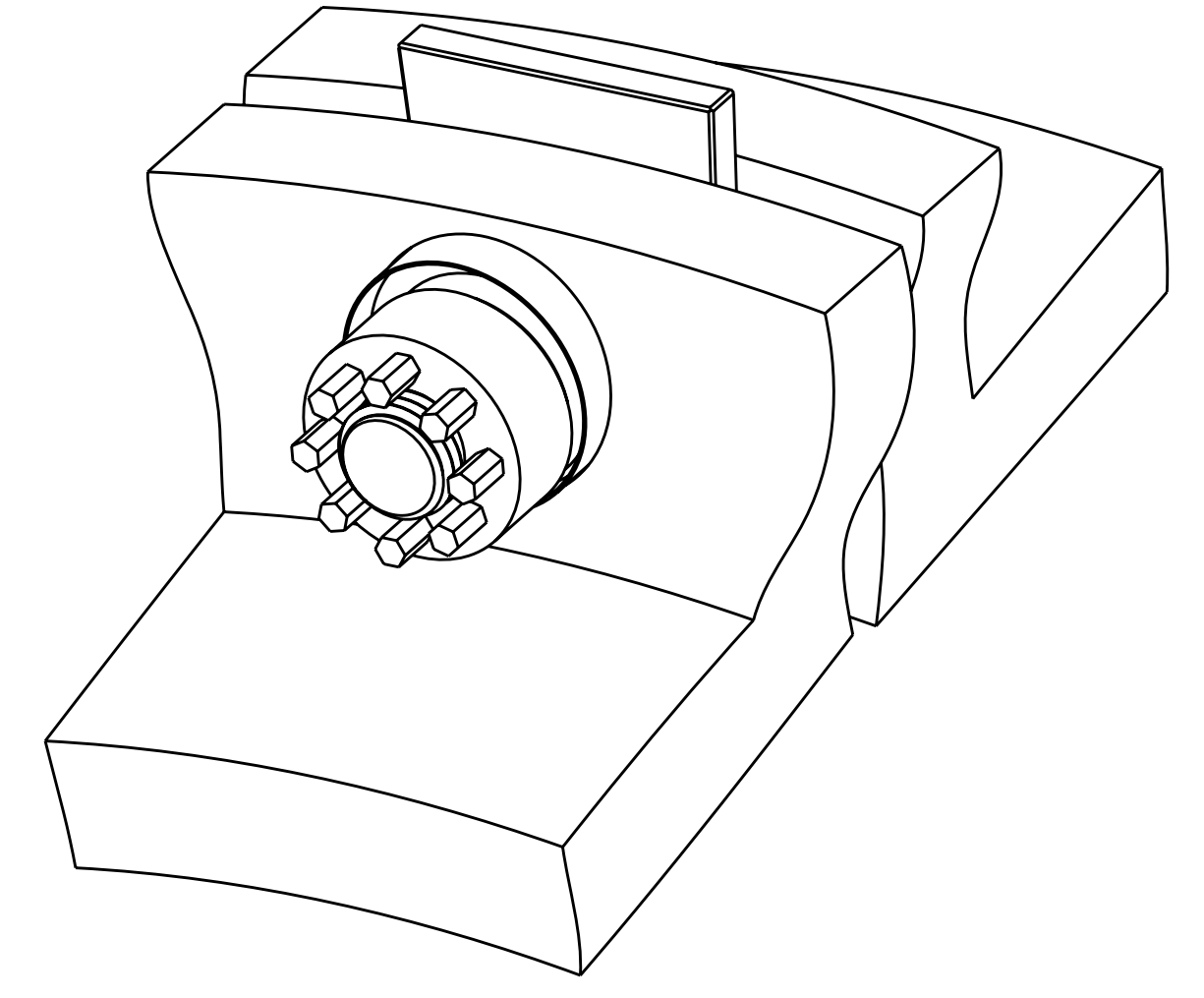
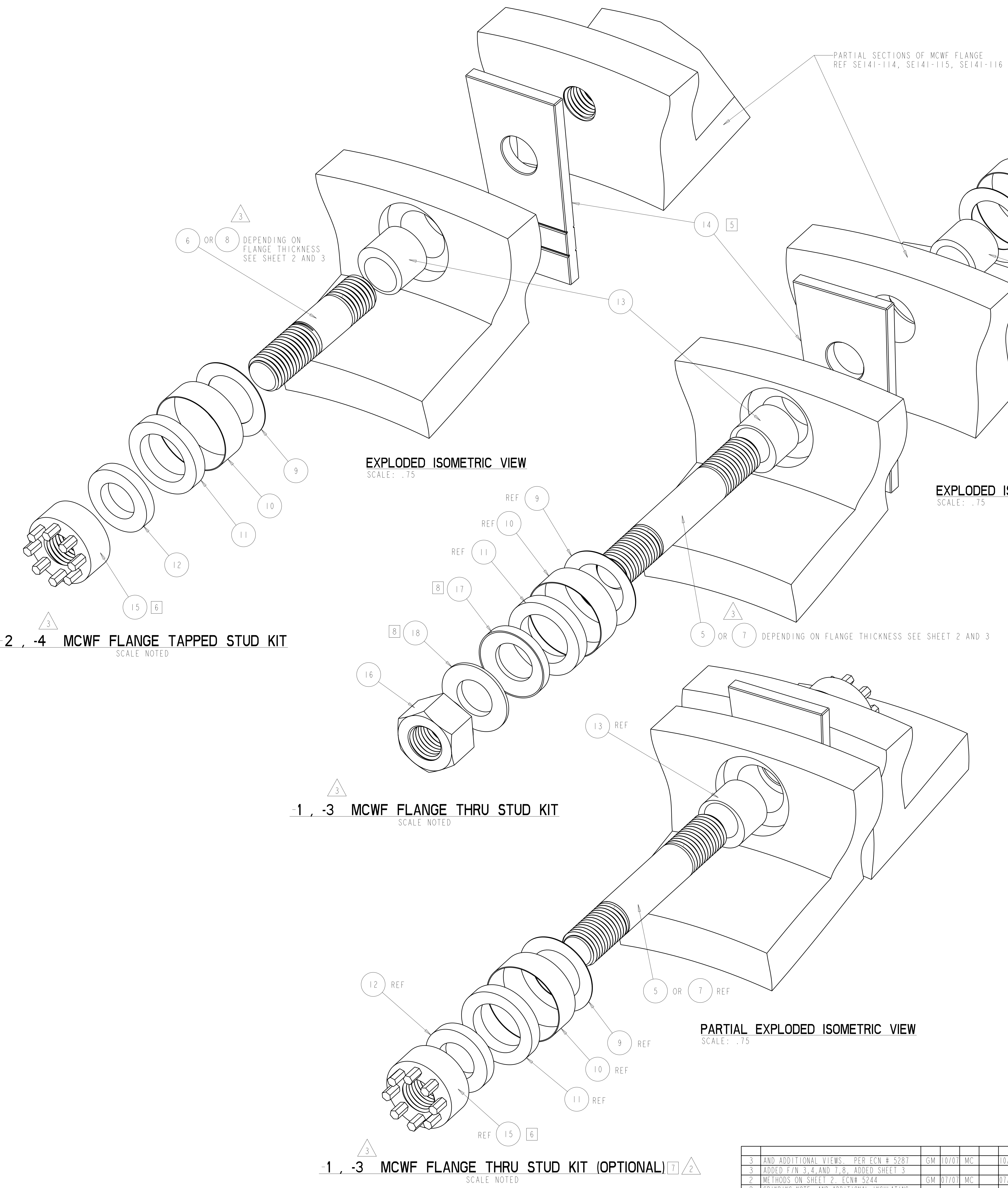


