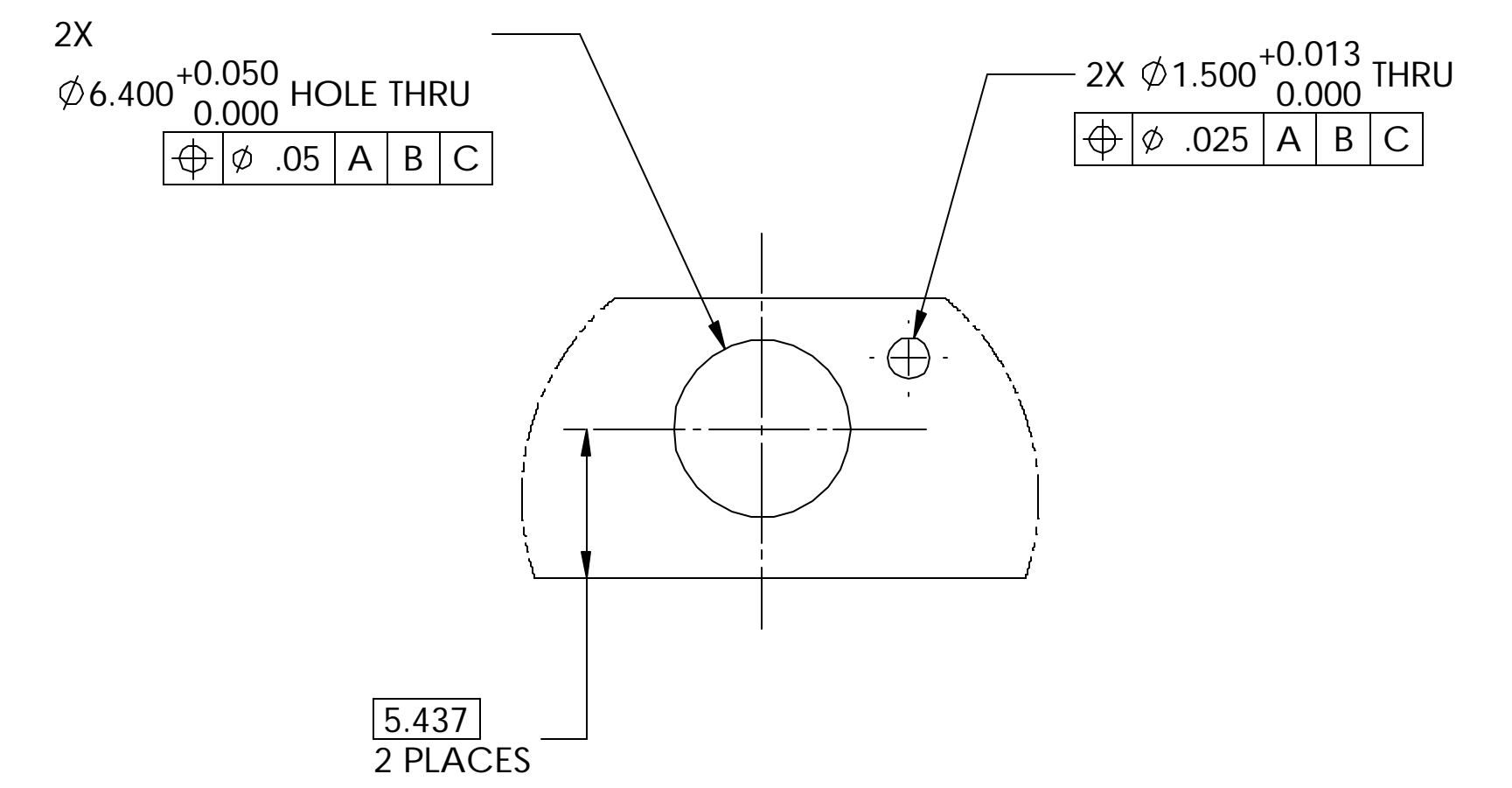
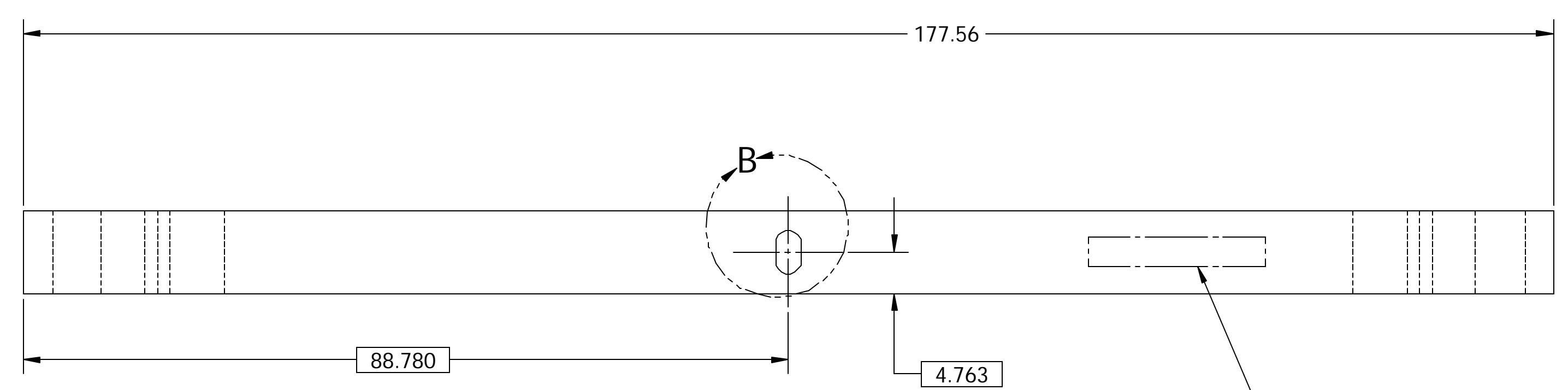
MATL: 18-8 SSSL 1/4" PRECISION SHOULDER SCREW
(SEE NOTE 9)

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 W. K. MILLER		SCALE: 8:1	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				CHK BY BILL WILDS		DO NOT SCALE PRINTS	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				DATE 4/16/2002		SHEET 1 OF 1	
REV DWG				DATE 4/16/2002		SIZE	
CHANGES				DATE 4/16/2002		REV.	
				P1AP-11		AP6250	
				21F7044			

