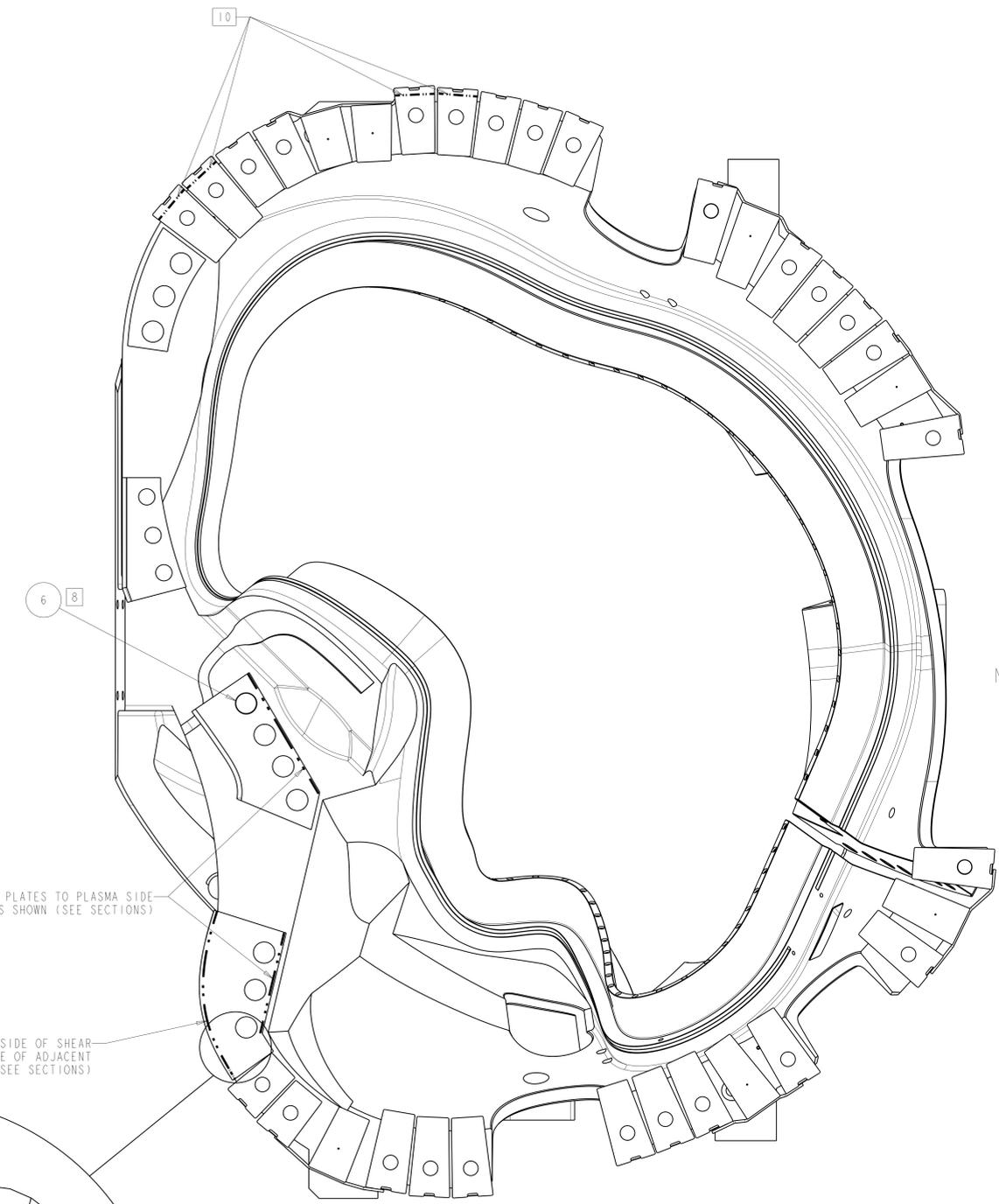


- NOTES
- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.100-2004.
  - INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994.
  - DIMENSIONS ARE IN INCHES
  - MAGNETIC PERMEABILITY NOT TO EXCEED 1.02 AS TESTED BY A SEVERN INDICATOR. AVAILABLE FROM:  
SEVERN ENGINEERING  
AUBURN, ALABAMA 36830  
WWW.SEVERNENGINEERING.COM
  - WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF PPPL PROCEDURE ENG-037. VISUAL WELD INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE ACCEPTANCE CRITERIA OF AWS D1.1 SECTION 6.
  - ASSEMBLE PER THIS DRAWING AND SPECIFICATION NCSX-CSPEC-185-02-00.
  - SEE SHIM AND SHEAR PLATE DRAWINGS SE140-041, SE140-052, AND SE140-053 FOR ADDITIONAL INFORMATION.
  - PUCKS TO BE CUSTOM SIZED PRIOR TO INSTALLATION. SEE PUCK DRAWING SE140-056 FOR ADDITIONAL INFORMATION.
  - THESE SHIMS ARE NOT LOCATED ON STUDS AND ARE TO BE WELDED IN PLACE APPROX AS SHOWN WITH WELD BARS, F/N 10. SHIMS MAY BE ORIENTED IN ANY POSITION BUT MUST BE CLEAR OF POLYDIAL BREAKS AND PORT OPENINGS. SHIMS MAY BE TRIMMED AS REQ'D BUT MUST MAINTAIN .25 MIN EDGE TRACKING WITH CASTING EDGES OR SURFACES. COVER EXPOSED EDGES WITH AN APPROVED COATING TO MAINTAIN ELECTRICAL ISOLATION.
  - THESE SHIMS TO BE TRIMMED TO .25 FROM CASTING FLANGE FOR ADDITIONAL ASSEMBLY CLEARANCE. ADDITIONAL SHIMS MAY ALSO BE TRIMMED DURING INSTALLATION AS REQ'D. COVER EXPOSED EDGES WITH AN APPROVED COATING AFTER CUTTING.

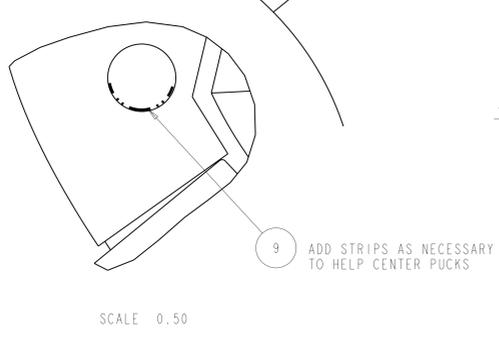


NOTE: MOD COILS SHOW ON SHEETS 1-4 ARE SHOWN AS PART ONLY FOR CLARITY. SHIMS AND SHEAR PLATES TO BE INSTALLED AND WELDED ON COMPLETED MOD COIL ASSEMBLIES.