- NOTES
- DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.100-2004.
 - INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994.
 - DIMENSIONS ARE IN INCHES
 - MAGNETIC PERMEABILITY NOT TO EXCEED 1.02 AS TESTED BY A SEVERN INDICATOR. AVAILABLE FROM:
SEVERN ENGINEERING
AUBURN, ALABAMA 36830
WWW.SEVERNENGINEERING.COM
 - SHIM SIZES DEPENDENT ON LOCATION AT ASSEMBLIES SE140-003, SE100-002, AND SE100-001. CUT AT CUT LINES AS REQUIRED.
 - FASTENER PRELOAD REQUIREMENT IS 72000 ±1000 LB USING ULTRASONIC INSPECTION
 - OPTIONAL SUPERNUT ON BOTH SIDES OF THRU BOLT CONFIGURATION USE F/N 15 IN PLACE OF F/N 16, F/N 12 IN PLACE OF F/N 17 & 18.
 - LUBRICATE MATING SURFACE OF F/N 17 & 18 WITH F/N 19, MOLYKOTE Z MOLY POWDER.



-2, -4 MCWF FLANGE TAPPED STUD KIT
SCALE NOTED

-1, -3 MCWF FLANGE THRU STUD KIT
SCALE NOTED

-1, -3 MCWF FLANGE THRU STUD KIT (OPTIONAL)
SCALE NOTED

2	AR	AR	AR	AR	-17	INSULATING SHEET	G-10CR SHEET .015 THICK	JJ ORLY, INC CLARK, NJ 07066 732-382-4500 WWW.JJORLY.COM	21
2	AR	AR	AR	AR	-16	ADHESIVE	CTD-540	COMPOSITE TECHNOLOGY DEVELOPMENT, INC LAFAYETTE, CO 80026 303-664-0394 WWW.CTD-MATERIALS.COM	20
8	AR	AR	AR	AR	-15	DRY LUBRICANT	MOLYKOTE Z MOLY POWDER	MOTION INDUSTRIES KNOXVILLE, TN 37919 865-546-1104 WWW.DOWNCORNING.COM	19
7		-1	-1		SE140-194-2	MALE SPHERICAL WASHER			18
7		-1	-1		SE140-194-1	FEMALE SPHERICAL WASHER			17
1	7				-12	1-3/8 -6 UNC HEX NUT	UNS S66286 (A286) OR UNS S20910 (NITRONIC 50) DEPENDING ON COST/AVAIL	ASTM A453 GRADE 660B OR ASTM A276	16
2	6				S-02200	1-3/8 -6 SUPER NUT		SUPERBOLT, INC CARNEGIE, PA 15106 412-279-1149 WWW.SUPERBOLT.COM	15
5		AR	AR	AR	AR	SE140-040-1	SINGLE HOLE SHIM		14
		1	2	1	2	SE140-195-1	BUSHING		13
2		1	2	1	2	SE140-208	FLAT WASHER		12
		1	2	1	2	SE140-193	FLAT WASHER		11
2		1	2	1	2	SE140-192-2	INSULATING SLEEVE		10
		1	2	1	2	SE140-192-1	INSULATING WASHER		9
3		1				SE140-191-4	1-3/8" X 5.75LG STUD		8
			1			SE140-191-3	1-3/8" X 8.50LG STUD		7
				1		SE140-191-2	1-3/8" X 5.60LG STUD		6
					1	SE140-191-1	1-3/8" X 8.00LG STUD		5
3	AR	AR				-4	MCWF FLANGE TAPPED STUD KIT		4
	AR	-AR				-3	MCWF FLANGE THRU STUD KIT		3
	AR	AR				-2	MCWF FLANGE TAPPED STUD KIT		2
	AR	-AR				-1	MCWF FLANGE THRU STUD KIT		1