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



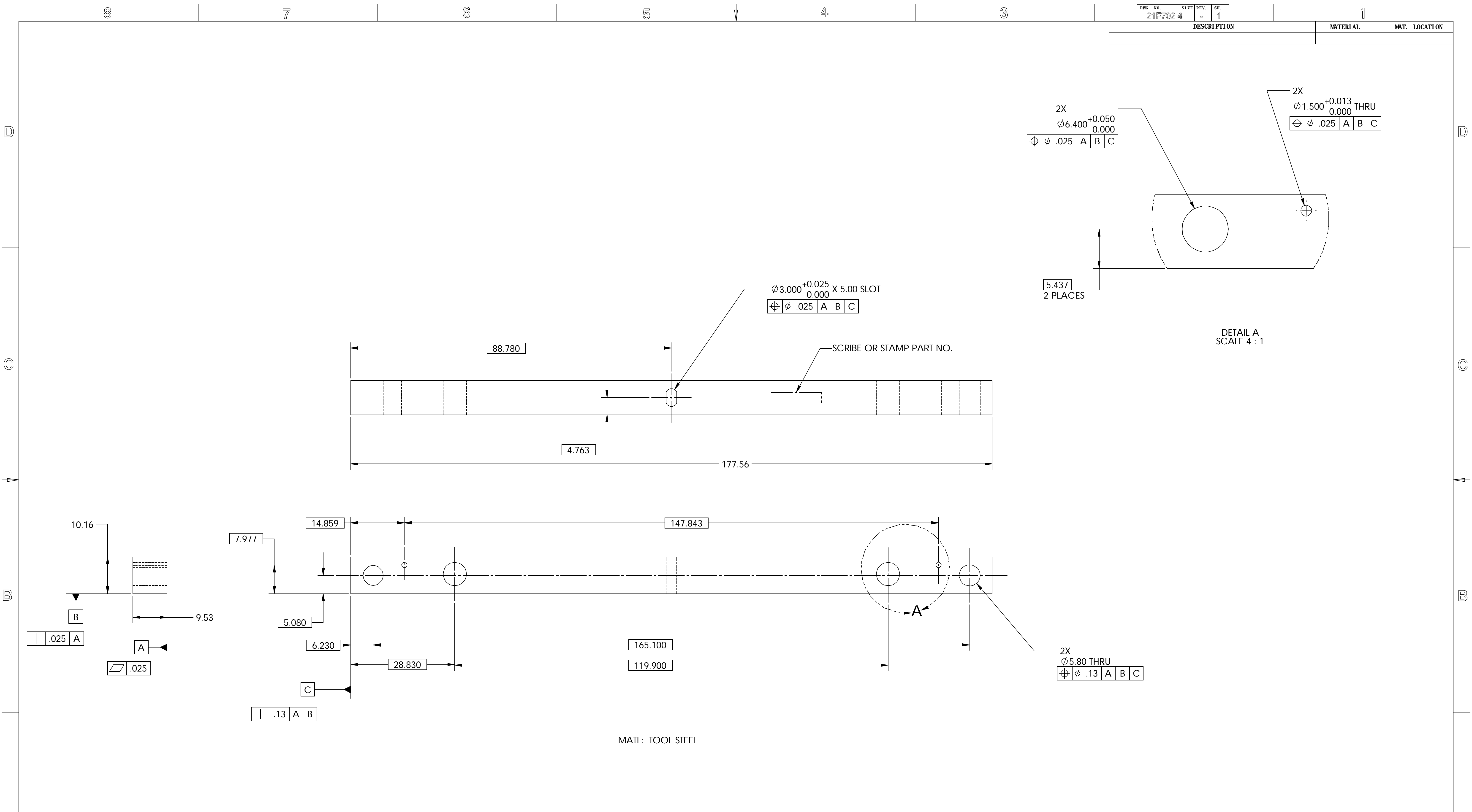
MATL: TOOL STEEL

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		SCALE: 2:1		
DO NOT SCALE PRINT				INDEX METHOD TAG		DO NOT SCALE PRINTS	
THREADS ARE CLASS 2				PROJECT NAME		SCALE PRINTS	
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NO. ATL-IP-ED-XXXX		MICROFILMED:	
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS				PROJECT US ATLAS SILICON SUBSYSTEM		DWG. TYPE	
BREAK EDGES .016 MAX. ON MACHINED WORK				DWG. BY W. K. MILLER		PART	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				CHK BY BILL WILDS		21F700	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				DATE 4/16/2002		SHOWS ON	
REV DWG				APR BY E. ANDERSSSEN		SCALE: 2:1	
CHANGES				DATE 4/16/2002		PART	
				PATENT CLEAR:		21F700	
				DESIGN ACCT. NO.		P1AP-11	
				CATEGORY CIDE		AP6250	
				DWG. NO.		21F703 4	
				SIZE		SHEET 1 OF 1	
				REV.		REV.	

DWG. NO.	SIZE	REV.	SHEET
21F7024		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION



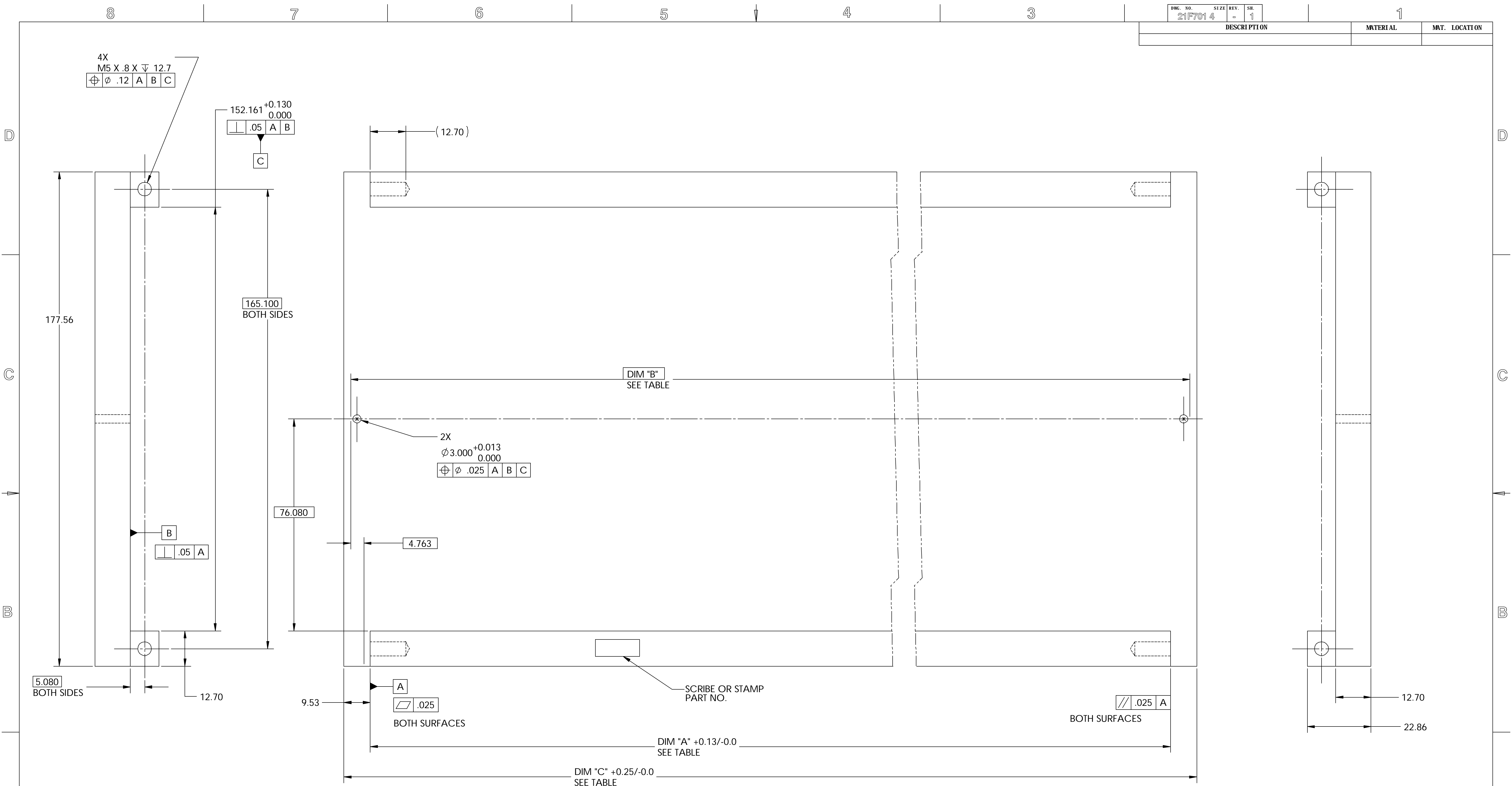
MATL: TOOL STEEL

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 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. 21F7024	
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. 21F7024	
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