WELDING OF SHEAR PLATES TO PLASMA SIDE OF FLANGES AS SHOWN (SEE SECTIONS)

WELDING OF SOLENOID SIDE OF SHEAR PLATES TO MATING FLANGE OF ADJACENT COIL AT ASSEMBLY (SEE SECTIONS)

**1 AB-BC MOD COIL SHIM AND SHEAR PLATE KIT**  
SCALE 0.18



SCALE 0.50

9 ADD STRIPS AS NECESSARY TO HELP CENTER PUCKS

AR	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	SPECIFICATION	FIND NO
		-10	Ø.25 ROUND	316L SST	ASTM A276	10
		8796K142	NOMEX STRIP	1.0 WIDE X .063 THICK 10' FT ROLL	MCMASTER CARR ATLANTA, GA 30374 404-346-7000 WWW.MCMASTER.COM	9
7		SE140-056-4	PUCK - 1.5"			8
4		SE140-056-2	PUCK - 1.75"			7
27		SE140-056-1	PUCK - 2"			6
1		SE140-053-1	B-C INBOARD SHEAR PLATE			5
1		SE140-052-1	A-B INBOARD SHEAR PLATE			4
11		SE140-041-2	NO BOLT SHIM PLATE ASSY			3
55		SE140-041-1	SHIM PLATE ASSY			2
AR		-1	AB-BC MOD COIL SHIM AND SHEAR PLATE ASSY			1

← NEXT ASSEMBLY

PARTS LIST

WELDING ENGINEER  
APPROVED L. DUDEK DATE: 01/08

RELEASED FOR FABRICATION / INSTALLATION  
PPPL Drafting

REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REQ	DATE	ORNL	DOE	DATE
1	TO SE140-003, PER ECN # 5332	GM	05/08	MC		05/08						
2	PER SHEAR PLATE REVISIONS, CHANGED "NEXT ASSY"											
3	LENGTH CHARTS ON SHEET 2 & 3, UPDATED WELD SYMBOLS											
4	PARTS, CHANGED SPEC # IN NOTE 6, ADDED SHIM											
5	SE140-041-1 WAS SE140-040, ADDED QTY #'S FOR ALL											
6	ADDED F/N 2, 9, 10 AND SHEET 4, F/N 2,											
7	AND RELATED SHEETS, RENUMBERED ALL F/N'S.											
8	CHANGED DWG TITLE, REMOVED F/N'S 4, 5, 10, 11											
0	ORIGINAL ISSUE	GM	01/08	MC		01/08						

SCALE	NOTED	DES	D WILLIAMSON	01/2008
TOLERANCES UNLESS OTHERWISE SPECIFIED		DRW	G MCGINNIS	01/2008
FRACTIONS		CHK	M COLE	01/2008
XX DECIMALS ±.01		SECT:		
XXX DECIMALS ±.005		DEPT:		
ANGLES ±0°15'		PE:		
BREAK SHARP EDGES 06 MAX		CR:		
FINISH .125 UNLESS OTHERWISE SPECIFIED		PJ:		
		RD:		
		PPPL DRFT	J SIEGEL	01/2008

VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS
19	ORNL	5700	3	1	6	S	U
RELEASE LEVEL		SE140-046					
Fabrication							

