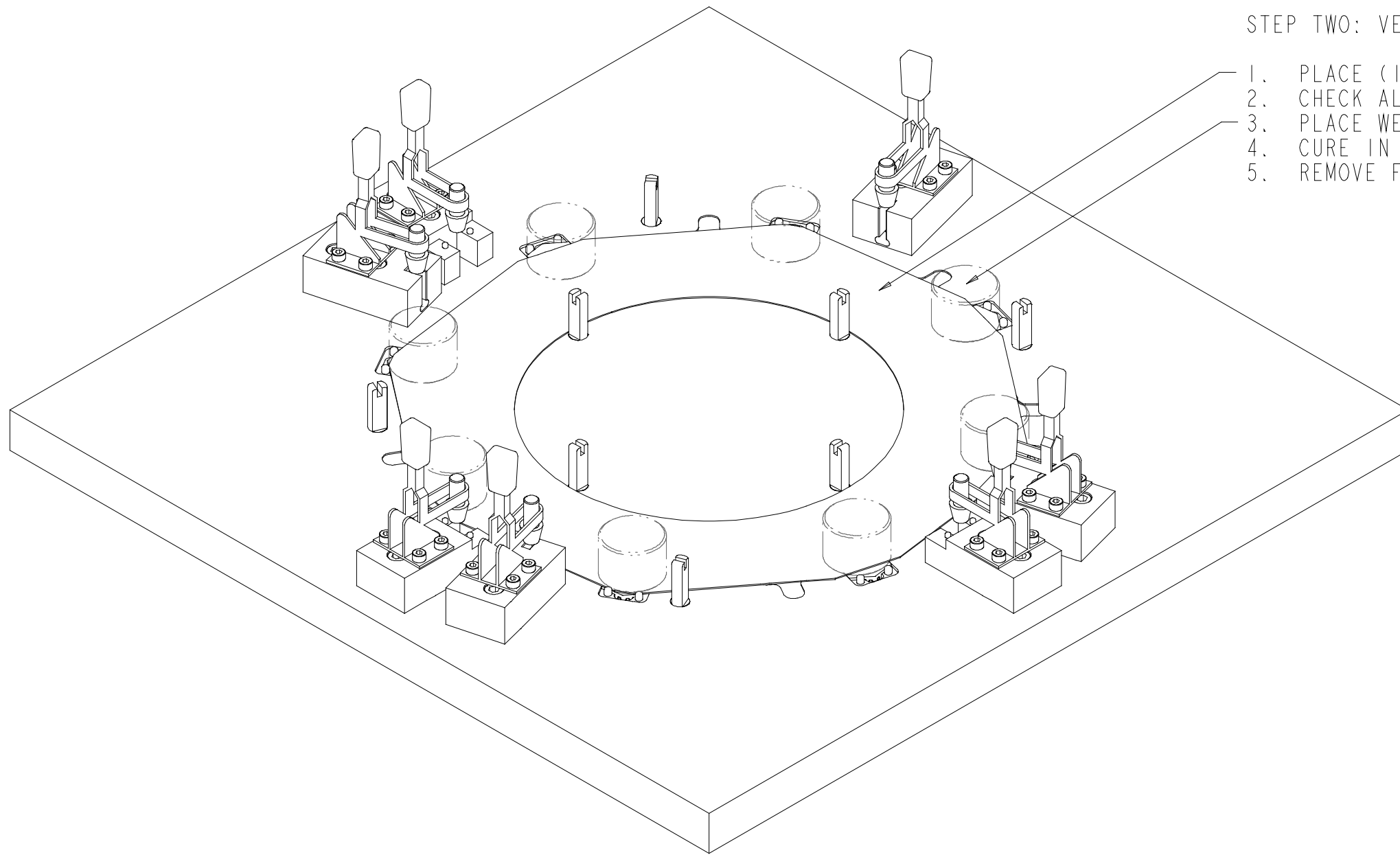


BARREL END CRUCIFORM SUPPORT (250152.ASM) FABRICATION

STEP TWO: VERTEX TAB BONDING

1. PLACE (1) EACH CRUCIFORM PLATE (250161.PRT)
2. CHECK ALIGNMENT AND CONTACT WITH ALL VERTEX TABS
3. PLACE WEIGHTS (8) EACH AS SHOWN.
4. CURE IN PLACE
5. REMOVE FROM FIXTURE