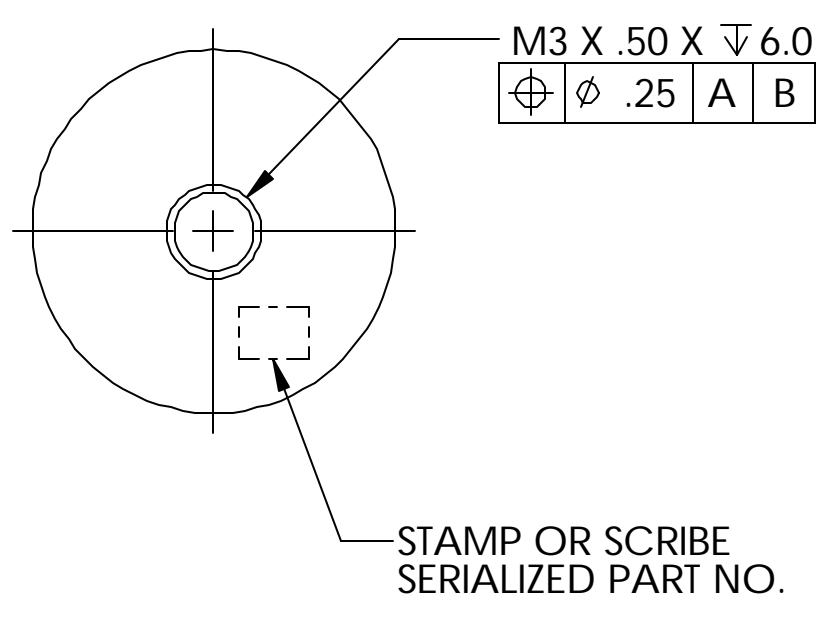
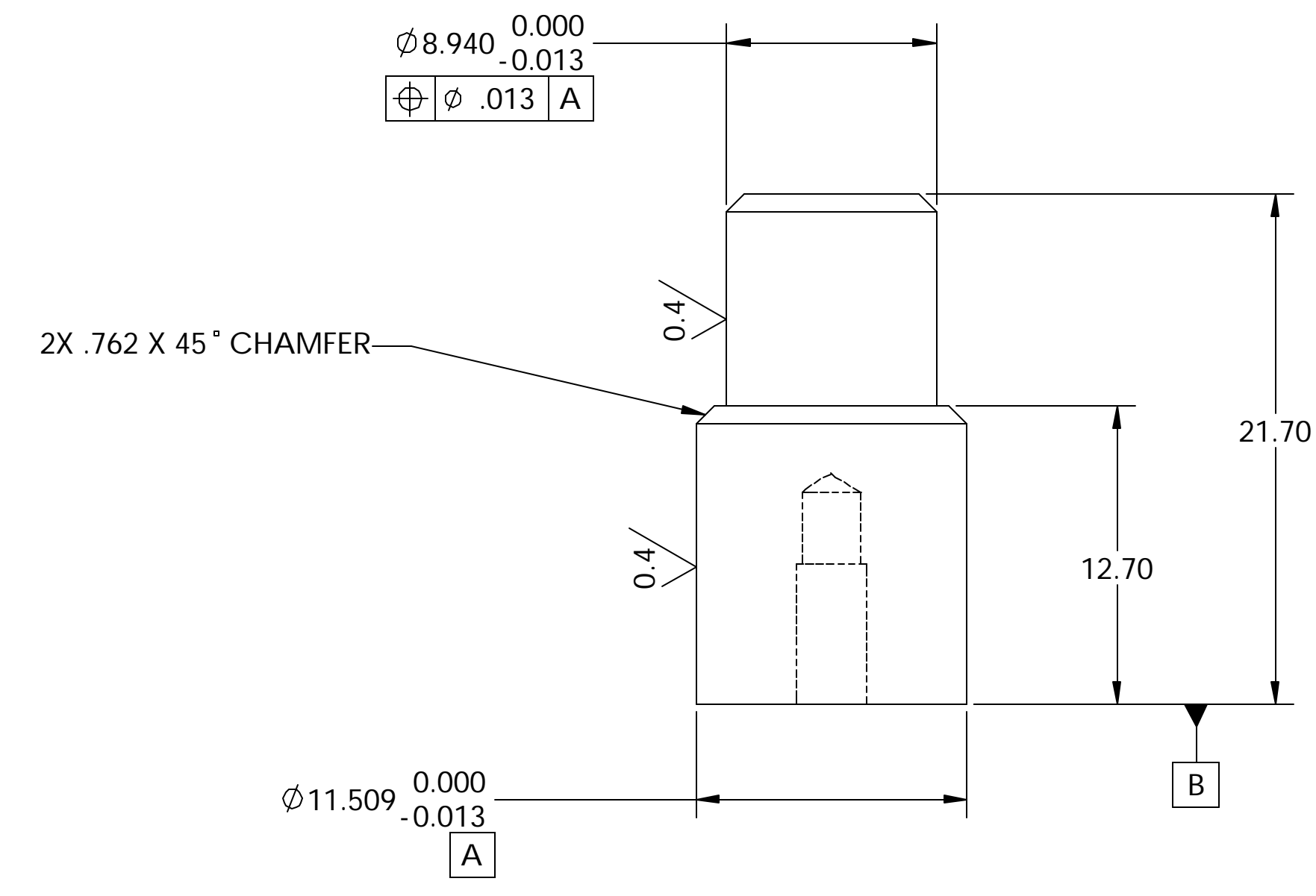
- NOTES: UNLESS OTHERWISE SPECIFIED
1. DIMENSIONS IN MILLIMETERS
 2. DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994
 3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
 4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
 5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
 6. COUNTERSINK 82 DEGREES ALL TAPPED 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	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			IDEN. METHOD TAG	SPACEFRAME END AND CENTRAL SECTION		
THREADS ARE CLASS 2			PROJECT NUMBER	SUB-PANEL BOND FIXTURE BASEPLATE		
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	DATE 4/16/2002	PART	N/A
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			CHK BY BILL WILDS	DATE 4/16/2002	DESIGN ACCT. NO.	PIAP-11
IN ACCORDANCE WITH ASME Y14.5m & B46.1			APR BY E. ANDERSSSEN	DATE 4/16/2002	PATENT CLEAR:	AP6250
REV	DWG	CHK	ZONE	DATE	CHANGES	

SHEET 1 OF 1

21F701 4

DWG. NO.	SIZE	REV.	SHEET
21F695 4		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION