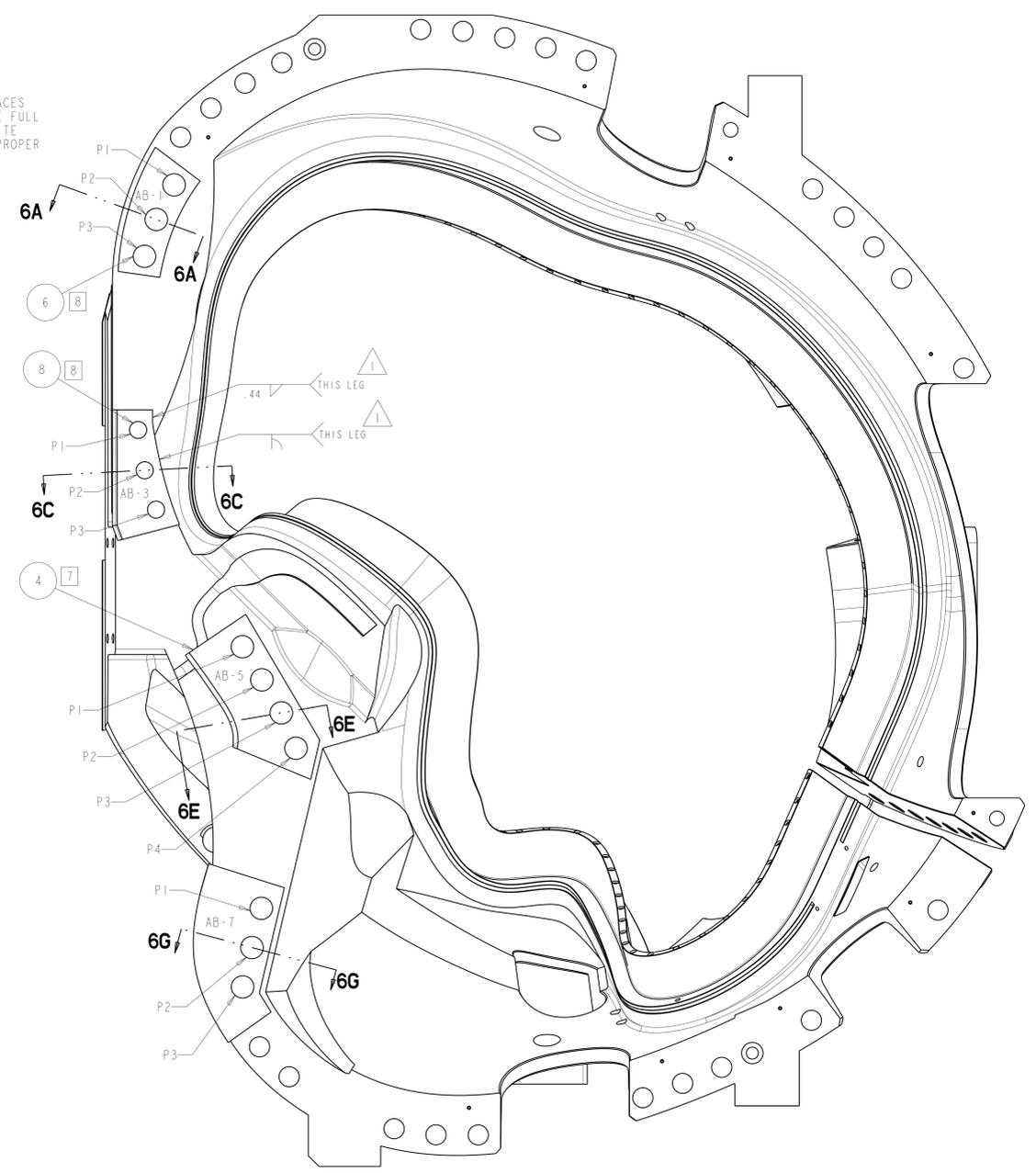
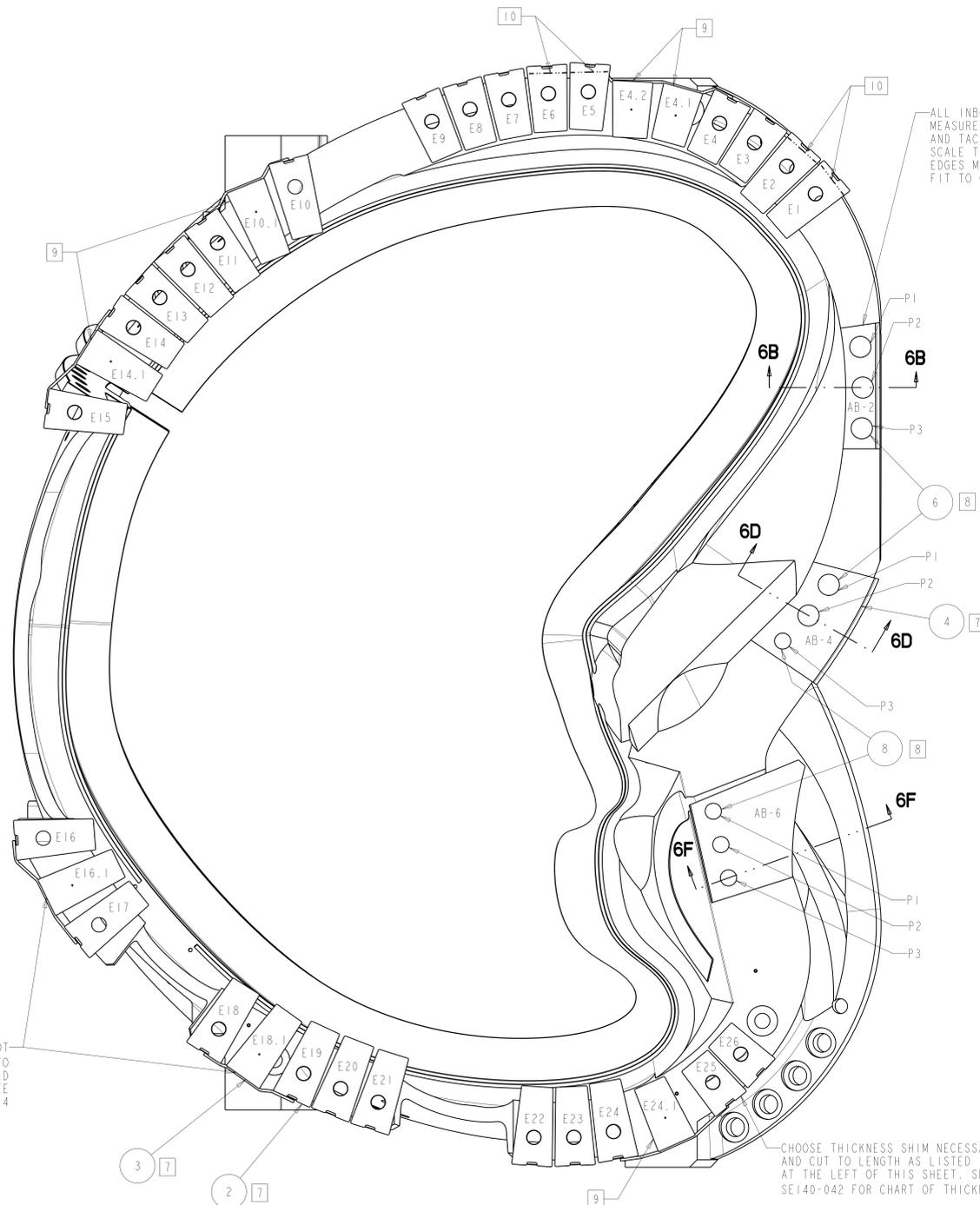
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**P** THIS DRAWING PRODUCED ON PRO-ENGINEER

**1 AB-BC MOD COIL SHIM AND SHEAR PLATE KIT**

REVISION 1

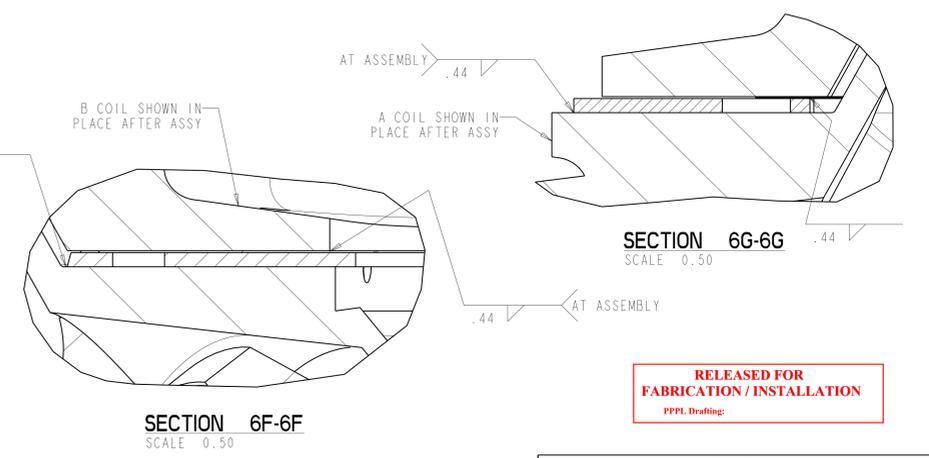
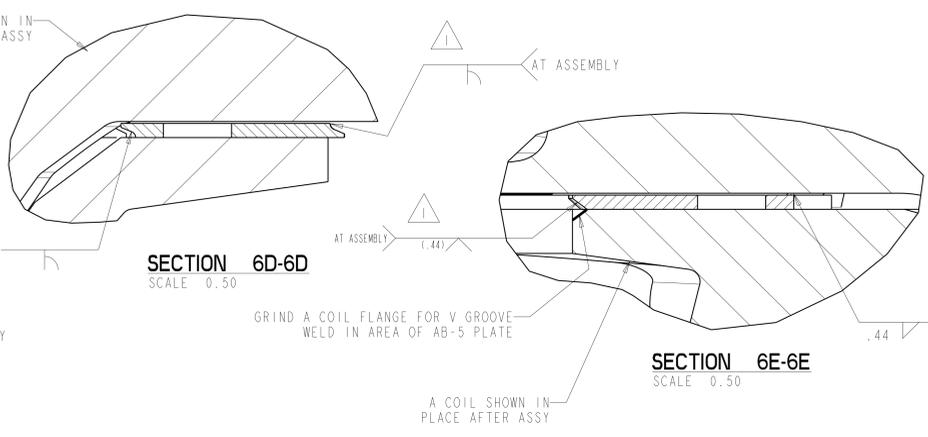
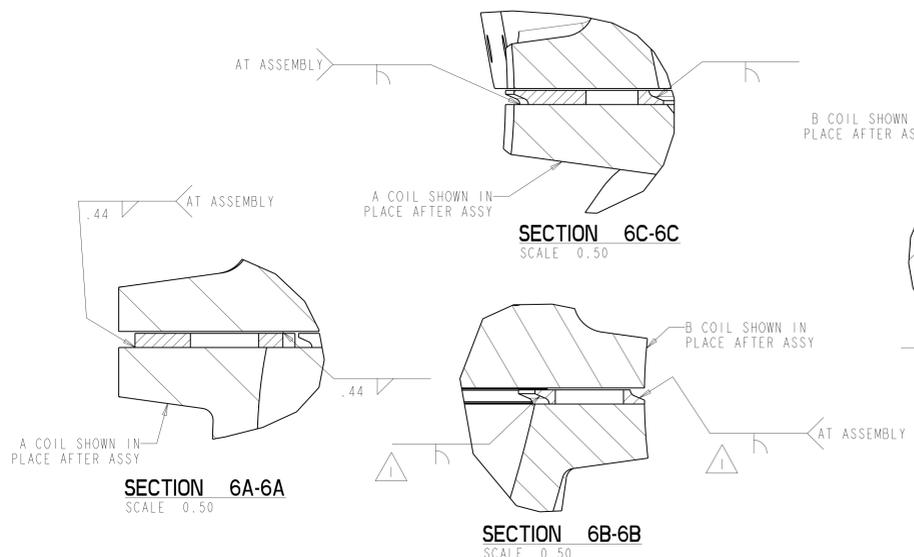
E26	2.75	
E25	2.75	
E24.1		3.75
E24	5.00	
E23	5.00	
E22	5.00	
E21	5.00	
E20	5.00	
E19	5.00	
E18.1		5.00
E18	5.00	
E17	5.00	
E16.1		5.00
E16	5.00	
E15	5.00	
E14.1		5.00
E14	5.00	
E13	5.00	
E12	5.00	
E11	5.00	
E10.1		5.00
E10	5.00	
E9	3.75	
E8	3.75	
E7	3.75	
E6	3.75	
E5	3.75	
E4.2		2.75
E4.1		2.75
E4	3.75	
E3	3.75	
E2	5.00	
E1	5.00	
HOLE NUMBER	BOLTED SHIM LENGTH	NO BOLT SHIM LENGTH