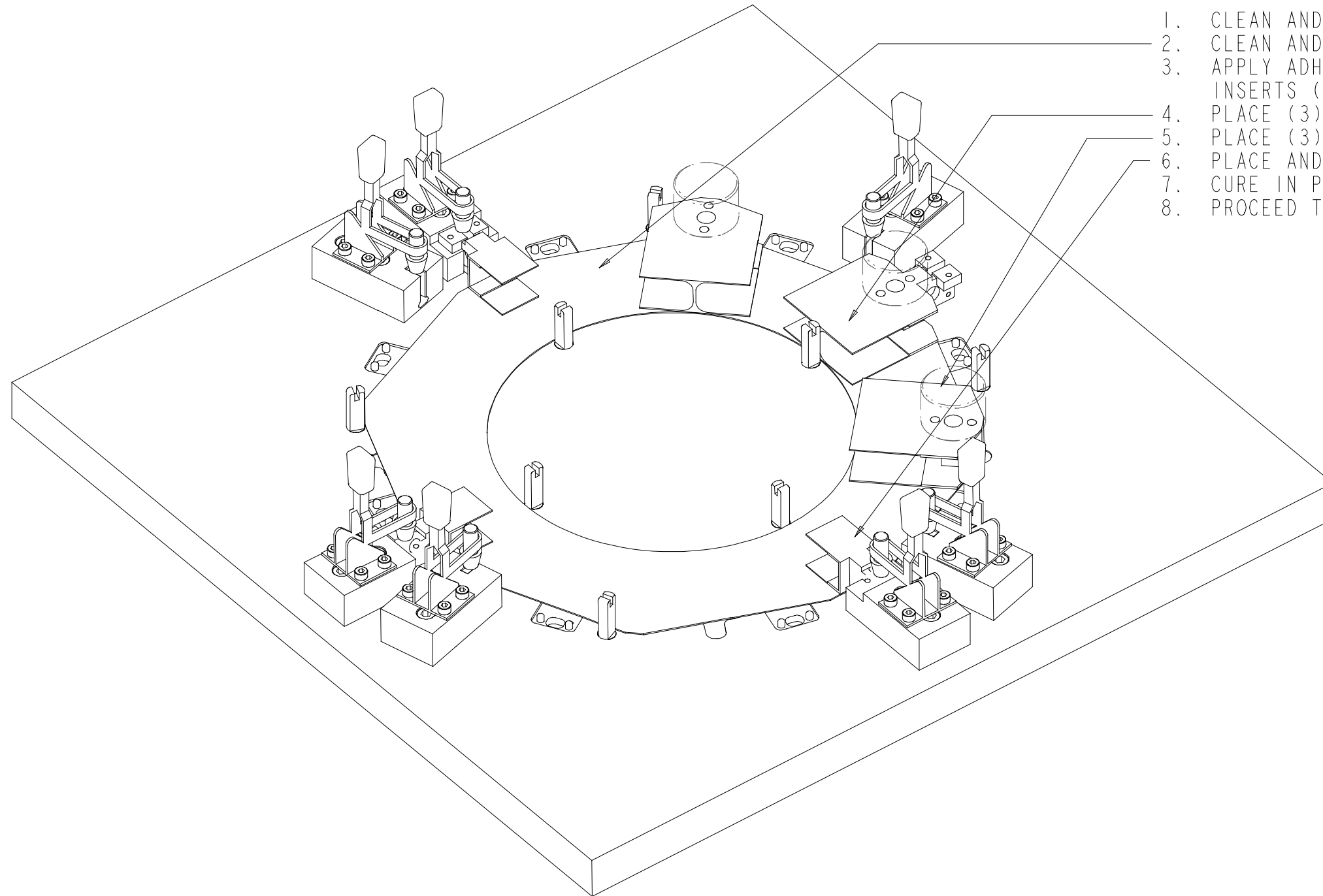


					UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER NO. -		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY ATLAS PIXEL DETECTOR BEAM PIPE AND SERVICES SUPPORT Cruciform Support Assy Fixture, Fabrication Process MICROFILMED: DWG. TYPE ASSEM SHOWN ON SHEET 3 OF 14 PATENT CLEAR: DESIGN ACCT. NO. CATEGORY CODE DWG. NO. 2501974 SIZE REV. 1					
					TOLERANCES		ACCT NO.		NO. REQD 1						DATE ISSD	
					X.X ± 0.1 FRAC. ± 1/64		DEL TO		E Anderssen						DATE REQD	
					X.XX ± 0.01 Angles ± 0.50°		SURFACE TREATMT									
					X.XXX ± 0.001 FINISH 125/1000		IDENT METHOD TAG									
					DO NOT SCALE PRINT		PROJECT NUMBER									
					THREADS ARE CLASS 2		PROJECT NAME									
					CHAMFER ENDS OF ALL SCREW THREADS 30°		DWG D Uken		DATE 13-Oct-03							
					CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS		CHK BY N Hartman		DATE							
					BREAK EDGES .019 MAX. ON MACHINED WORK		APP BY E Anderssen		DATE							
					REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		BY		DATE							
					IN ACCORDANCE WITH ASME Y14.5M & B46.1											
REV	DWG	CHK	ZONE	DATE	CHANGES											

BARREL END CRUCIFORM SUPPORT (250152.ASM) FABRICATION

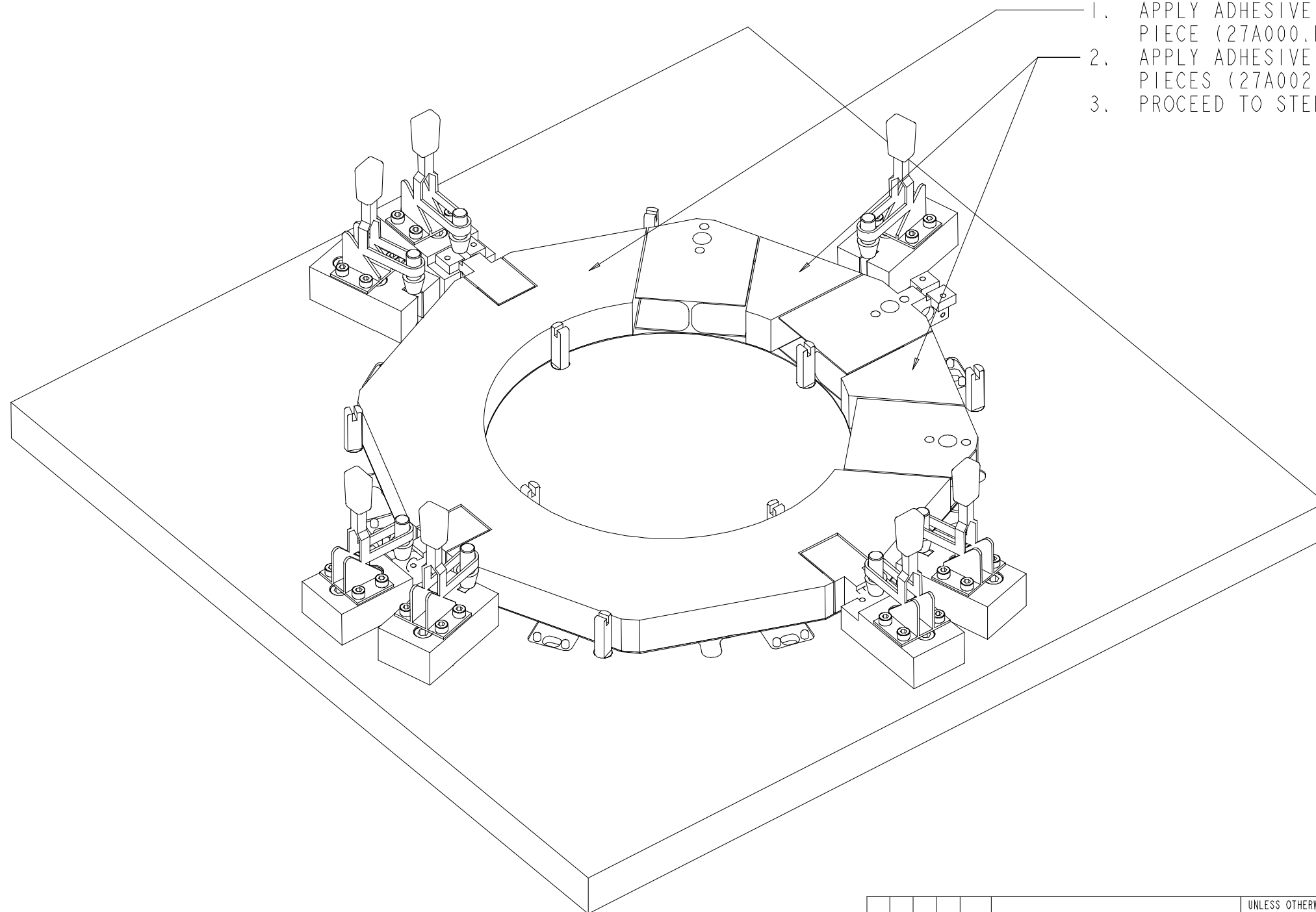
STEP THREE: CRUCIFORM INSERT BONDING

1. CLEAN AND MASK INSERTS (250I64.PRT, 250I66.PRT).
2. CLEAN AND PLACE CRUCIFORM PLATE (250I60.PRT) AS SHOWN.
3. APPLY ADHESIVE TO BONDING AREAS OF
INSERTS (250I64.PRT, 250I66.PRT).}
4. PLACE (3) INSERTS (250I66.PRT) AS SHOWN.
5. PLACE (3) WEIGHTS AS SHOWN.
6. PLACE AND CLAMP (3) INSERTS (250I64.PRT) AS SHOWN.
7. CURE IN PLACE.
8. PROCEED TO STEP 4.