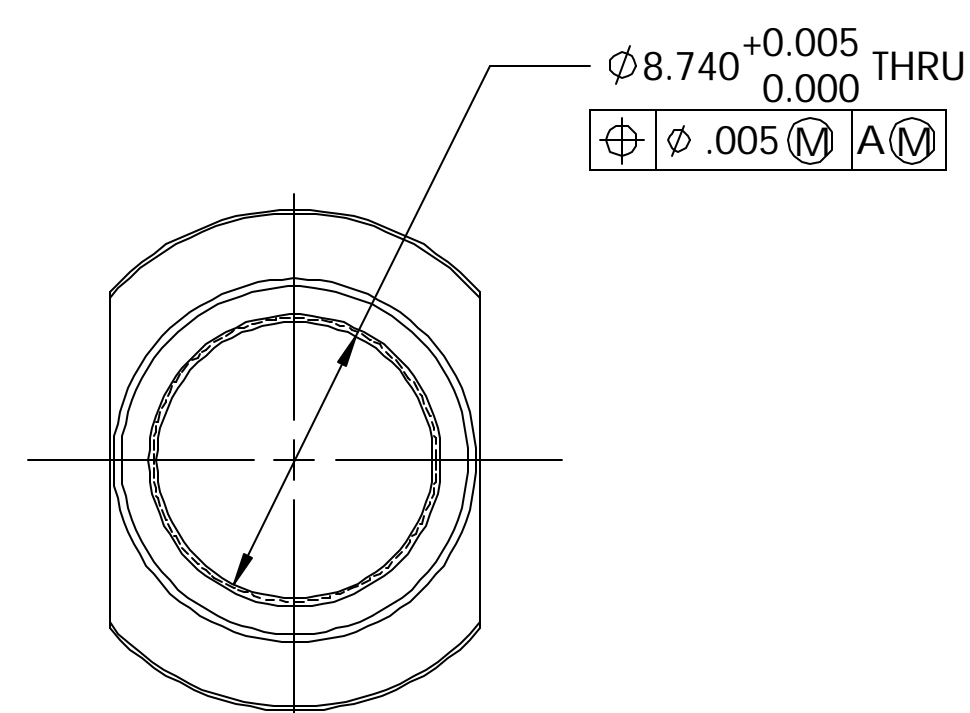
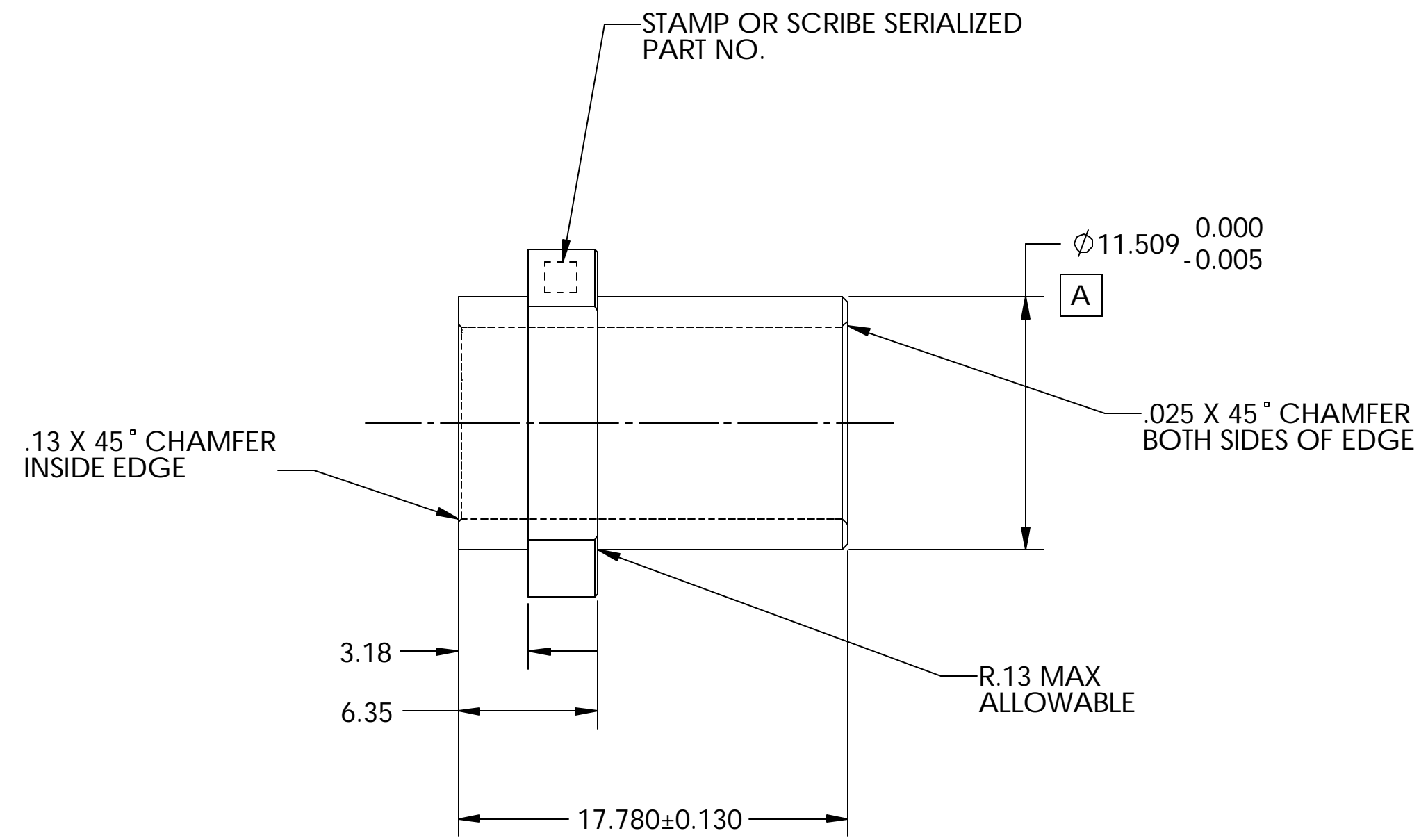
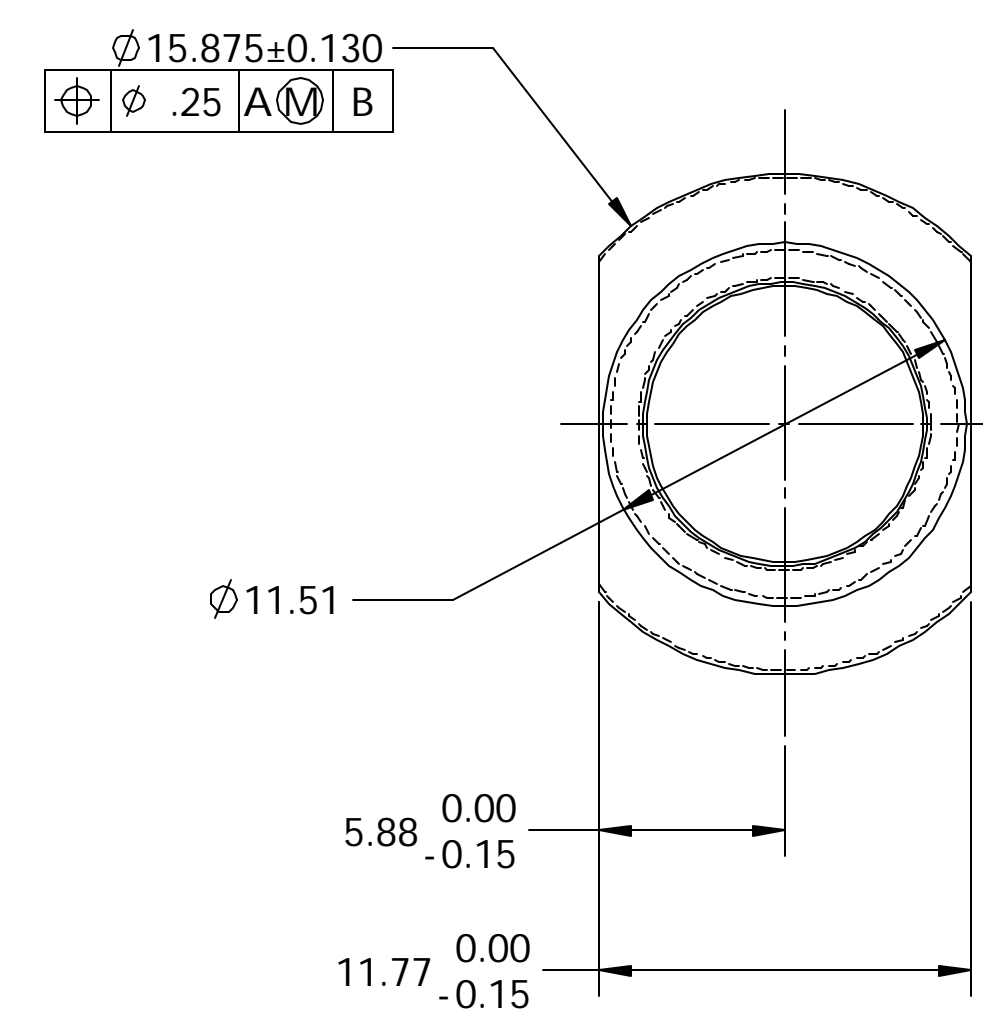