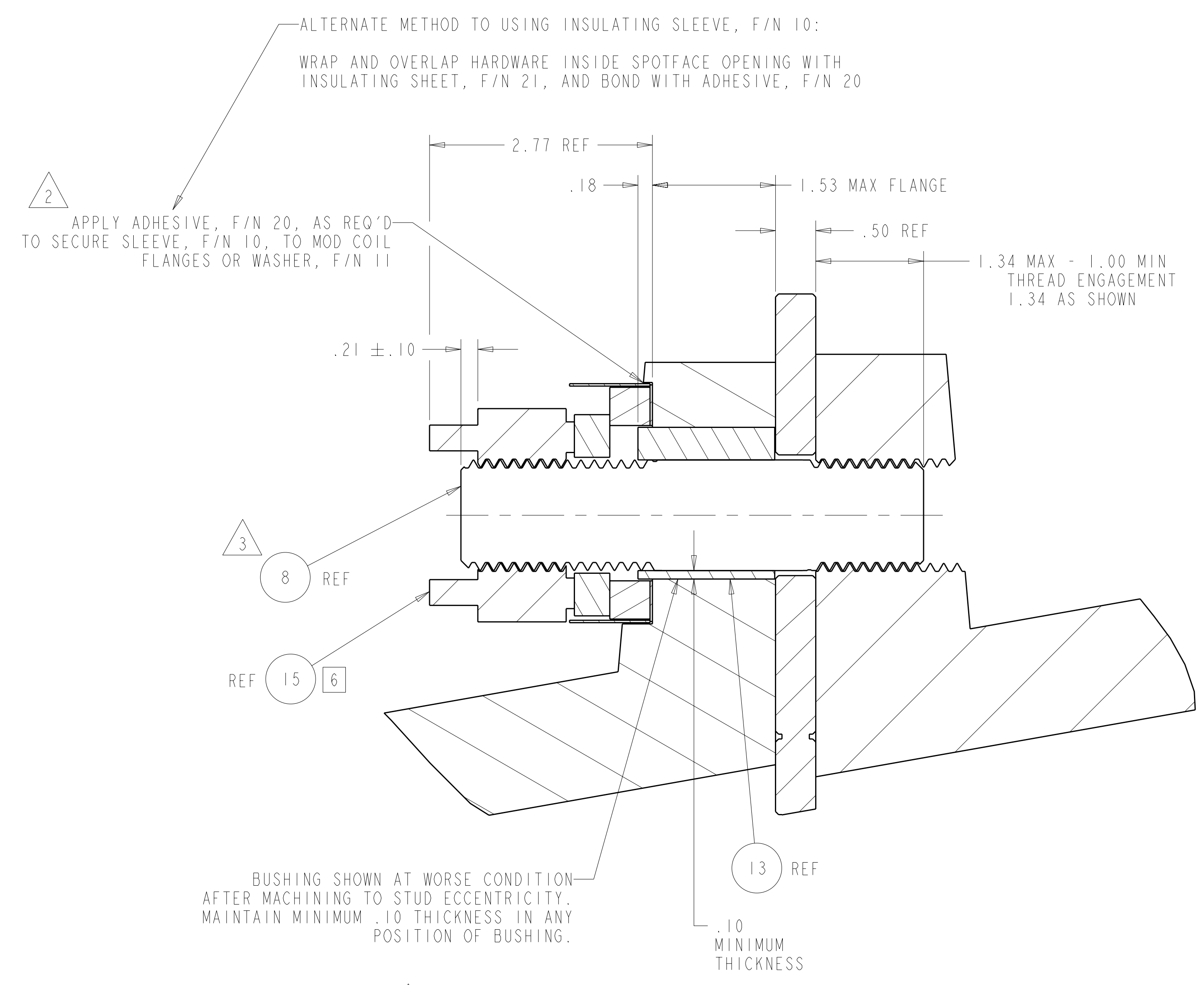
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PPPL Drafting