[illegible]

STEP FOUR: CRUCIFORM CORE BONDING

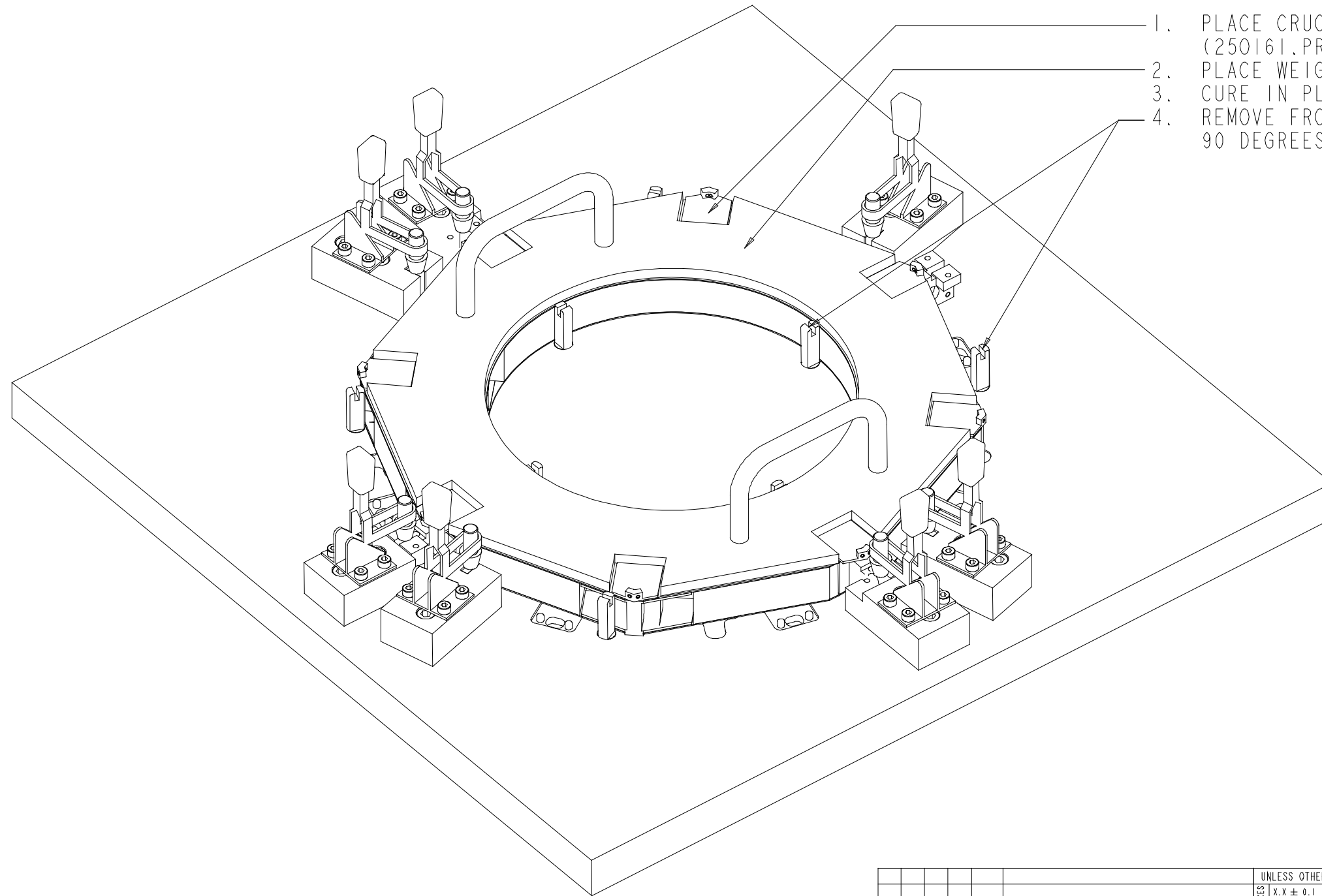
1. APPLY ADHESIVE TO BOTH SIDES OF CRUCIFORM CORE
PIECE (27A000.PRT) AND PLACE AS SHOWN.
2. APPLY ADHESIVE TO BOTH SIDES OF (2) CRUCIFORM CORE
PIECES (27A002.PRT) AND PLACE AS SHOWN.
3. PROCEED TO STEP 5.

[illegible]

BARREL END CRUCIFORM SUPPORT (250152.ASM) FABRICATION

STEP FIVE: CRUCIFORM PLATE FINAL BONDING

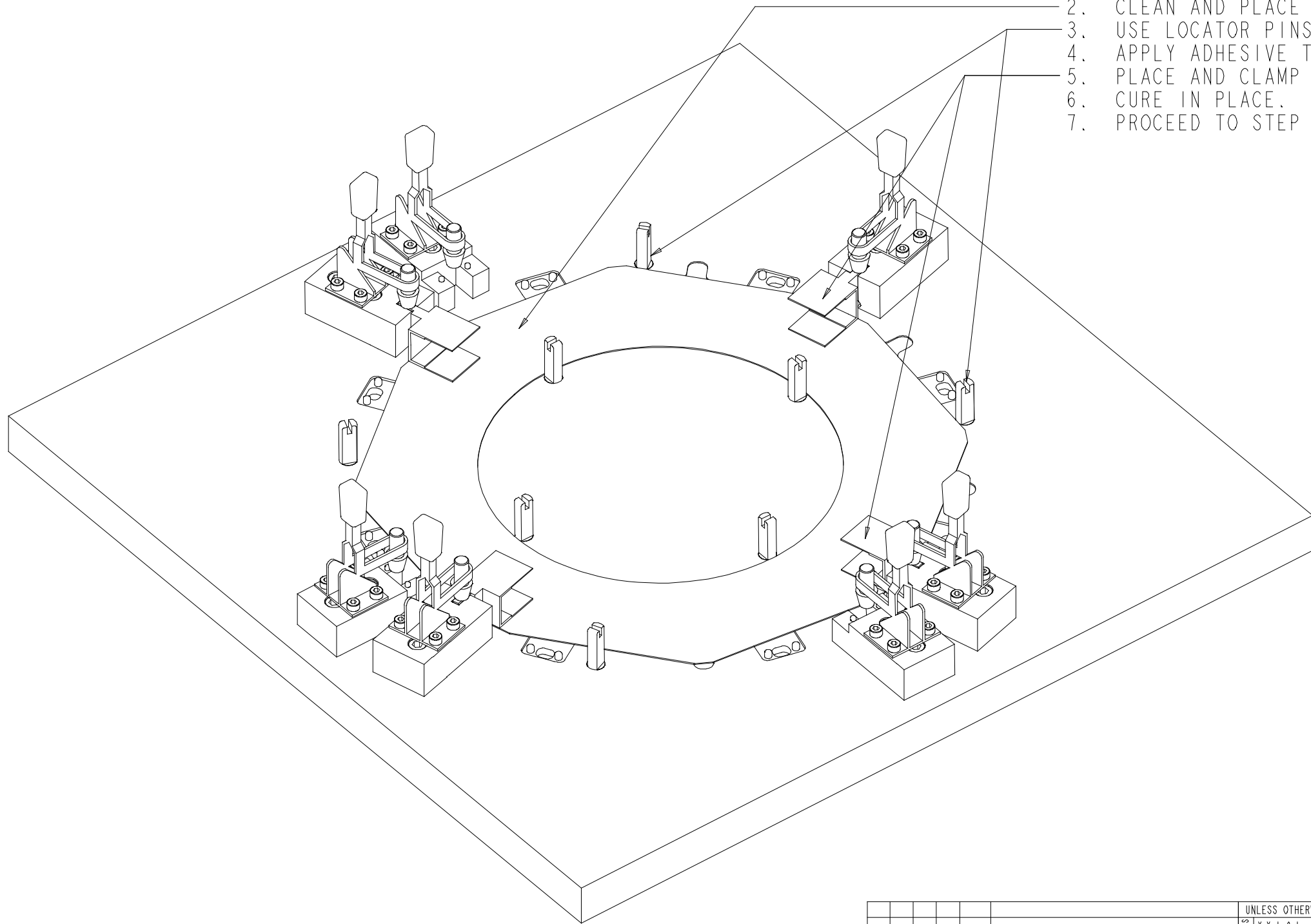
- 1. PLACE CRUCIFORM PLATE WITH VERTEX TABS FROM STEP TWO (250161.PRT WITH (8) OF 250171.PRT) AS SHOWN.
- 2. PLACE WEIGHT PLATE (250148.PRT) WITH HANDLES AS SHOWN.
3. CURE IN PLACE.
- 4. REMOVE FROM FIXTURE. TWIST LOCATOR PINS (27A008.PRT 90 DEGREES TO AID IN RELEASE FROM FIXTURE.