A-B JOINT LOOKING AT THE A COIL B FLANGE  
(B COIL REMOVED)

A-B JOINT LOOKING AT THE B COIL A FLANGE  
(A COIL REMOVED)

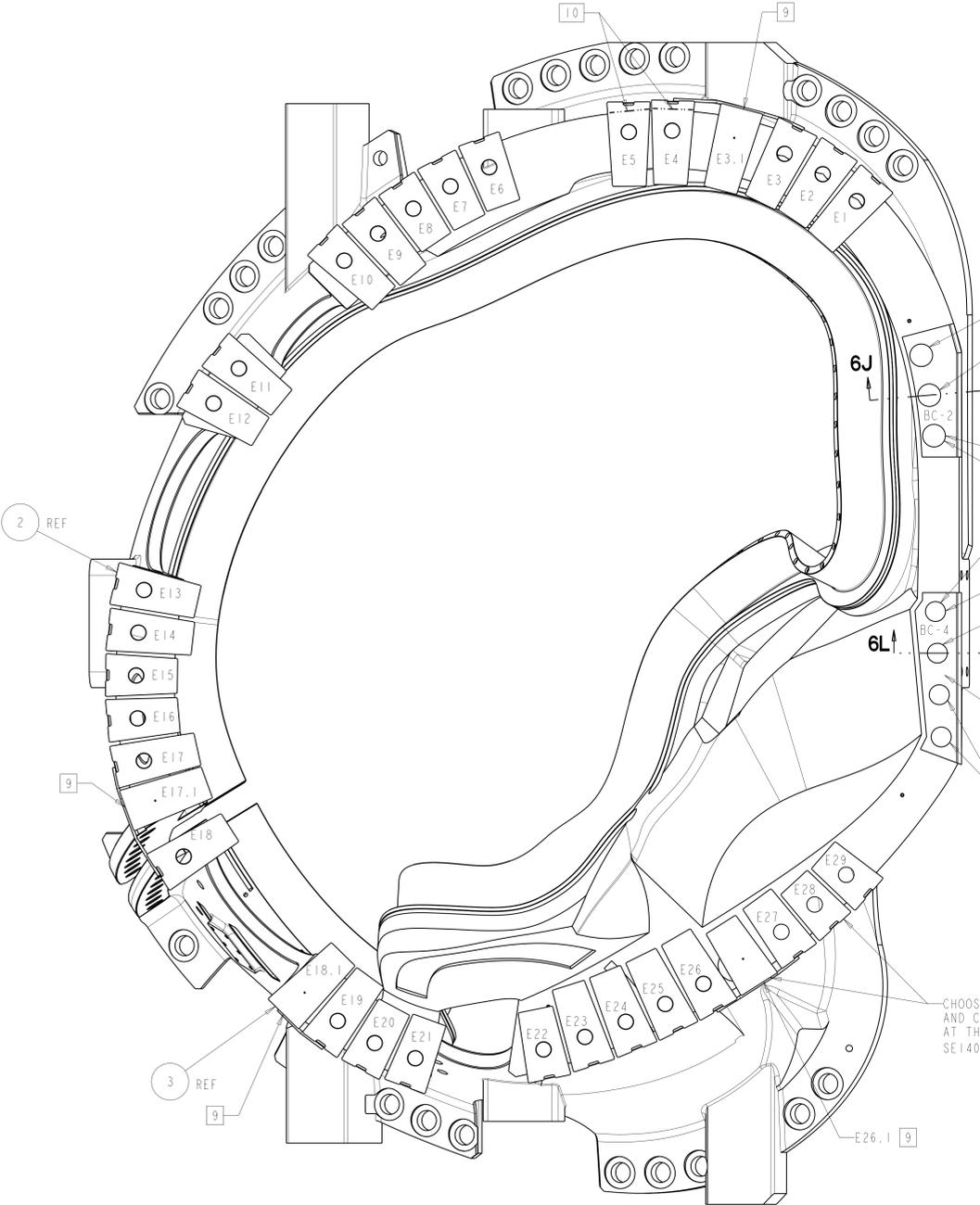
NOTE: MOD COILS SHOW AS PART ONLY FOR CLARITY.  
SHIMS AND SHEAR PLATES TO BE INSTALLED ON  
MOD COIL ASSEMBLIES



RELEASED FOR  
FABRICATION / INSTALLATION  
PPPL Drafting

Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee									
PROJECT NAME <b>NATIONAL COMPACT STELLARATOR EXPERIMENT</b>									
AB-BC MOD COIL SHIM AND SHEAR PLATE KIT									
VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS	U	
19	ORNL	5700	3	2	6	S			
RELEASE LEVEL		SE140-046							
Fabrication									