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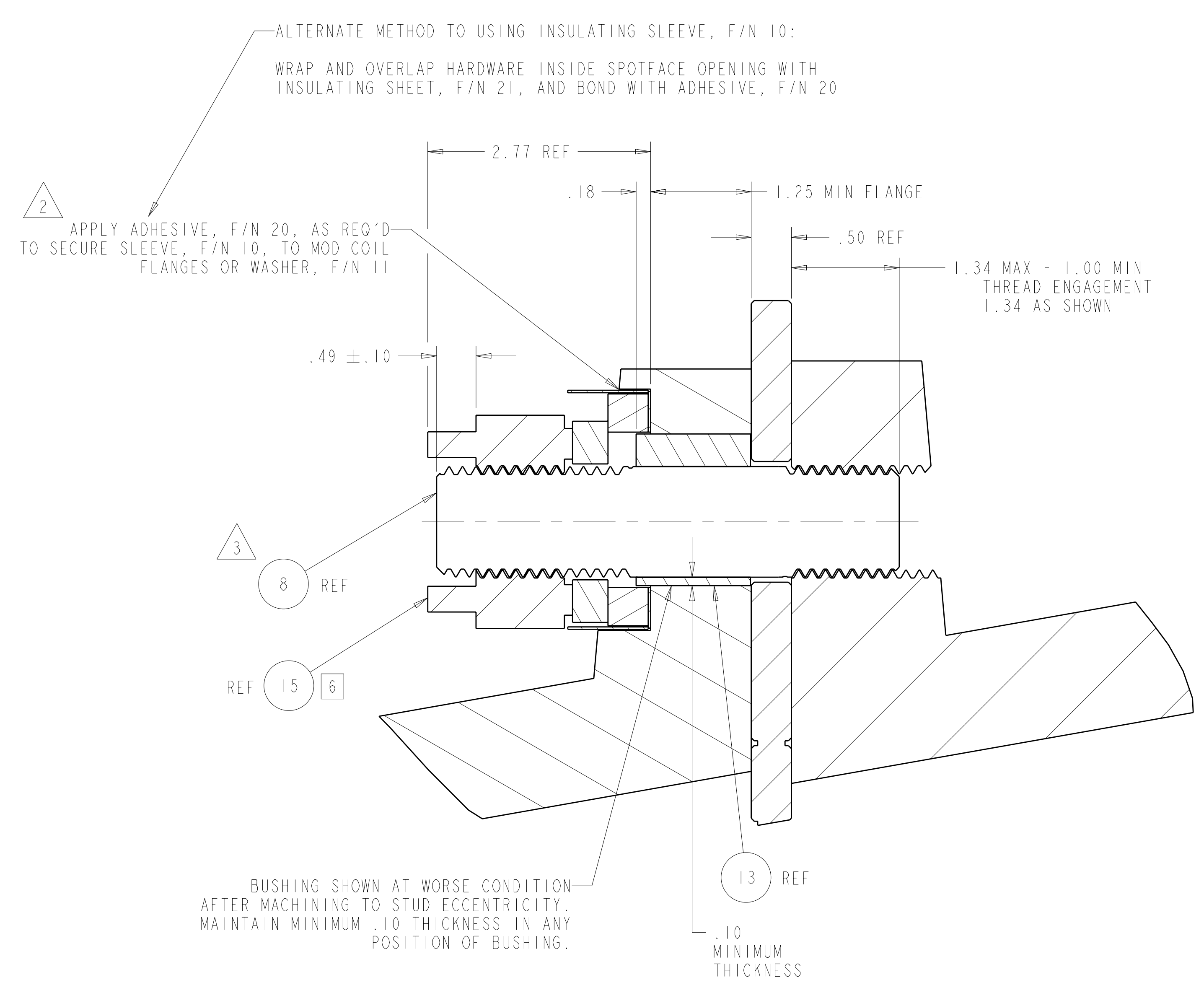
P THIS DRAWING PRODUCED ON PRO-ENGINEER

3	AND ADDITIONAL VIEWS, PER ECN # 5287	GM	10/07	MC		10/07												
3	ADDED F/N 3, 4 AND 7, 8, ADDED SHEET 3																	
2	METHODS ON SHEET 2, ECN# 5244	GM	07/07	MC		07/07	DW		07/07									
2	GRINDING NOTE AND ADDITIONAL INSULATING																	
2	ADDED OPTIONAL THRU BOLT CONFIGURATION																	
2	ADHESIVE, F/N 16, AND INS SHEET, F/N 17																	
2	SUPERNUT, F/N 11, WASHER, F/N 8, SLEEVE, F/N 6																	
2	DELETED 12 PT NUT & SHIM BUSHING, ADDED																	
1	REVISED MATL AND NOTES PER ECN-5232	DW	3/07	MC														
0	ORIGINAL ISSUE	GM	02/07															
REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REQ	DATE	ORNL	DOE	DATE						
	REVISION OR ISSUE PURPOSE																	