[illegible]

MIDDLE CRUCIFORM SUPPORT (250153.ASM) FABRICATION

STEP ONE: CRUCIFORM INSERT BONDING

1. CLEAN AND MASK INSERTS (4 OF 250167.PRT).
2. CLEAN AND PLACE CRUCIFORM PLATE (250161.PRT) AS SHOWN;
3. USE LOCATOR PINS (27A008.PRT) TO ALIGN PLATE TO FIXTURE.
4. APPLY ADHESIVE TO BONDING AREAS OF INSERTS (250167.PRT).
5. PLACE AND CLAMP (4) INSERTS (250167.PRT) AS SHOWN.
6. CURE IN PLACE.
7. PROCEED TO STEP 2.

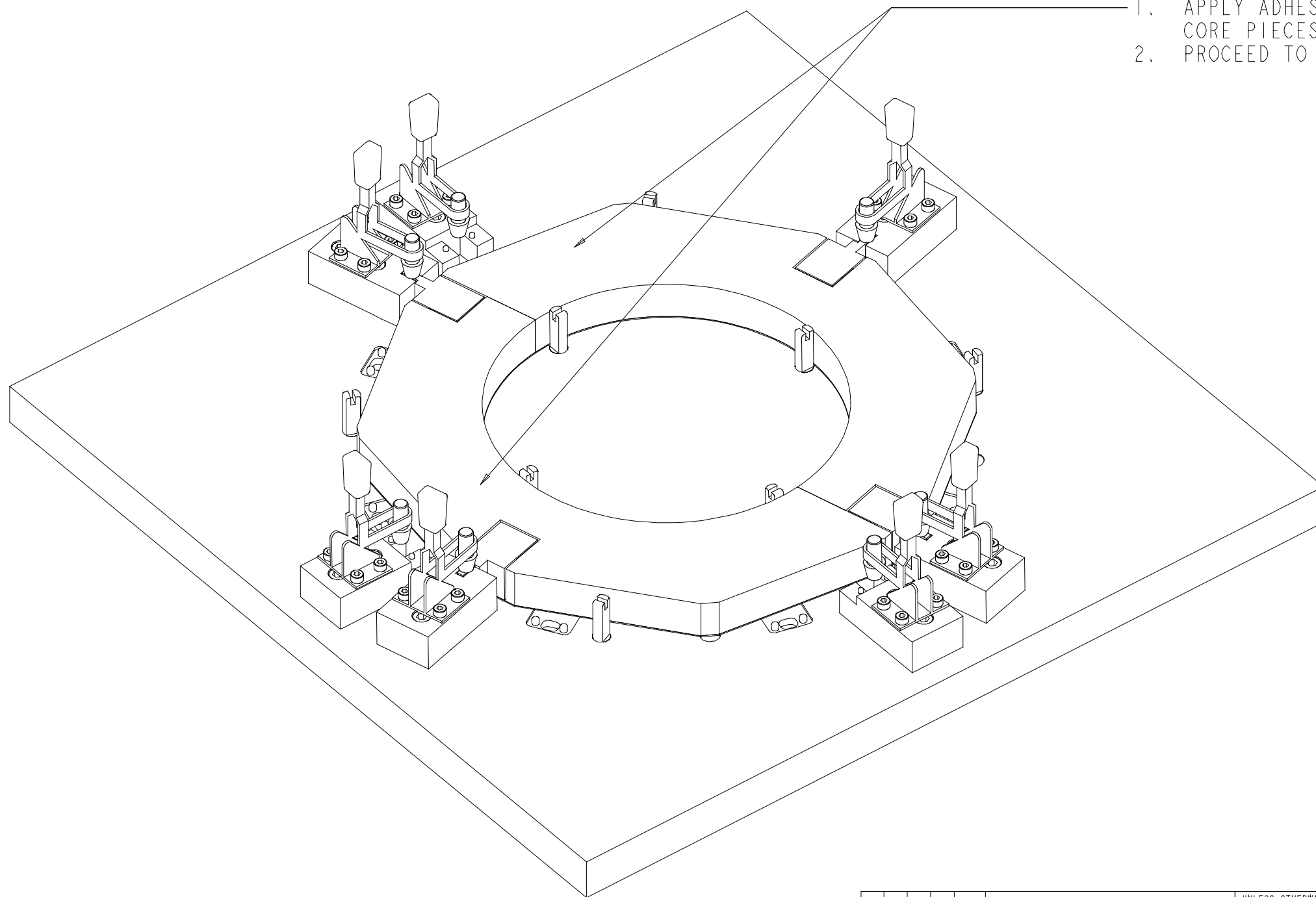


					UNLESS OTHERWISE SPECIFIED			SHOP ORDERS			SER. NO. -		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY ATLAS PIXEL DETECTOR BEAM PIPE AND SERVICES SUPPORT Cruciform Support Assy Fixture, Fabrication Process					
					X.X ± 0.1 FRAC. ± 1/64			ACCT. NO. NO. REQ. 1			DATE ISSD -							
					X.XX ± 0.01 Angles ± 0.50°			DEL. TO E Anderssen			DATE REQ. -							
					X.XXX ± 0.001 FINISH 125/1000			SURFACE TREATMT										
					DO NOT SCALE PRINT			IDENT METHOD TAG										
					THREADS ARE CLASS 2			PROJECT NUMBER										
					CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NAME										
					CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS			DWG. D Uken			DATE 14-Oct-03							
					BREAK EDGES .019 MAX. ON MACHINED WORK			CHK BY N Hariman			DATE							
					REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			APP BY E Anderssen			DATE							
					IN ACCORDANCE WITH ASME Y14.5M & B46.1													
REV	DWG	CHK	ZONE	DATE	CHANGES								PATENT CLEAR: DESIGN ACCT. NO. CATEGORY CODE DWG. NO. 2501974 SIZE 1					
											See WebJ		API000		SHEET 7 OF 14			