E29	2.75	
E28	2.75	
E27	3.75	
E26.1		3.75
E26	5.00	
E25	5.00	
E24	5.00	
E23	5.00	
E22	3.75	
E21	3.75	
E20	3.75	
E19	5.00	
E18.1		5.00
E18	5.00	
E17.1		5.00
E17	5.00	
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E13	5.00	
E12	5.00	
E11	5.00	
E10	5.00	
E9	5.00	
E8	3.75	
E7	3.75	
E6	3.75	
E5	5.00	
E4	5.00	
E3.1		5.00
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E2	5.00	
E1	5.00	
HOLE NUMBER	BOLTED SHIM LENGTH	NO. BOLT SHIM LENGTH

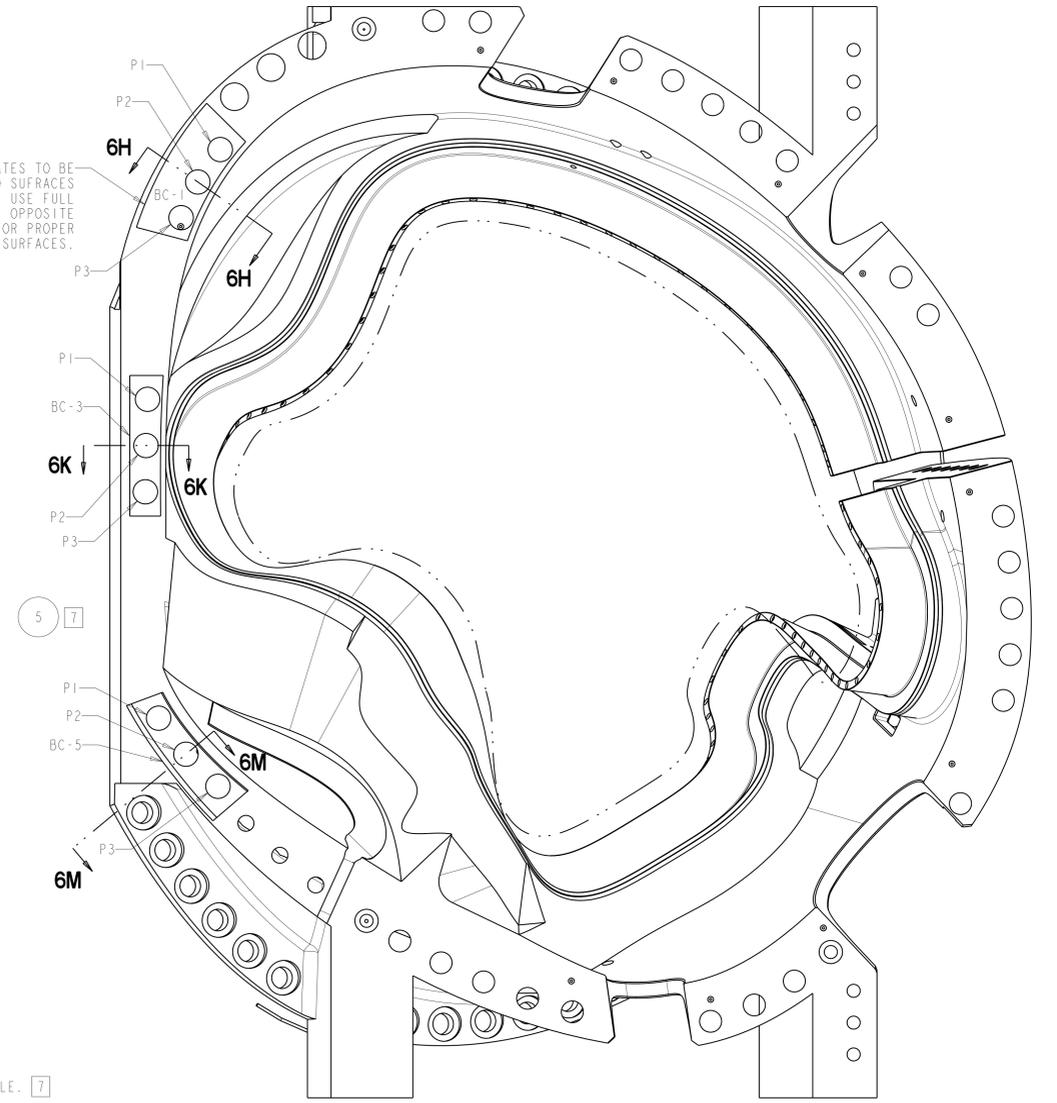


B-C JOINT LOOKING AT THE B COIL C FLANGE  
(C COIL REMOVED)

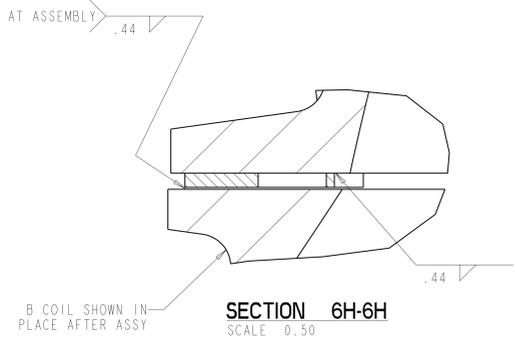
ALL INBOARD SHEAR PLATES TO BE MEASURED/ALIGNED TO MACHINED SURFACES AND TACK WELDED INTO POSITION. USE FULL SCALE TEMPLATE SEE SHEET 6, OPPOSITE EDGES MAY BE GROUND AS REQ'D FOR PROPER FIT TO CASTING SURFACES.

CHOOSE THICKNESS SHIM NECESSARY AND CUT TO LENGTH AS LISTED IN CHART AT THE LEFT OF THIS SHEET. SEE DRAWING SE140-042 FOR CHART OF THICKNESS AVAILABLE. 7

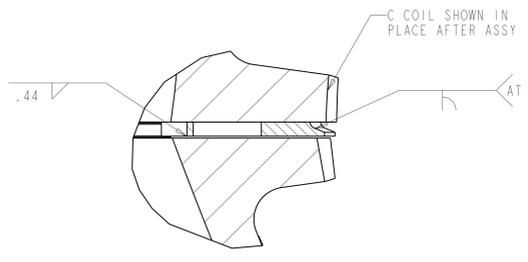
NOTE: MOD COILS SHOW AS PART ONLY FOR CLARITY. SHIMS AND SHEAR PLATES TO BE INSTALLED ON MOD COIL ASSEMBLIES