CAPTIVE PIN
MATL: 17-4 PH STEEL
SCALE 4:1

- 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

UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO.		ERNEST ORLANDO LAWRENCE	
TOLERANCES		NO. REQD		DATE ISSD		BERKELEY NATIONAL LABORATORY	
X.X ± 0.5	FRAC. ± 1/64	DATE REQD		DATE REQD		UNIVERSITY OF CALIFORNIA - BERKELEY #	
X.XX ± 0.25	ANGLES ± 30°	SURFACE TREATMENT		PROJECT NUMBER		ATLAS PIXEL DETECTOR	
X.XXX ± 0.013	FINISH 1.6	INDEX METHOD TAG		PROJECT NAME		SPACEFRAME BOND FIXTURE	
DO NOT SCALE PRINT				PROJECT US ATLAS SILICON SUBSYSTEM		CUSTOM TOOLING PINS AND BUSHINGS	
THREADS ARE CLASS 2				DWG BY W. K. MILLER		MICROFILMED:	
CHAMFER ENDS OF ALL SCREW THREADS 30°				DATE 4/16/2002		DWG. TYPE PART	
CUT ROUNDS, 1.5 THREAD RELIEF ON MACHINED THREADS				CHK BY BILL WILDS		SHOWS ON nnXnnn	
BREAK EDGES .016 MAX. ON MACHINED WORK				DATE 4/16/2002		SCALE: N/A	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				APR BY E. ANDERSSSEN		DO NOT SCALE PRINTS	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				DATE 4/16/2002		PATENT CLEAR: DESIGN ACCT. NO. CATEGORY CIDE	
REV DWG CHK ZONE DATE				CHANGES		DWG. NO. SHEET 1 OF 2	
						SIZE REV.	
						21F695 4	