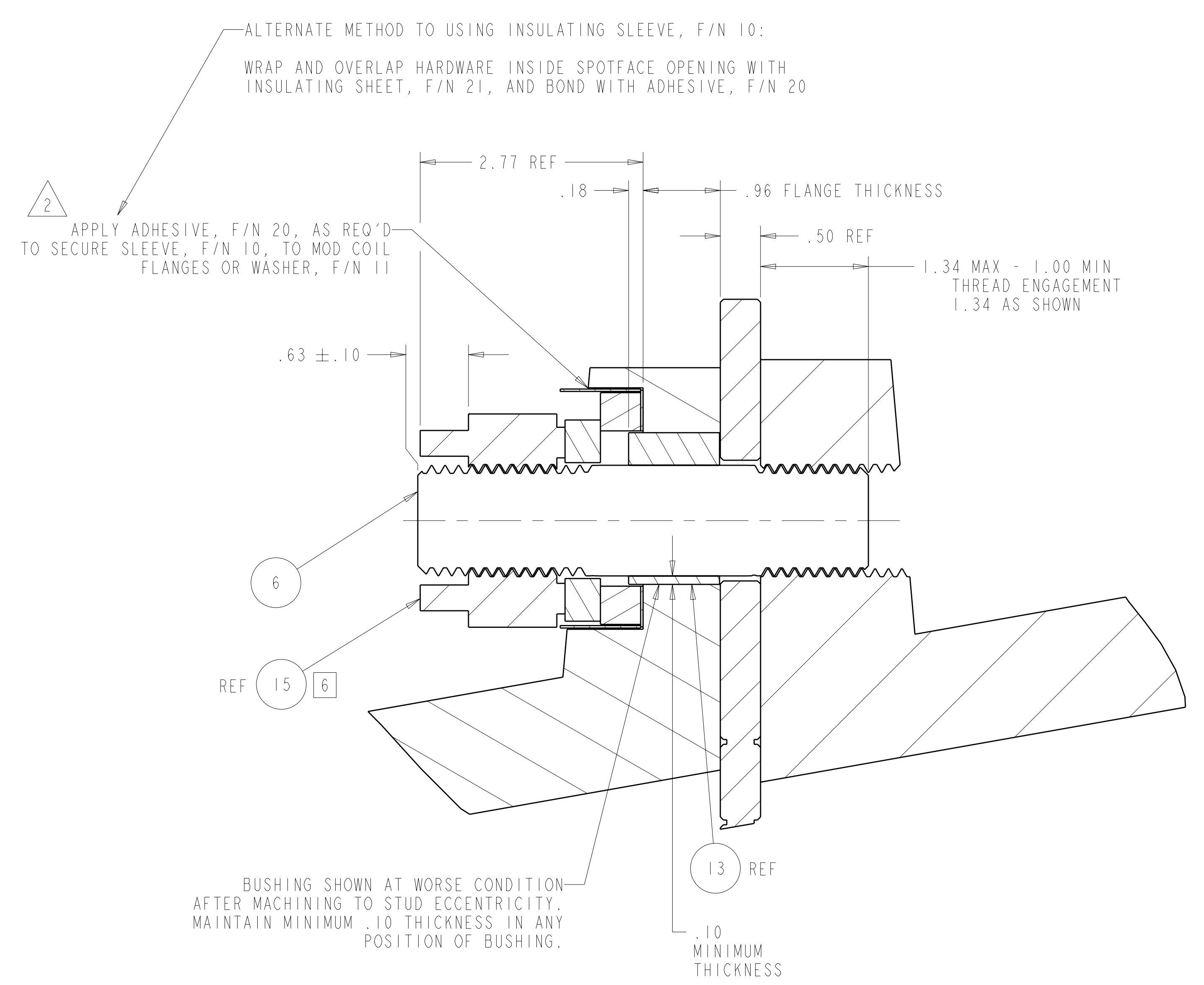
SCALE NOTED		DES D WILLIAMSON 02/07	Oak Ridge National Laboratory managed by the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC. Oak Ridge, Tennessee	
TOLERANCES UNLESS OTHERWISE SPECIFIED		DRW G MCGINNIS 02/07	PROJECT NAME	
FRACTIONS 1/16		CHK M COLE	NATIONAL COMPACT STELLARATOR EXPERIMENT	
XX DECIMALS ±.01		DEPT :	MCWF FLANGE STUD KITS	
XXX DECIMALS ±.005		FE :	VERSION NO. 3	
ANGLES ±0°15'		CR :	PLANT ORNL	
BREAK SHARP EDGES OR MAX		PJ :	BLDG 5700	
FINISH .125 UNLESS OTHERWISE SPECIFIED		RD :	FL 3	
		REO :	SHT 1	
		PPPL DRFT J SIEGEL 02/07	OF 3	
			TYPE A	
			CLASS U	
			RELEASE LEVEL	
			Fabrication	
			SE140-190	
			REV 3	