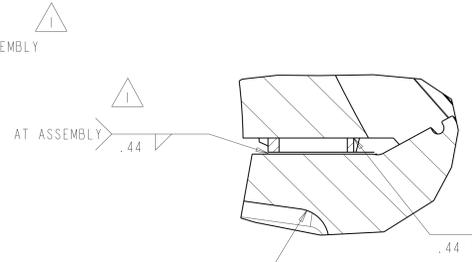
B-C JOINT LOOKING AT THE C COIL B FLANGE  
(B COIL REMOVED)



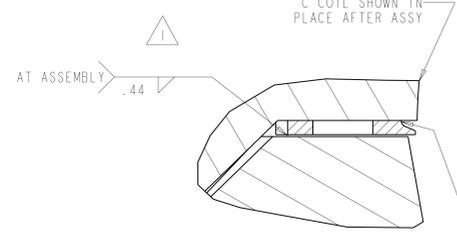
SECTION 6H-6H  
SCALE 0.50



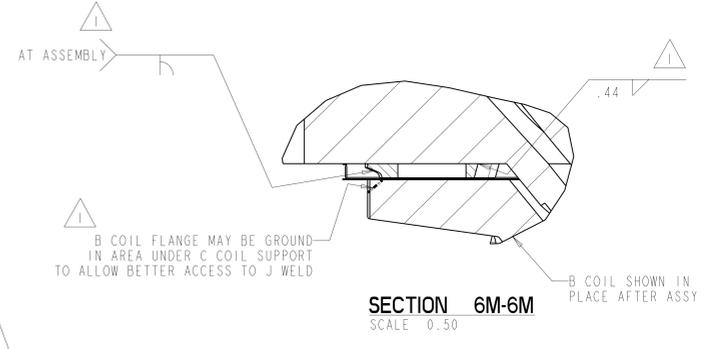
SECTION 6J-6J  
SCALE 0.50



SECTION 6K-6K  
SCALE 0.50



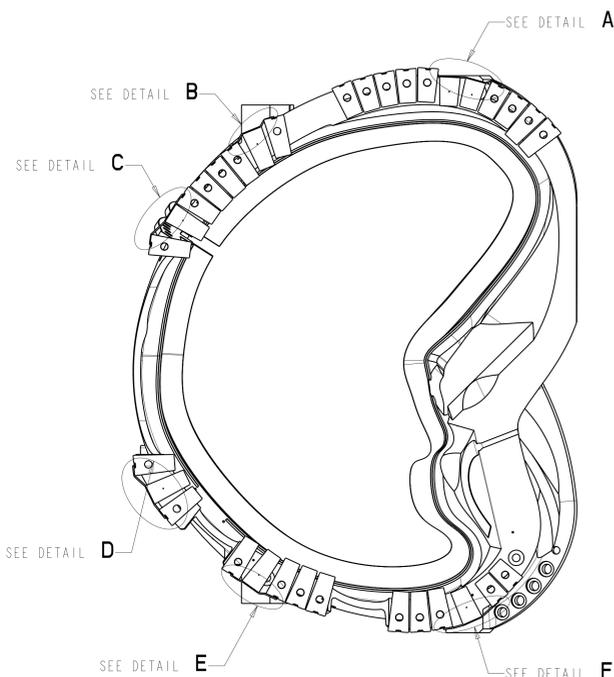
SECTION 6L-6L  
SCALE 0.50



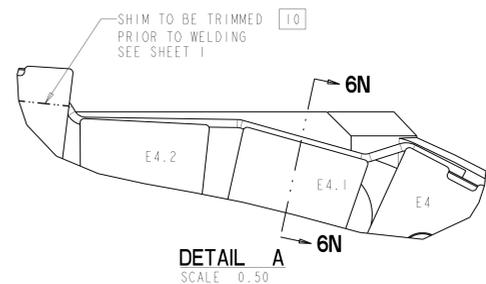
SECTION 6M-6M  
SCALE 0.50

RELEASED FOR FABRICATION / INSTALLATION  
PPPL Drafting:

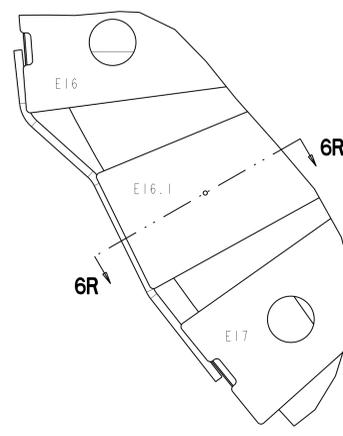
Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725 UT-BATTELLE, LLC. Oak Ridge, Tennessee									
PROJECT NAME									
NATIONAL COMPACT STELLARATOR EXPERIMENT									
AB-BC MOD COIL SHIM AND SHEAR PLATE KIT									
VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS		
19	ORNL	5700	3	3	6	S	U		
RELEASE LEVEL		Fabrication							
		SE140-046							
		REV I							



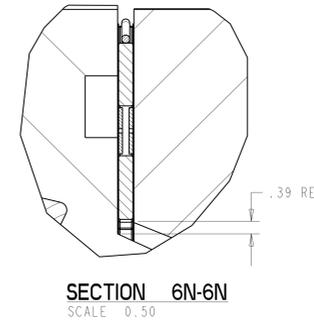
**A COIL B FLANGE  
(B COIL REMOVED)**  
SCALE 0.08



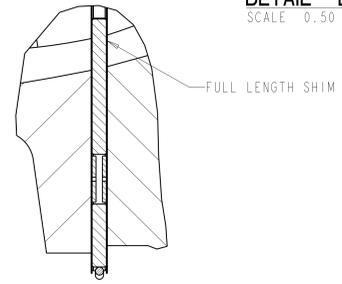
**DETAIL A**  
SCALE 0.50



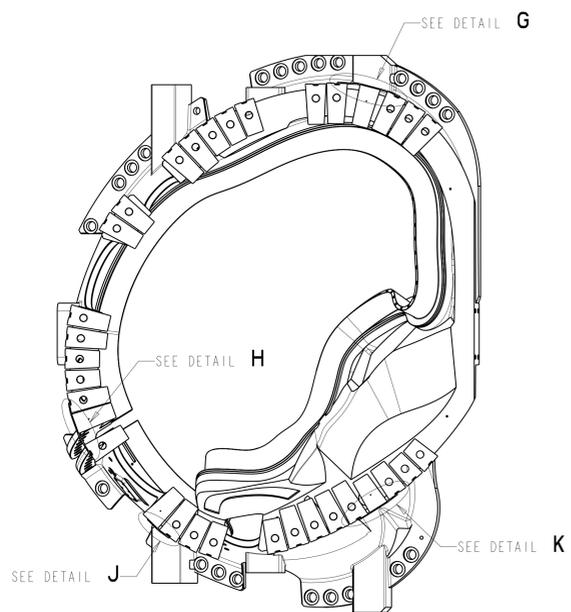
**DETAIL D**  
SCALE 0.50



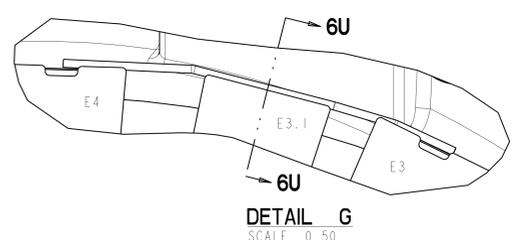
**SECTION 6N-6N**  
SCALE 0.50



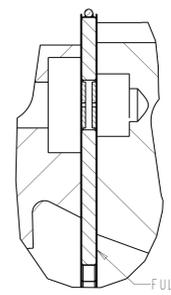
**SECTION 6R-6R**  
SCALE 0.50



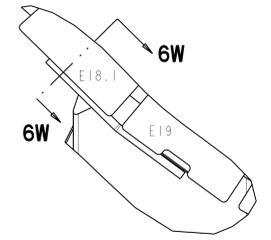
**B COIL C FLANGE  
(C COIL REMOVED)**  
SCALE 0.08