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



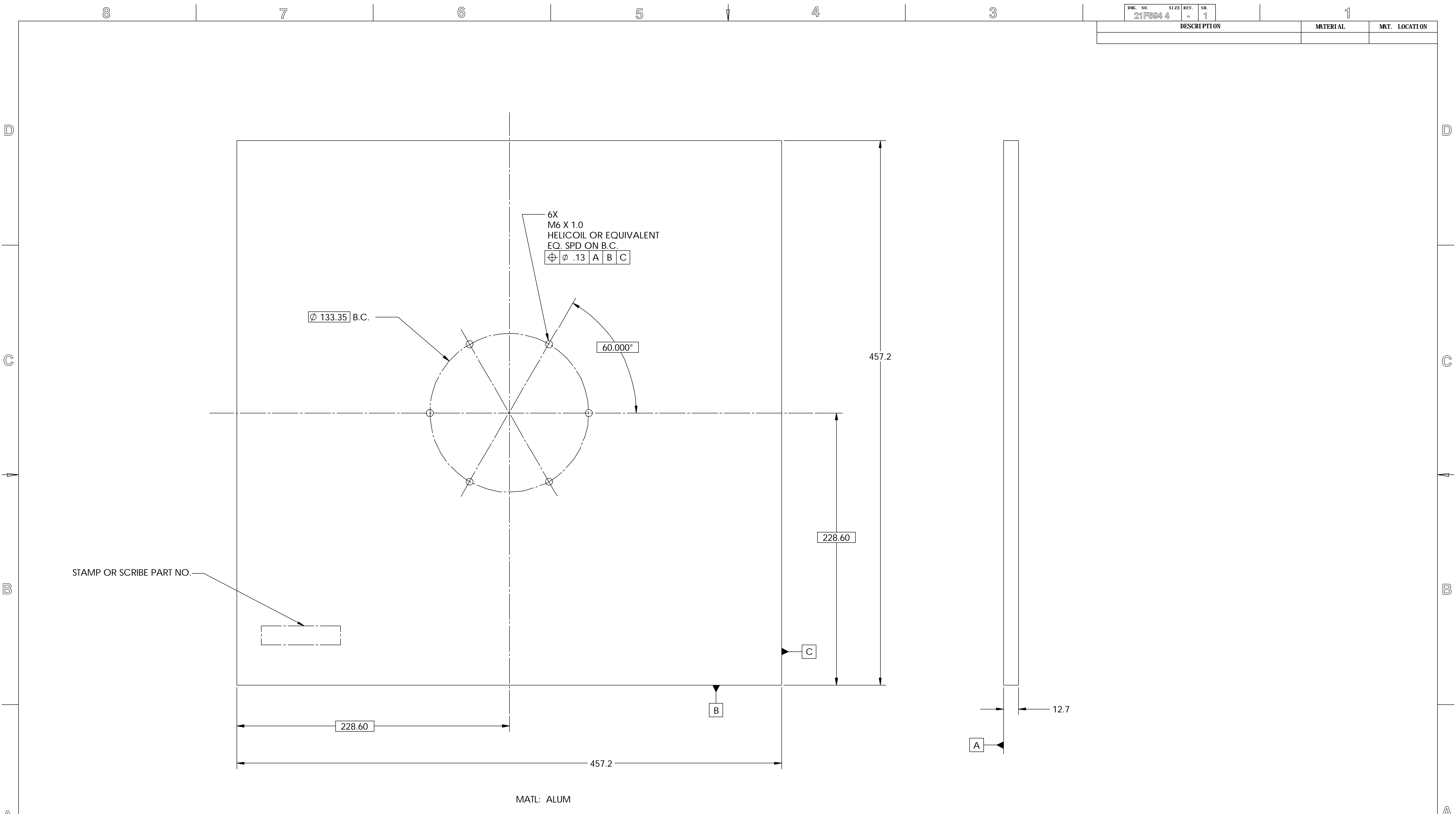
JOINING PIN CENTERING BUSHING
 MATL: STANDARD BRASS
 SCALE 4:1

- 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
 - 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	
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 BOND FIXTURE
THREADS ARE CLASS 2	PROJECT US ATLAS SILICONE SUBSYSTEM		PROJECT NUMBER	ATL-IP-ED-XXXX		CUSTOM TOOLING PINS AND BUSHINGS
CHAMFER ENDS OF ALL SCREW THREADS 30°	DWG. BY W. K. MILLER		DATE	4/16/2002		MICROFILMED:
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS	CHK BY BILL WILDS		DATE	4/16/2002		DWG. TYPE PART
BREAK EDGES .016 MAX. ON MACHINED WORK	APR BY E. ANDERSSSEN		DATE	4/16/2002		SHOWS ON nnXnnn
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE	IN ACCORDANCE WITH ASME Y14.5m & B46.1		PATENT CLEAR:	DESIGN ACCT. NO. P1AP-11	CATEGORY CIDE AP6250	SCALE: N/A
REV	DWG	CHK	ZONE	DATE	CHANGES	DO NOT SCALE PRINTS

SHEET 2 OF 2
 21F695 4

DWG. NO.	SIZE	REV.	SHEET
21F694 4		1	1
DESCRIPTION		MATERIAL	MNT. LOCATION

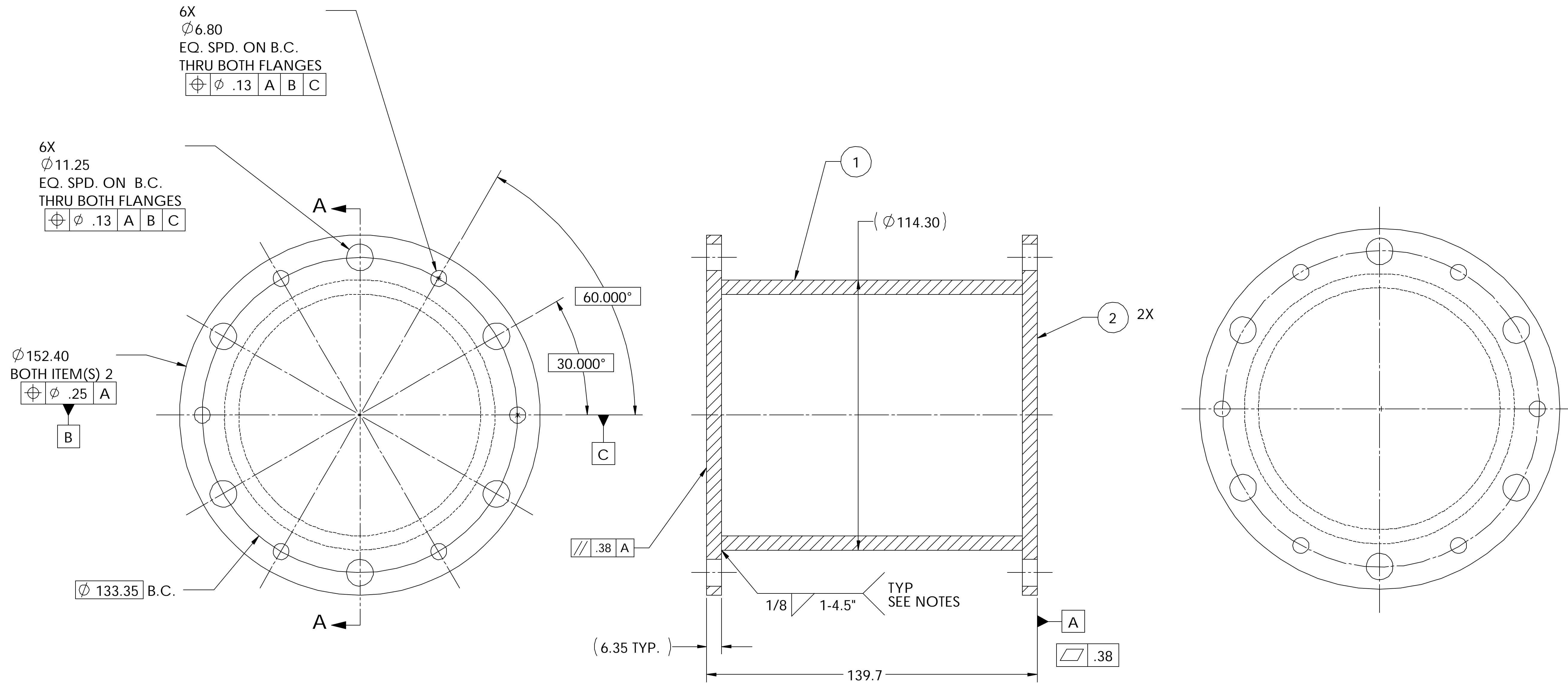


NOTES: UNLESS OTHERWISE SPECIFIED

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 .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. DATE	REQD.	UNIVERSITY OF CALIFORNIA - BERKELEY #		
	X.XXX ± 0.013	FINISH 1.6	SURFACE TREATMENT		ATLAS PIXEL DETECTOR		
DO NOT SCALE PRINT				PROJECT NUMBER		SPACEFRAME BONDING FIXTURE	
THERADS ARE CLASS 2				ATL-IP-ED-XXXX		BASEPLATE	
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NAME		MICROFILMED:	
CUT ROUNDS: 1.5 THREAD RELIEF ON MACHINED THREADS				US ATLAS SILICON SUBSYSTEM		DWG. TYPE	
BREAK EDGES: .016 MAX. ON MACHINED WORK				DATE 4/16/2002		PART	
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				DATE 4/16/2002		SHOWS ON	
IN ACCORDANCE WITH ASME Y14.5m & B46.1				DATE 4/16/2002		SCALE: 1:1.5	
REV DWG				CHANGES		DO NOT SCALE PRINTS	
						SHEET 1 OF 1	
						P1AP-11	
						AP6250	
						21F694 4	