-4 TAPPED BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THICKER MAXIMUM FLANGE THICKNESS 1.53 SHOWN
SCALE 1.00



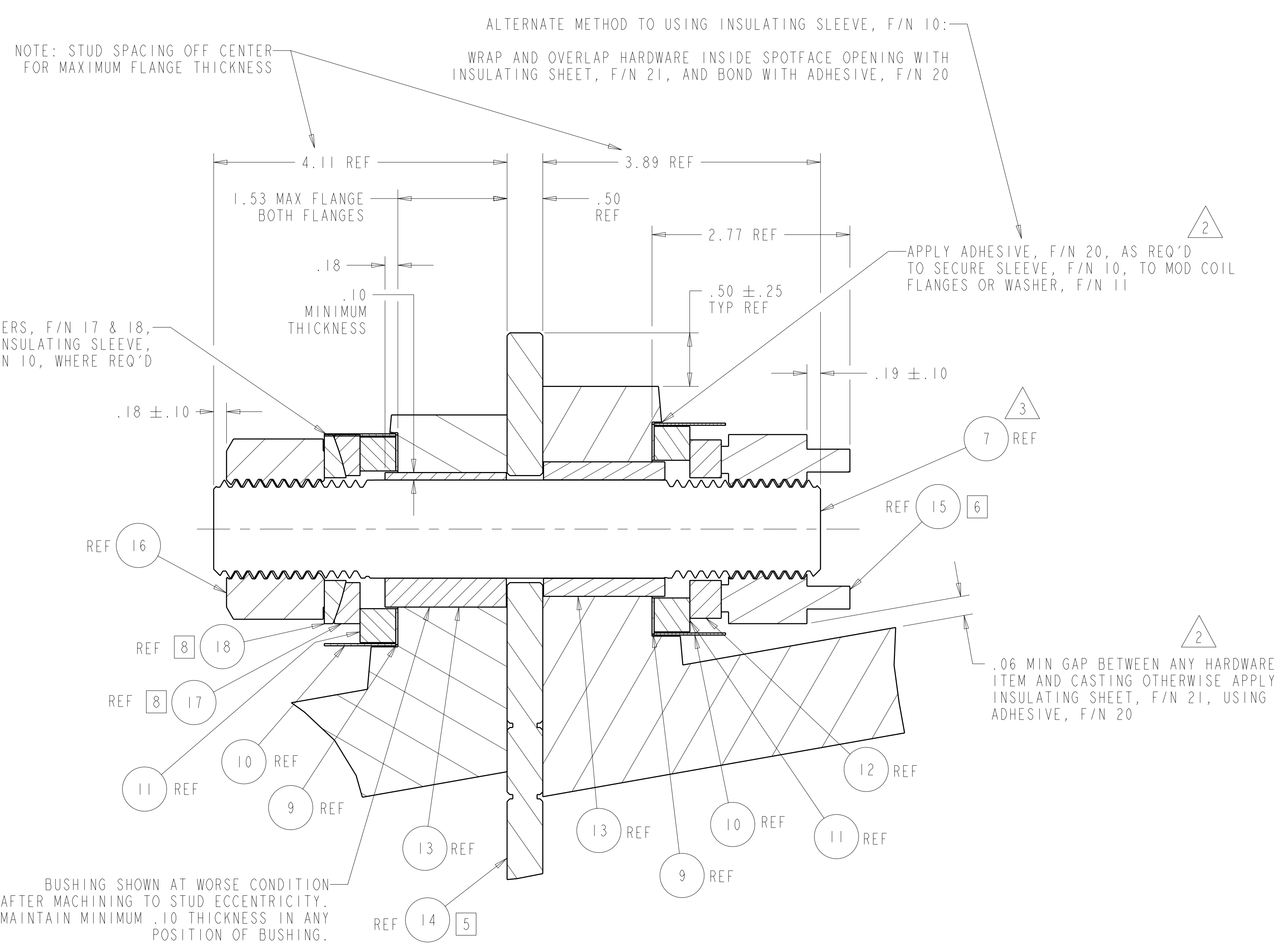
-4 TAPPED BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THICKER MINIMUM FLANGE THICKNESS 1.25 SHOWN
SCALE 1.00



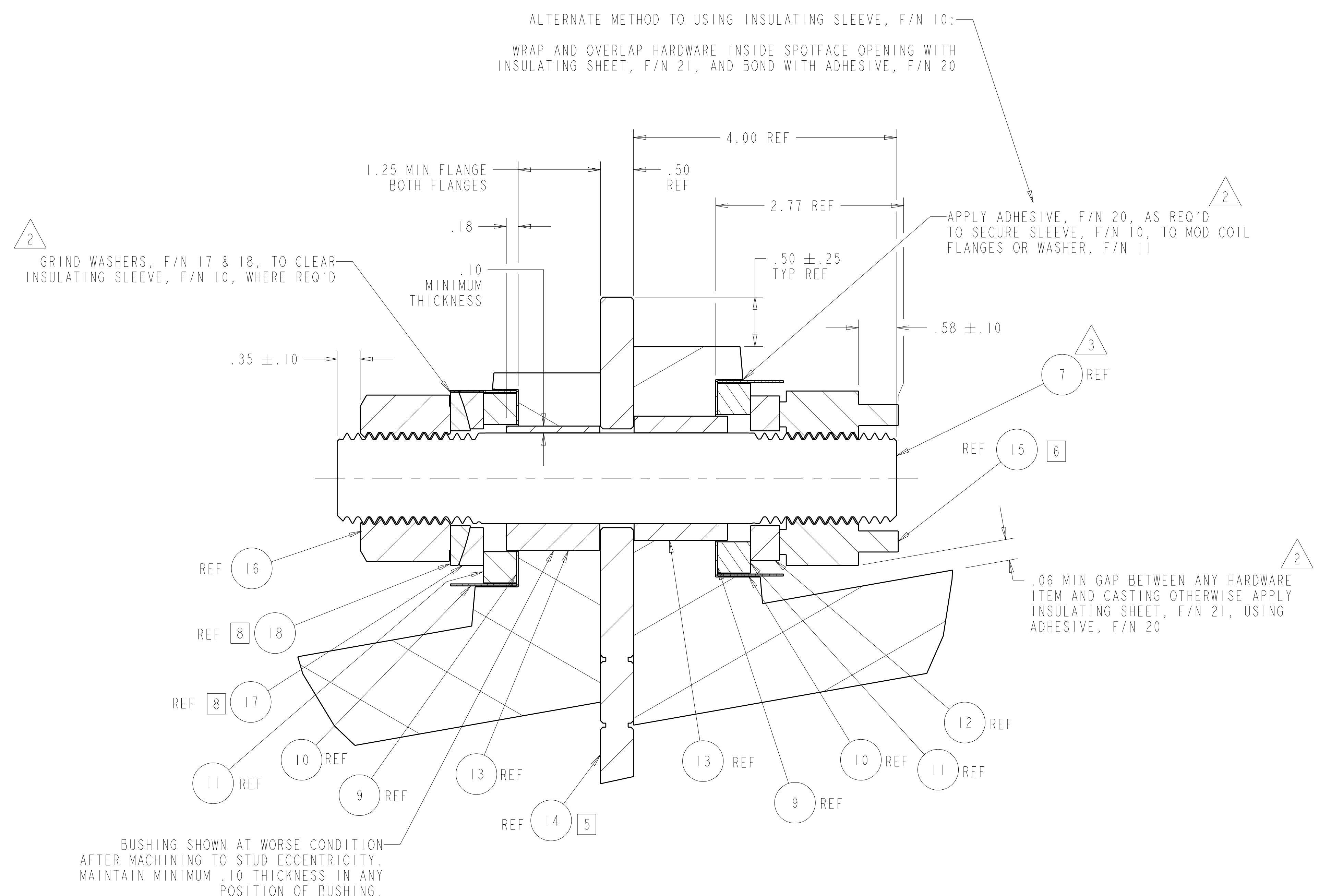
-2 TAPPED BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THINNER FLANGE THICKNESS .96 SHOWN
SCALE 1.00