MIDDLE CRUCIFORM SUPPORT (250152.ASM) FABRICATION

STEP TWO: CRUCIFORM CORE BONDING

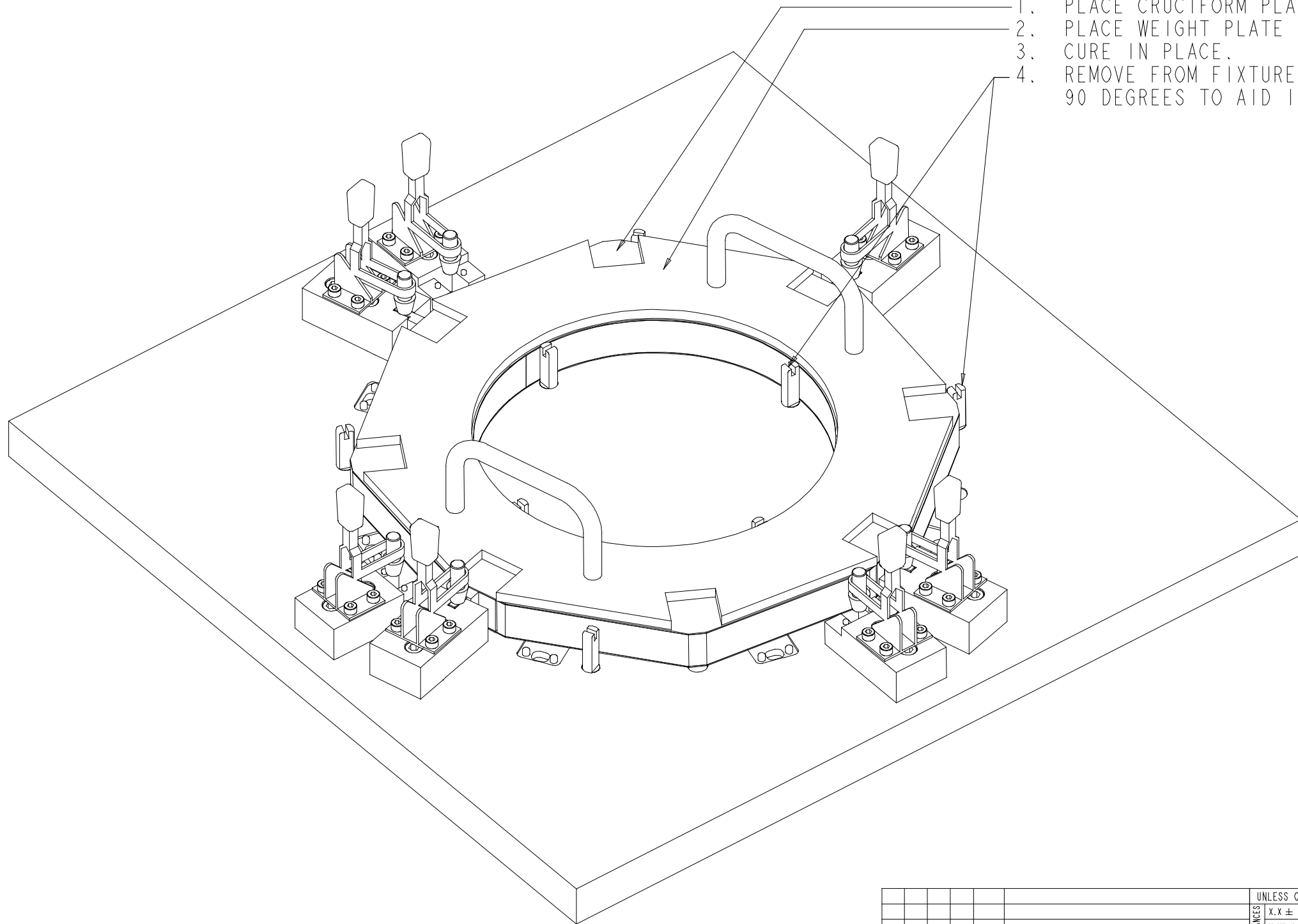
1. APPLY ADHESIVE TO BOTH SIDES OF (2) CRUCIFORM CORE PIECES (27A003.PRT) AND PLACE AS SHOWN.
2. PROCEED TO STEP 5.

[illegible]

MIDDLE CRUCIFORM SUPPORT (250154.ASM) FABRICATION

STEP THREE: CRUCIFORM PLATE FINAL BONDING

1. PLACE CRUCIFORM PLATE (250161.PRT) AS SHOWN.
2. PLACE WEIGHT PLATE (250148.PRT) WITH HANDLES AS SHOWN.
3. CURE IN PLACE.
4. REMOVE FROM FIXTURE. TWIST LOCATOR PINS (27A008.PRT) 90 DEGREES TO AID IN RELEASE FROM FIXTURE.