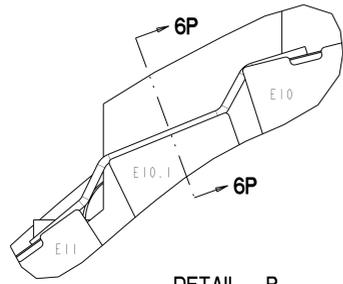
**DETAIL G**  
SCALE 0.50



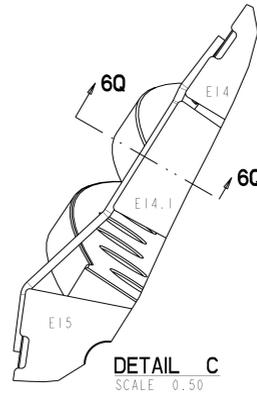
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SCALE 0.50



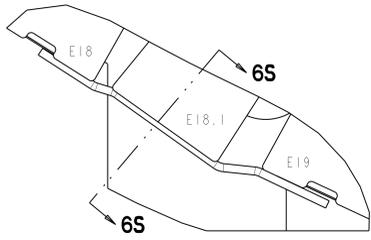
**DETAIL J**  
SCALE 0.50



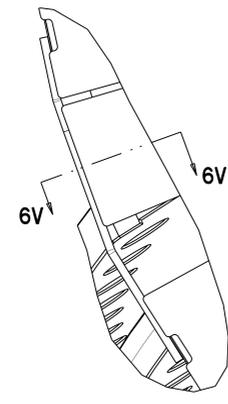
**DETAIL B**  
SCALE 0.50



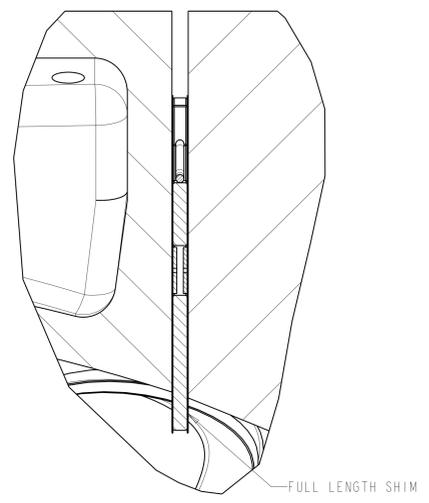
**DETAIL C**  
SCALE 0.50



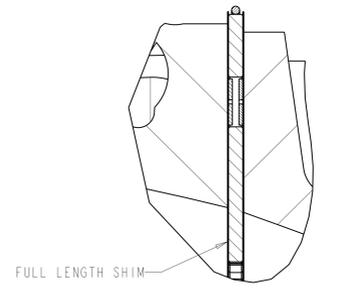
**DETAIL E**  
SCALE 0.50



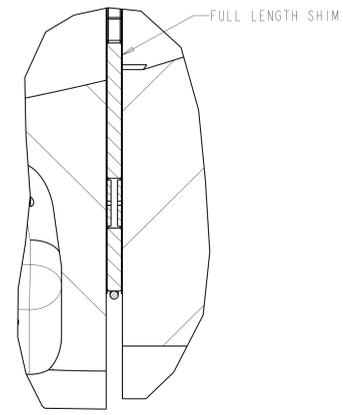
**DETAIL H**  
SCALE 0.50



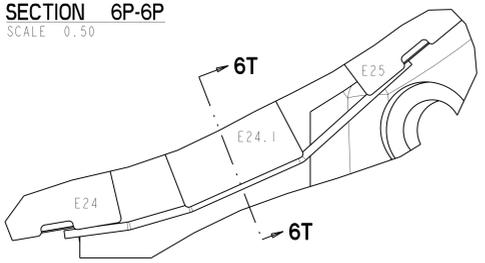
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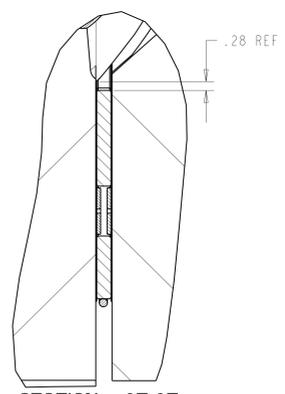
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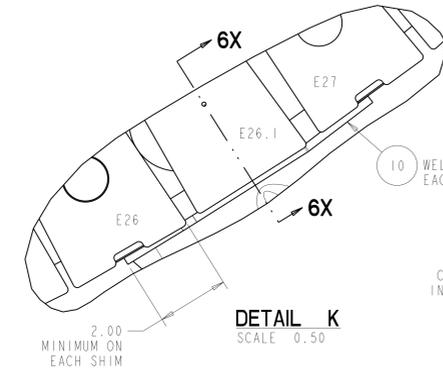
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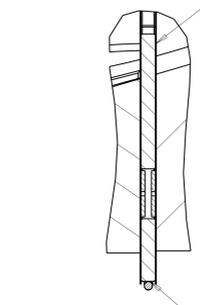
**DETAIL F**  
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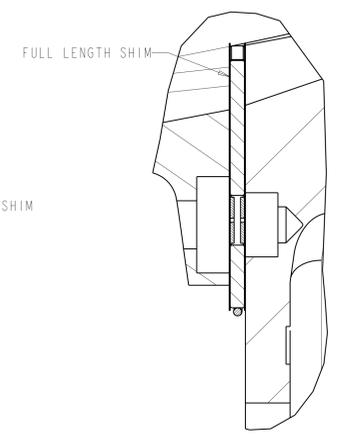
**SECTION 6T-6T**  
SCALE 0.50