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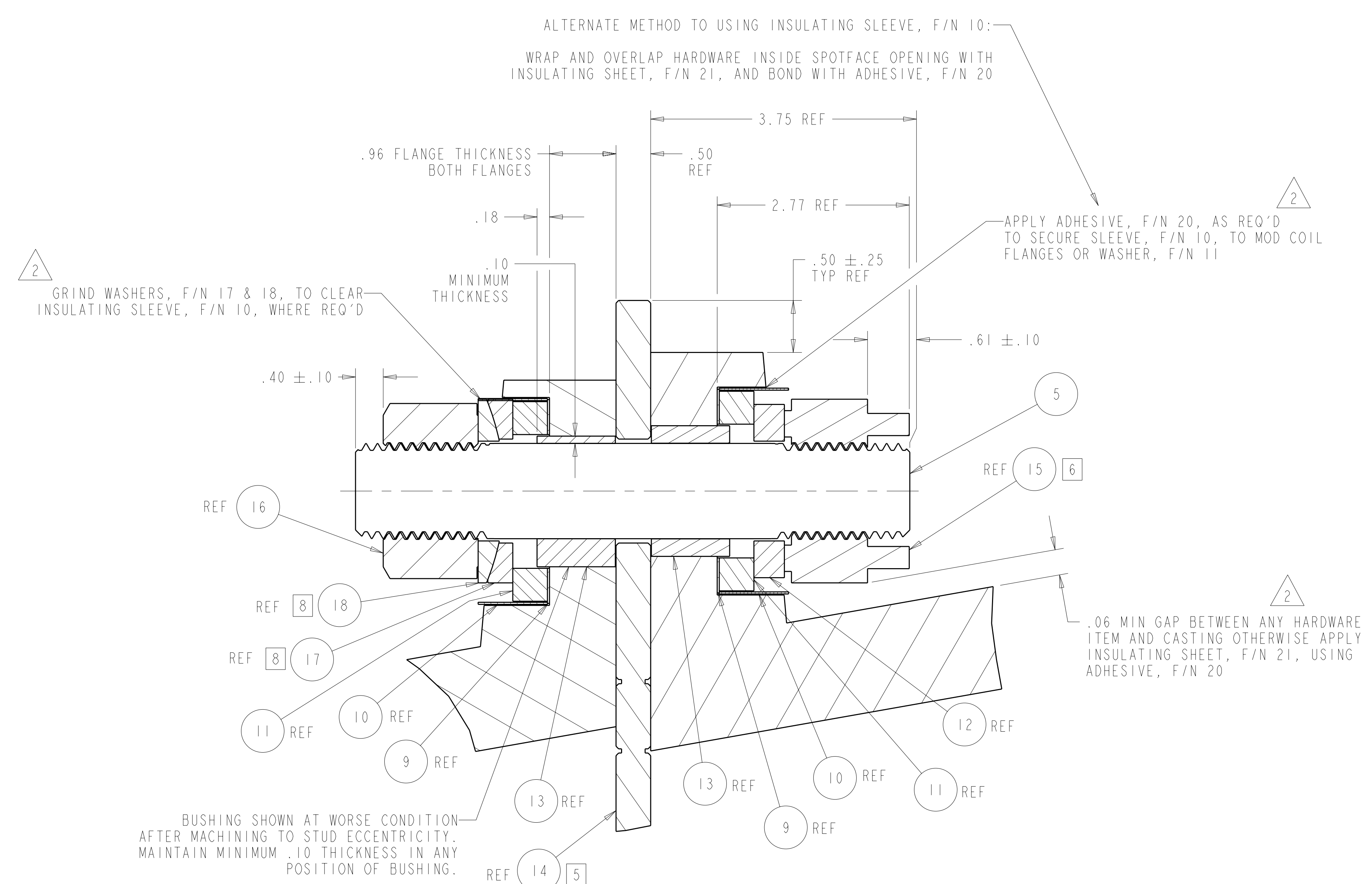
Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC. Oak Ridge, Tennessee										
PROJECT NAME NATIONAL COMPACT STELLARATOR EXPERIMENT										
MCWF FLANGE STUD KITS										
VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS			
3	ORNL	5700	3	2	3	A	U			
RELEASE LEVEL		SE140-190					REV		3	
Fabrication										