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



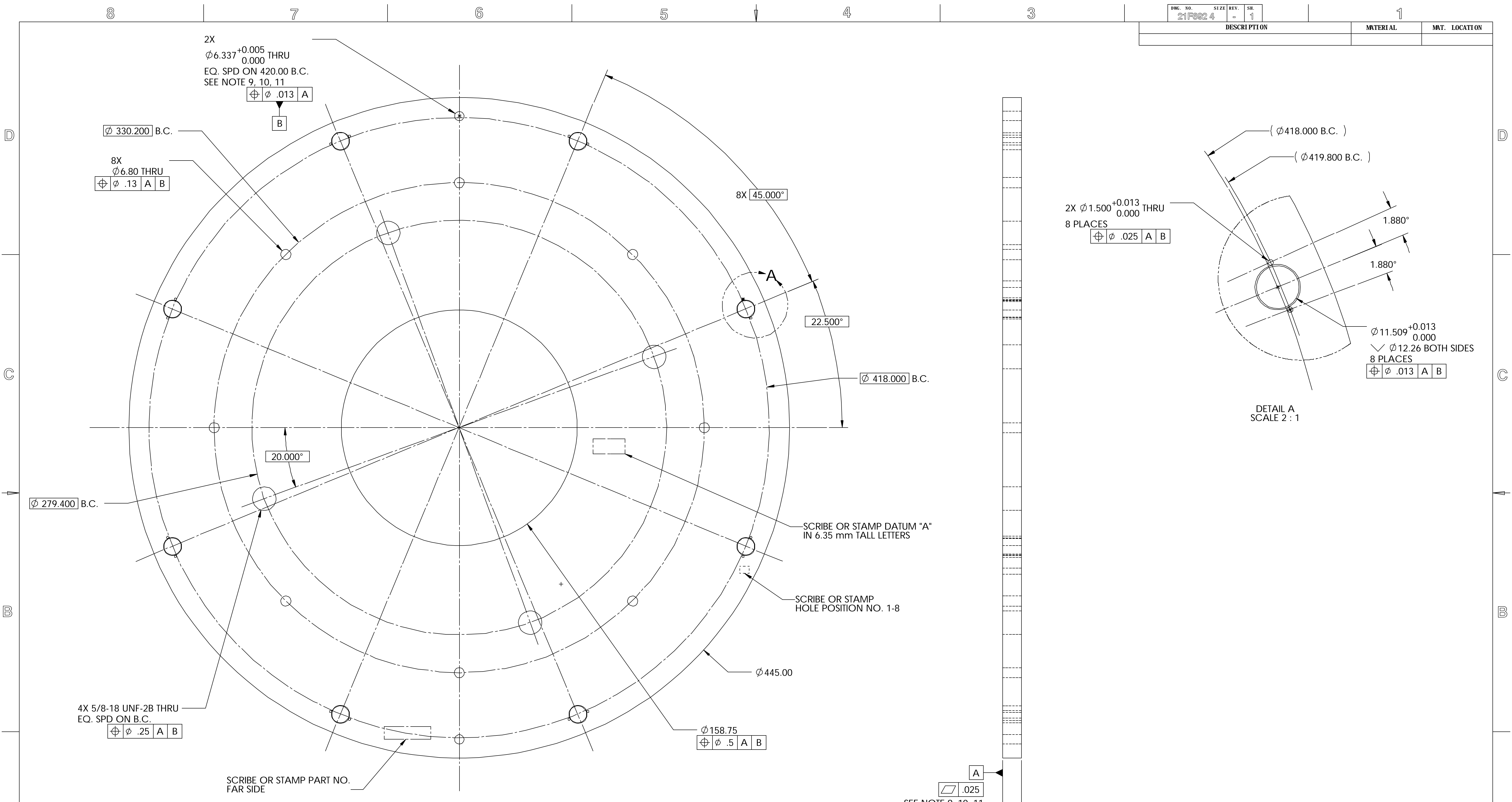
SECTION A-A
SCALE 1 : 1

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
						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	UNIVERSITY OF CALIFORNIA - BERKELEY #
						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 NUMBER PROJECT US ATLAS SILICON SUBSYSTEM	INDEX METHOD TAG ATL-IP-ED-XXXX	ATLAS PIXEL DETECTOR SPACEFRAME BONDING FIXTURE TUBE BASEPLATE STAND
						DWG BY CHK BY APR BY	DATE DATE DATE	PATENT CLEAR:	SCALE: 1:1 SHOWS ON: ASSEM CATEGORY CIDE: P1AP-11 AP6250 DWG. NO.: 21F6934 SHEET 1 OF 1

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
	X .XX ± 0.25	ANGLES	± 30°	DATE REQD.	
	X .XXX ± 0.013	FINISH	1.6		
DO NOT SCALE PRINT			INDEX METHOD TAG		
THREADS ARE CLASS 2			PROJECT NUMBER		
CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT US ATLAS SILICON SUBSYSTEM		
CUT ROUND. 1.5 THREAD RELIEF ON MACHINED THREADS			DWG. W. K. MILLER		
BREAK EDGES .016 MAX. ON MACHINED WORK			DATE 4/16/2002		
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			CHK. BILL WILDS		
IN ACCORDANCE WITH ASME Y14.5m & B46.1			DATE 4/16/2002		
REV	DWG	CHK	ZONE	DATE	CHANGES

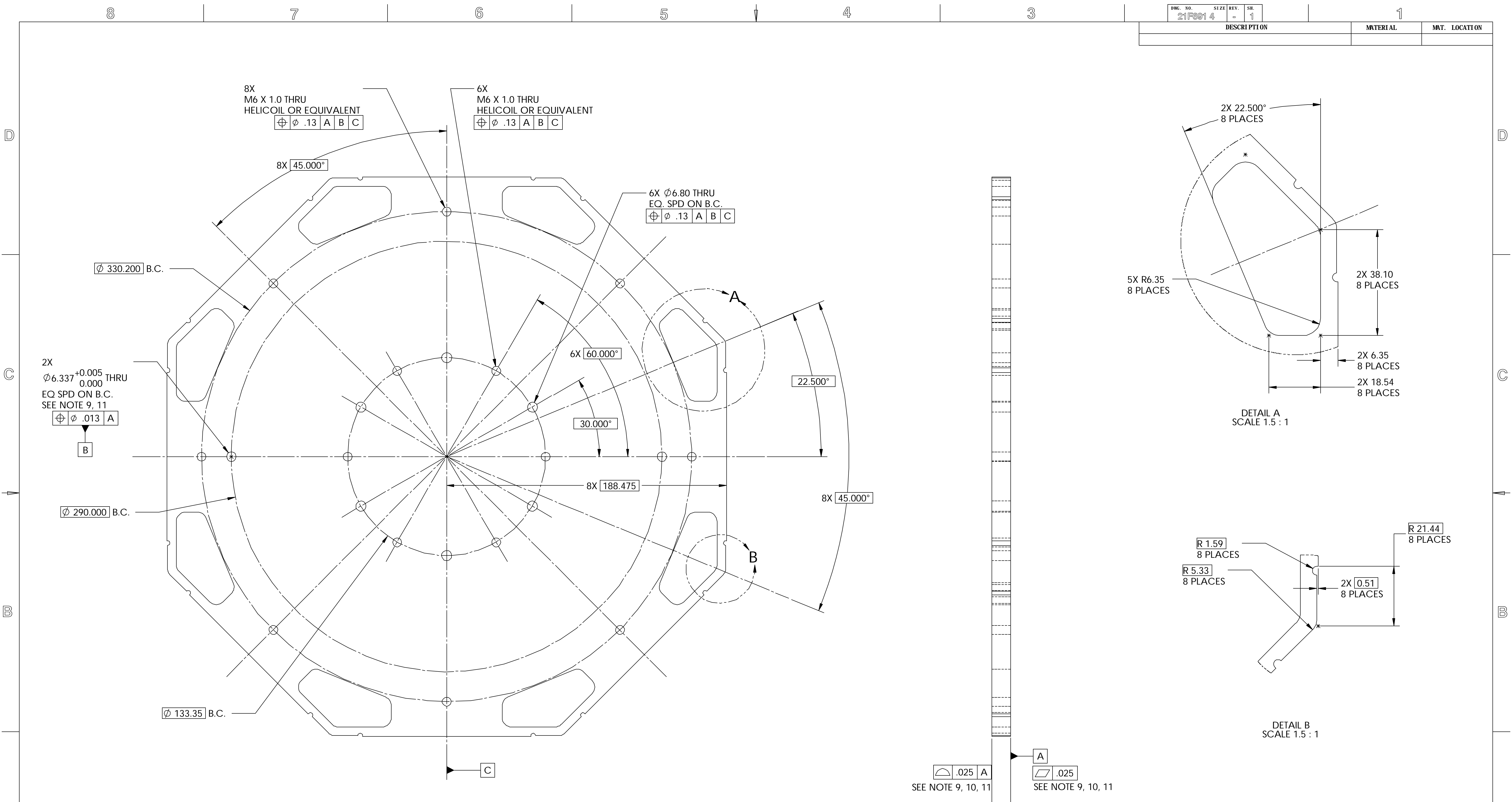
ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY
UNIVERSITY OF CALIFORNIA - BERKELEY #