**DETAIL K**  
SCALE 0.50



**SECTION 6V-6V**  
SCALE 0.50



**SECTION 6W-6W**  
SCALE 0.50

NOTE: INFORMATION IN THIS AREA  
TYPICAL FOR ALL WELD BARS



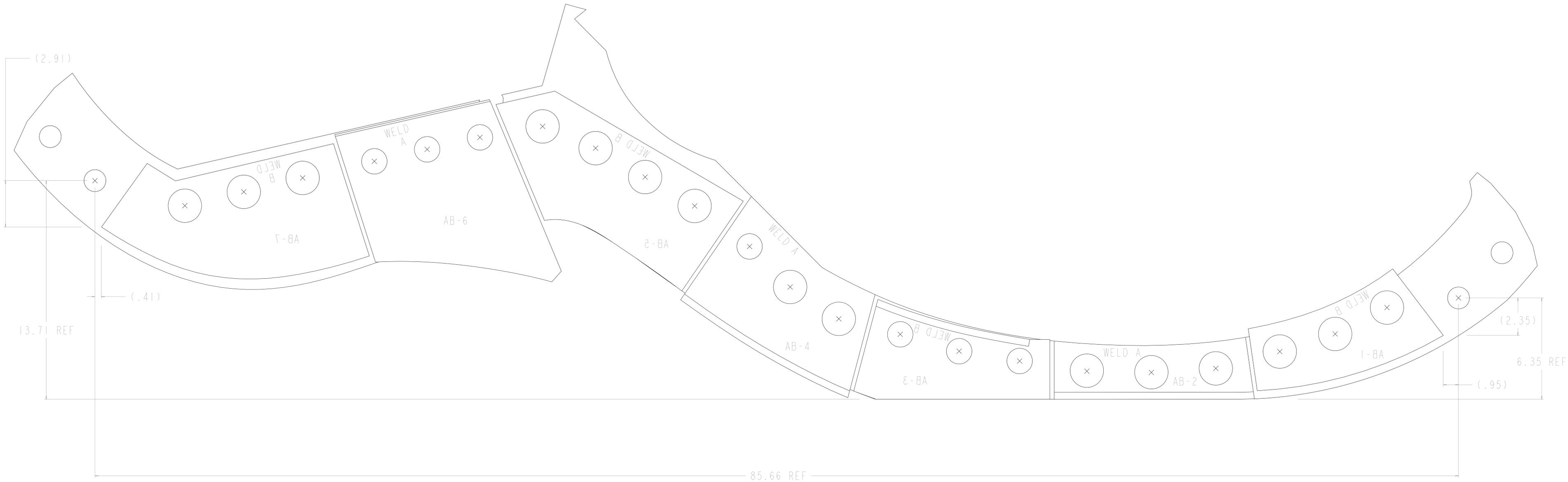
**SECTION 6X-6X**  
SCALE 0.50

COVER ALL WELD BARS IMBEDDED  
INSIDE FLANGES WITH APPROVED  
INSULATING MATERIAL

NOTE: BOTH ADJACENT COILS ARE  
SHOWN AS ASSEMBLED IN SECTIONS

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FABRICATION / INSTALLATION

Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725 UT-BATTELLE, LLC. Oak Ridge, Tennessee									
PROJECT NAME <b>NATIONAL COMPACT STELLARATOR EXPERIMENT</b>									
AB-BC MOD COIL SHIM AND SHEAR PLATE KIT									
VERSION NO. 19	PLANT ORNL	BLDG 5700	FL 3	SHT 4	OF 6	TYPE S	CLASS U		
RELEASE LEVEL Fabrication		SE140-046						REV 1	



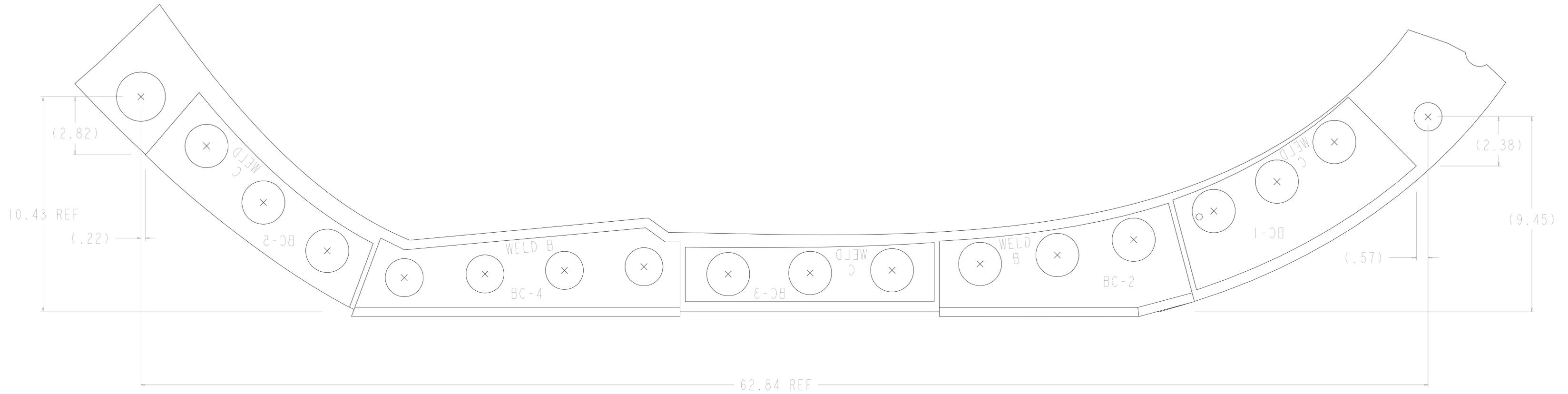
**A-B SHEAR PLATE LOCATION TEMPLATE - A COIL B FLANGE**

SCALE 1 : 1

**CHECK TEMPLATE WITH REF DIMENSIONS  
SHOWN TO VERIFY PROPER SCALE**

RELEASED FOR  
FABRICATION/INSTALLATION  
PPTL Drafting

UT-BATTELLE		Oak Ridge National Laboratory P.O. Box 21708, Knoxville, TN 37921-0708 615/576-8400	
NATIONAL COMPACT STELLARATOR EXPERIMENT			
AB-BC MOD COIL SHIM AND SHEAR PLATE KIT			
REVISED BY	REVISED DATE	REVISED BY	REVISED DATE
ORNL	5700	3	5
Fabrication		SE140-046	



## B-C SHEAR PLATE LOCATION TEMPLATE - B COIL C FLANGE

SCALE 1 : 1

CHECK TEMPLATE WITH REF DIMENSIONS  
SHOWN TO VERIFY PROPER SCALE

RELEASED FOR  
FABRICATION/INSTALLATION  
PPPL Drawing

Oak Ridge National Laboratory  
managed for the DEPARTMENT OF ENERGY  
by UT-BATTELLE, a UT-BATTELLE, LLC, Oak Ridge, Tennessee  
NATIONAL COMPACT STELLARATOR EXPERIMENT

AB-BC MOD COIL SHIM AND  
SHEAR PLATE KIT

VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS
19	ORNL	5700	3	6	6	S	U
RELEASED FOR FABRICATION							SE140-046