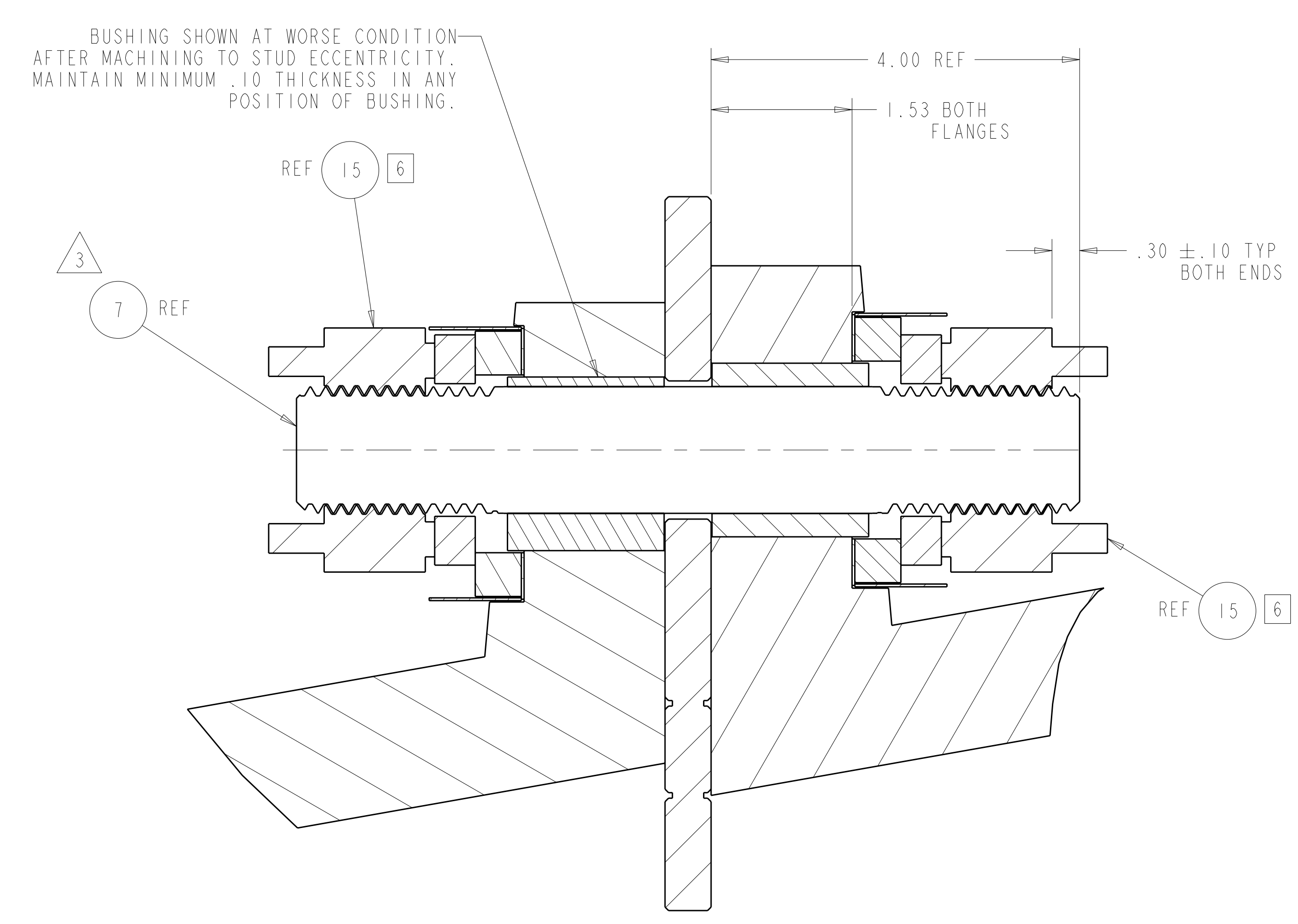
-3 THRU BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THICKER - MAXIMUM FLANGE THICKNESS 1.53 SHOWN
SCALE 1.00



-3 THRU BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THICKER - MINIMUM FLANGE THICKNESS 1.25 SHOWN
SCALE 1.00



-1 THRU BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THINNER - FLANGE THICKNESS .96 SHOWN
SCALE 1.00



-3 THRU BOLT SECTION (OPTIONAL - 2 SUPERNUTS) SHOWN AT MAXIMUM FLANGE THICKNESS
SCALE 1.00

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PROJECT NAME NATIONAL COMPACT STELLARATOR EXPERIMENT									
ITEM NAME MCWF FLANGE STUD KITS									
VERSION NO. 3	PLANT ORNL	BLDG 5700	FL 3	SHT OF 3	TYPE A	CLASS U			
RELEASE LEVEL Fabrication		SE140-190				REV 3			