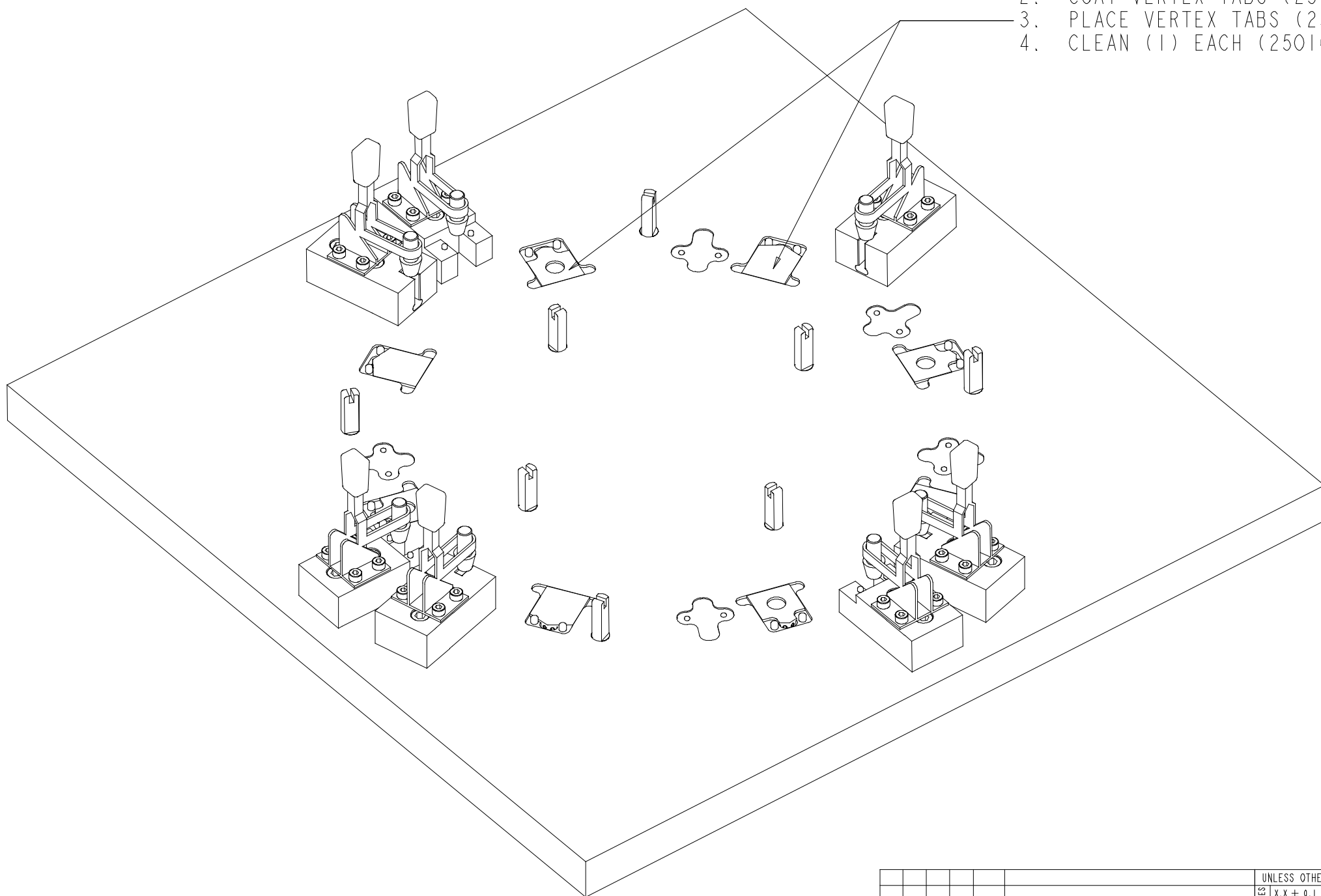


					UNLESS OTHERWISE SPECIFIED			SHOP ORDERS			SER. NO. -		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY 				
					X.X ± 0.1 FRAC. ± 1/64			ACCT. NO. NO. REQ. 1			DATE ISSD -						
					X.XX ± 0.01 Angles ± 0.50°			DEL. TO E Anderssen			DATE REQ. -		ATLAS PIXEL DETECTOR BEAM PIPE AND SERVICES SUPPORT Cruciform Support Assy Fixture, Fabrication Process				
					X.XXX ± 0.001 FINISH 125/1000			SURFACE TREATMT									
					DO NOT SCALE PRINT			IDENT METHOD TAG					MICROFILMED: DWG. TYPE SHOWN ON SCALE: 0.750 DO NOT SCALE PRINTS				
					THREADS ARE CLASS 2			PROJECT NUMBER									
					CHAMFER ENDS OF ALL SCREW THREADS 30°			PROJECT NAME					SHEET 9 OF 14				
					CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS			DWG. D Uken			DATE 14-Oct-03						
					BREAK EDGES .015 MAX. ON MACHINED WORK			CHK BY N Hariman			DATE		PATENT CLEAR: DESIGN ACCT. NO. CATEGORY CODE DWG. NO. SIZE REV.				
					REMOVE BURRS, WELD SPLATTER & LOOSE SCALE			APP BY E Anderssen			DATE						
					IN ACCORDANCE WITH ASME Y14.5M & B46.1								See WebJ0 API000 2501974 1				
REV	DWG	CHK	ZONE	DATE	CHANGES												

FORWARD CRUCIFORM SUPPORT (250154.ASM) FABRICATION

STEP ONE: VERTEX TAB BONDING PREP

1. CLEAN (8) VERTEX TABS (4 EACH OF 250170.PRT AND 250171.PRT).
2. COAT VERTEX TABS (250170.PRT, 250171.PRT) WITH ADHESIVE.
3. PLACE VERTEX TABS (250170.PRT, 250171.PRT) IN POCKETS AS SHOWN.
4. CLEAN (1) EACH (250162.PRT) CRUCIFORM PLATE (NOT SHOWN).

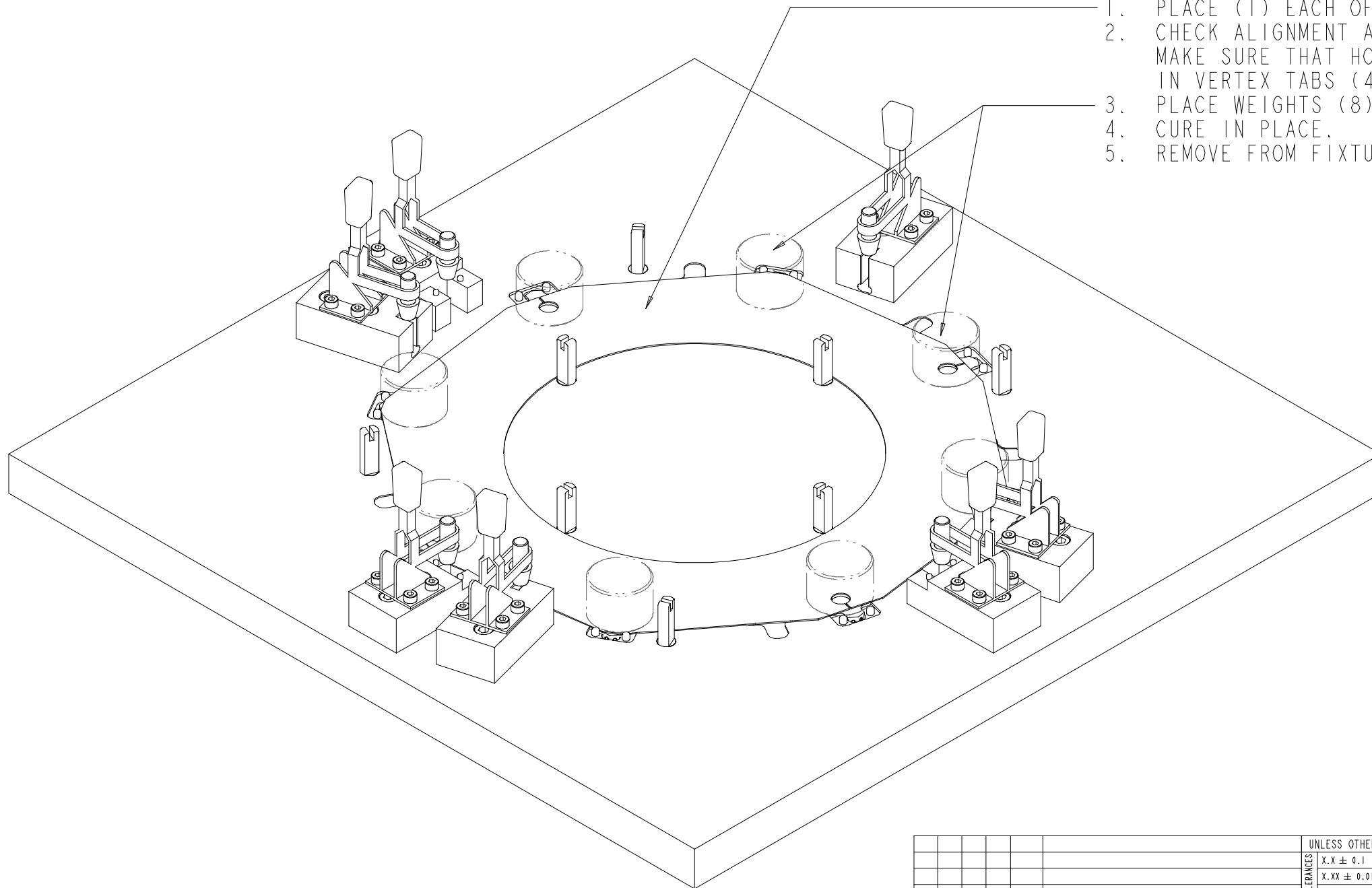


					UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		SER. NO. -	ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY 				
					TOLERANCES	X.X ± 0.1	FRAC. ± 1/64	ACCT. NO. 1	DATE ISSD -					
						X.XX ± 0.01	Angles ± 0.50°	DEL. TO: E Anderssen	DATE REQD -	ATLAS PIXEL DETECTOR BEAM PIPE AND SERVICES SUPPORT Cruciform Support Assy Fixture, Fabrication Process				
						X.XXX ± 0.001	FINISH 125/100	SURFACE TREATMT						
					DO NOT SCALE PRINT		IDENT METHOD TAG	PROJECT NUMBER		MICROFILMED: DWG. TYPE ASSEM SHOWN ON SHEET 10 OF 14				
					THREADS ARE CLASS 2		PROJECT NAME	PROJECT DATE 14-Oct-03						
					CHAMFER ENDS OF ALL SCREW THREADS 30°		CHK BY D Uken	DATE		PATENT CLEAR: DESIGN ACCT. NO. CATEGORY CODE				
					CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS		CHK BY N Hariman	DATE						
					BREAK EDGES .015 MAX. ON MACHINED WORK		APR BY E Anderssen	DATE		See WebJ API000				
					REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		DWG. NO. 2501974		SIZE 1					
					IN ACCORDANCE WITH ASME Y14.5M & B46.1		APR BY E Anderssen		DATE		SHEET 10 OF 14 2501974 1			
REV	DWG	CHK	ZONE	DATE	CHANGES									