ATLAS PIXEL DETECTOR
SPACEFRAME BOND FIXTURE
VERTEX CORNER JOINT ALIGNMENT PLATE

MICROFILMED: DWG. TYPE PART
SHOWS ON: 21F690
SCALE: 1:1.25
SHEET 1 OF 1

PATENT CLEAR: DESIGN ACCT. NO. P1AP-11
CATEGORY CODE AP6250
DWG. NO. 21F692 4
SIZE REV.

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



NOTES: UNLESS OTHERWISE SPECIFIED

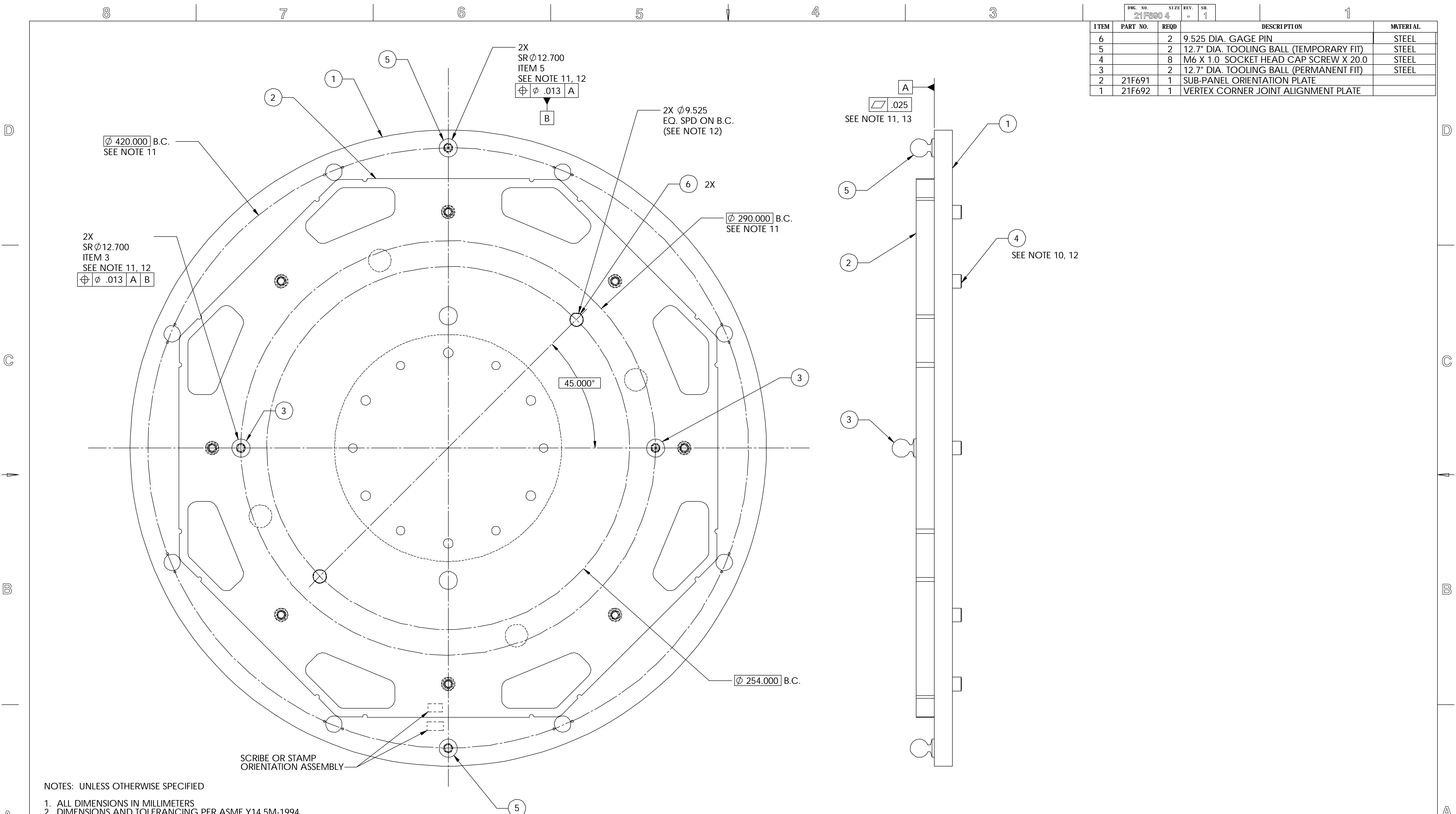
MATL: 6061-T6 ALUM
(SEE NOTE 10)

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.

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.		
	X.XXX ± 0.013	FINISH	1.6	SURFACE TREATMENT			
DO NOT SCALE PRINT				IDEN. METHOD TAG	ATLAS PIXEL DETECTOR SPACEFRAME BOND FIXTURE SUB-PANEL ORIENTATION PLATE		
THREADS ARE CLASS 2				PROJECT NAME	MICROFILMED:		
CHAMFER ENDS OF ALL SCREW THREADS 30°				PROJECT NO.	DWG. TYPE		
CUT ROUND. 1.5 THREAD RELIEF ON MACHINED THREADS				PROJECT US ATLAS SILICON SUBSYSTEM	PART		
BREAK EDGES .016 MAX. ON MACHINED WORK				DWG. BY W. K. MILLER	DATE	4/16/2002	SHOWS ON
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE				CHK BY BILL WILDS	DATE	4/16/2002	21F690
IN ACCORDANCE WITH ASME Y14.5m & B46.1				APR BY E. ANDERSSSEN	DATE	4/16/2002	SCALE: 1:1.25
REV	DWG	CHK	ZONE	DATE	CHANGES		DO NOT SCALE PRINTS

SCALE: 1:1.25
SHEET 1 OF 1
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 CODE	DWG. NO.	SIZE
	P1AP-11	AP6250	21F6904	REV.
			SHEET 1 OF 1	