FORWARD CRUCIFORM SUPPORT (250154.ASM) FABRICATION

STEP TWO: VERTEX TAB BONDING

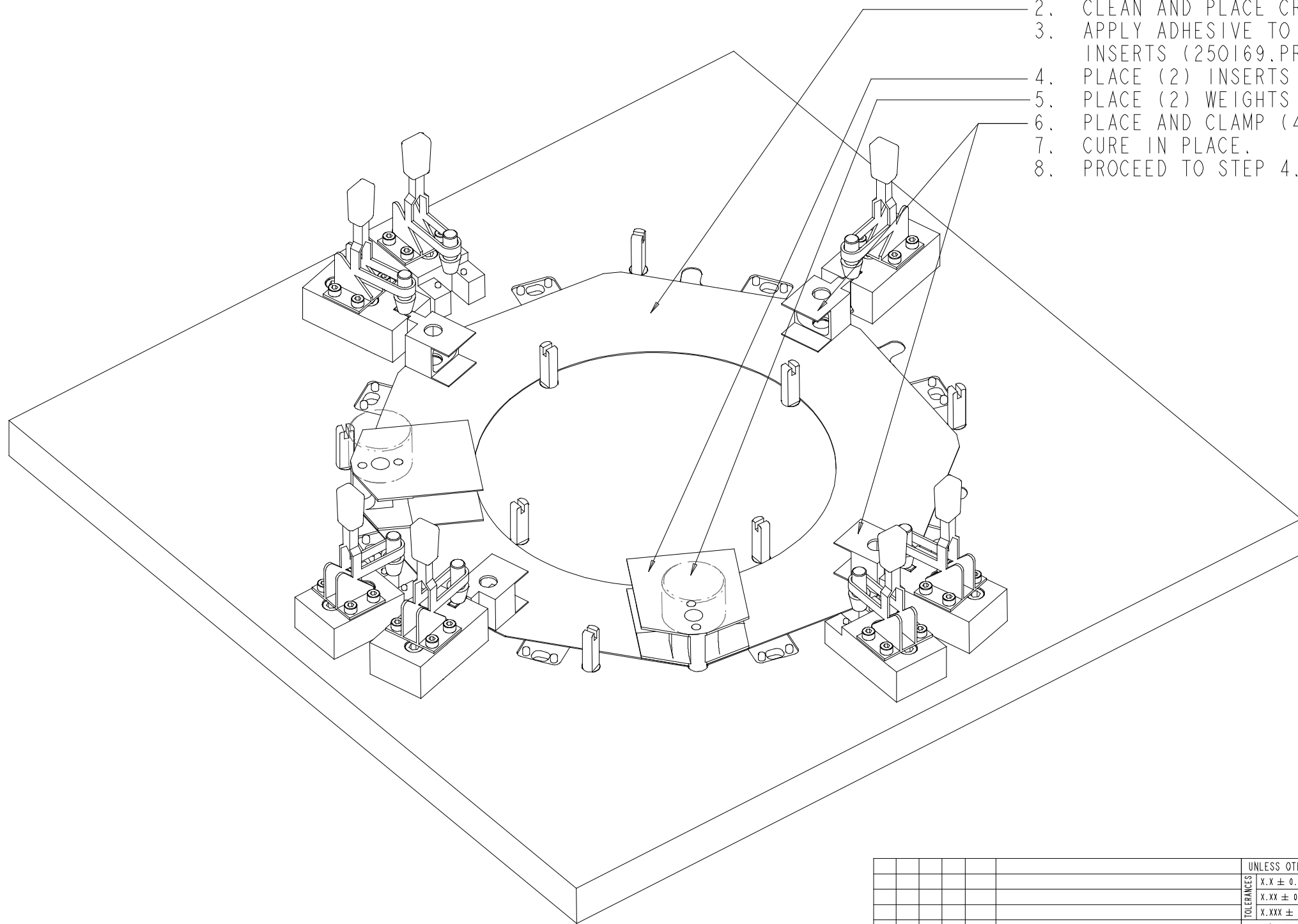
1. PLACE (1) EACH OF CRUCIFORM PLATE (250I62.PRT) AS SHOWN.
2. CHECK ALIGNMENT AND CONTACT WITH ALL VERTEX TABS;
MAKE SURE THAT HOLES IN PLATE ARE LOCATED OVER HOLES
IN VERTEX TABS (4 OF 250I70.PRT).
3. PLACE WEIGHTS (8) EACH AS SHOWN.
4. CURE IN PLACE.
5. REMOVE FROM FIXTURE.

[illegible]

FORWARD CRUCIFORM SUPPORT (250154.ASM) FABRICATION

STEP THREE: CRUCIFORM INSERT BONDING

1. CLEAN AND MASK INSERTS (4 OF 250169.PRT, 2 OF 250166.PRT).
2. CLEAN AND PLACE CRUCIFORM PLATE (250163.PRT) AS SHOWN.
3. APPLY ADHESIVE TO BONDING AREAS OF INSERTS (250169.PRT, 250166.PRT).
4. PLACE (2) INSERTS (250166.PRT) AS SHOWN.
5. PLACE (2) WEIGHTS AS SHOWN.
6. PLACE AND CLAMP (4) INSERTS (250169.PRT) AS SHOWN.
7. CURE IN PLACE.
8. PROCEED TO STEP 4.

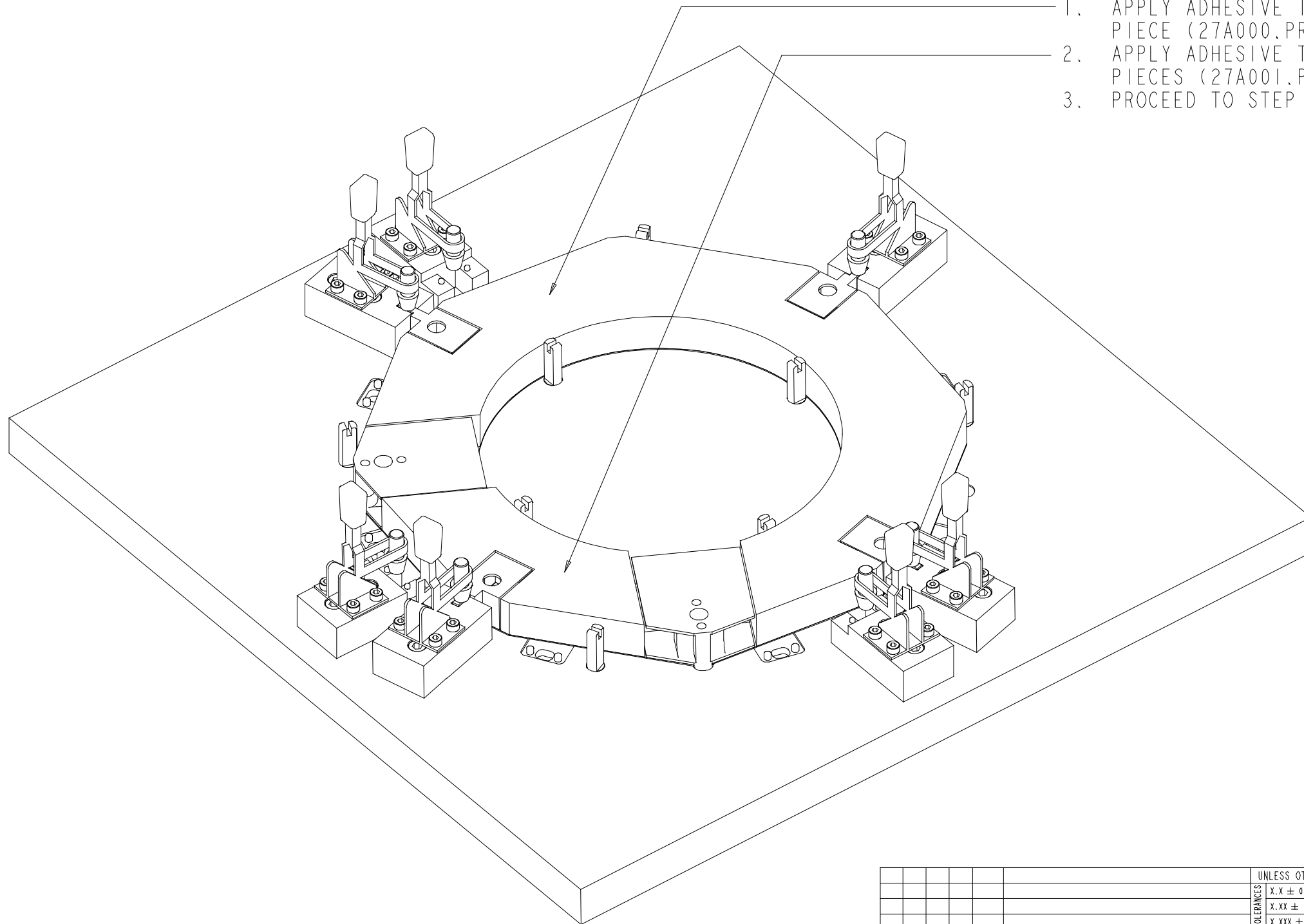


					UNLESS OTHERWISE SPECIFIED		SHOP ORDERS		REV. -	ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY			
					TOLERANCES	FRAC. ± 1/64	ACCT. NO.	NO. REQ. 1	DATE ISSD				
					X.X ± 0.1	Angles ± 0.50°	DEL. TO	E Anderssen	DATE REQ.	ATLAS PIXEL DETECTOR BEAM PIPE AND SERVICES SUPPORT Cruciform Support Assy Fixture, Fabrication Process			
					X.XX ± 0.01	FINISH 125/100	SURFACE TREATMT		DATE REQ.				
					X.XXX ± 0.001	DO NOT SCALE PRINT	IDENT METHOD TAG		DATE	SCALE: 0.750 DO NOT SCALE PRINTS			
					THREADS ARE CLASS 2	CHAMFER ENDS OF ALL SCREW THREADS 30°	PROJECT NUMBER		DATE				
					CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS	BREAK EDGES .015 MAX. ON MACHINED WORK	PROJECT NAME		DATE	SCALE: 0.750 DO NOT SCALE PRINTS			
					REMOVE BURRS, WELD SPLATTER & LOOSE SCALE	IN ACCORDANCE WITH ASME Y14.5M & B46.1	PROJECT NAME		DATE				
					REV	DWG	CHK	ZONE	DATE	SCALE: 0.750 DO NOT SCALE PRINTS			
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FORWARD CRUCIFORM SUPPORT (250154.ASM) FABRICATION

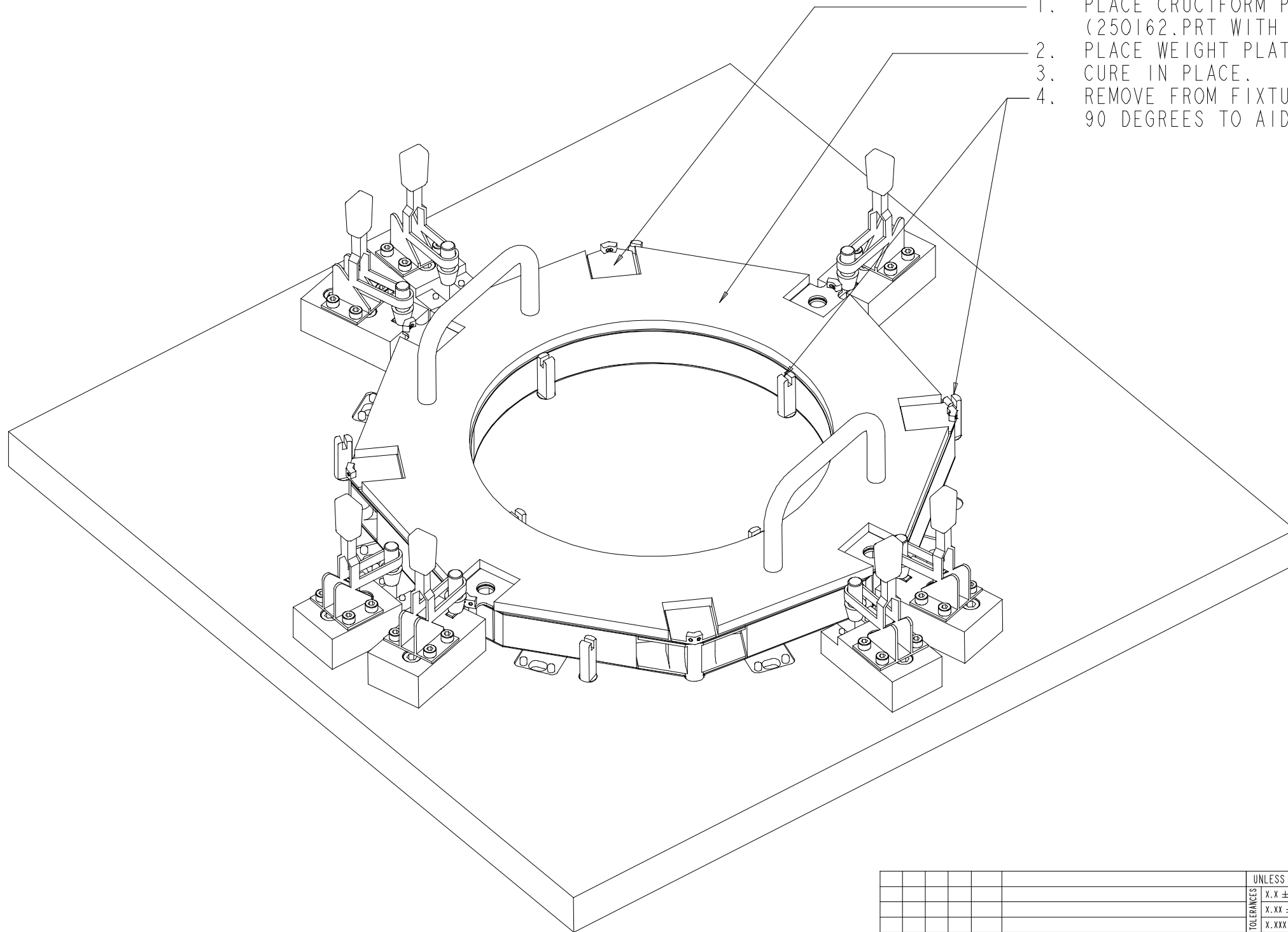
STEP FOUR: CRUCIFORM CORE BONDING

1. APPLY ADHESIVE TO BOTH SIDES OF CRUCIFORM CORE
PIECE (27A000.PRT) AND PLACE AS SHOWN.
2. APPLY ADHESIVE TO BOTH SIDES OF (2) CRUCIFORM CORE
PIECES (27A001.PRT) AND PLACE AS SHOWN.
3. PROCEED TO STEP 5.

[illegible]

STEP FIVE: CRUCIFORM PLATE FINAL BONDING

- 1. PLACE CRUCIFORM PLATE WITH VERTEX TABS FROM STEP TWO (250I62.PRT WITH (4) EACH OF 250I70.PRT & 250I71.PRT) AS SHOWN.
- 2. PLACE WEIGHT PLATE (250I48.PRT) WITH HANDLES AS SHOWN.
3. CURE IN PLACE.
- 4. REMOVE FROM FIXTURE. TWIST LOCATOR PINS (27A008.PRT 90 DEGREES TO AID IN RELEASE FROM FIXTURE.

[illegible]