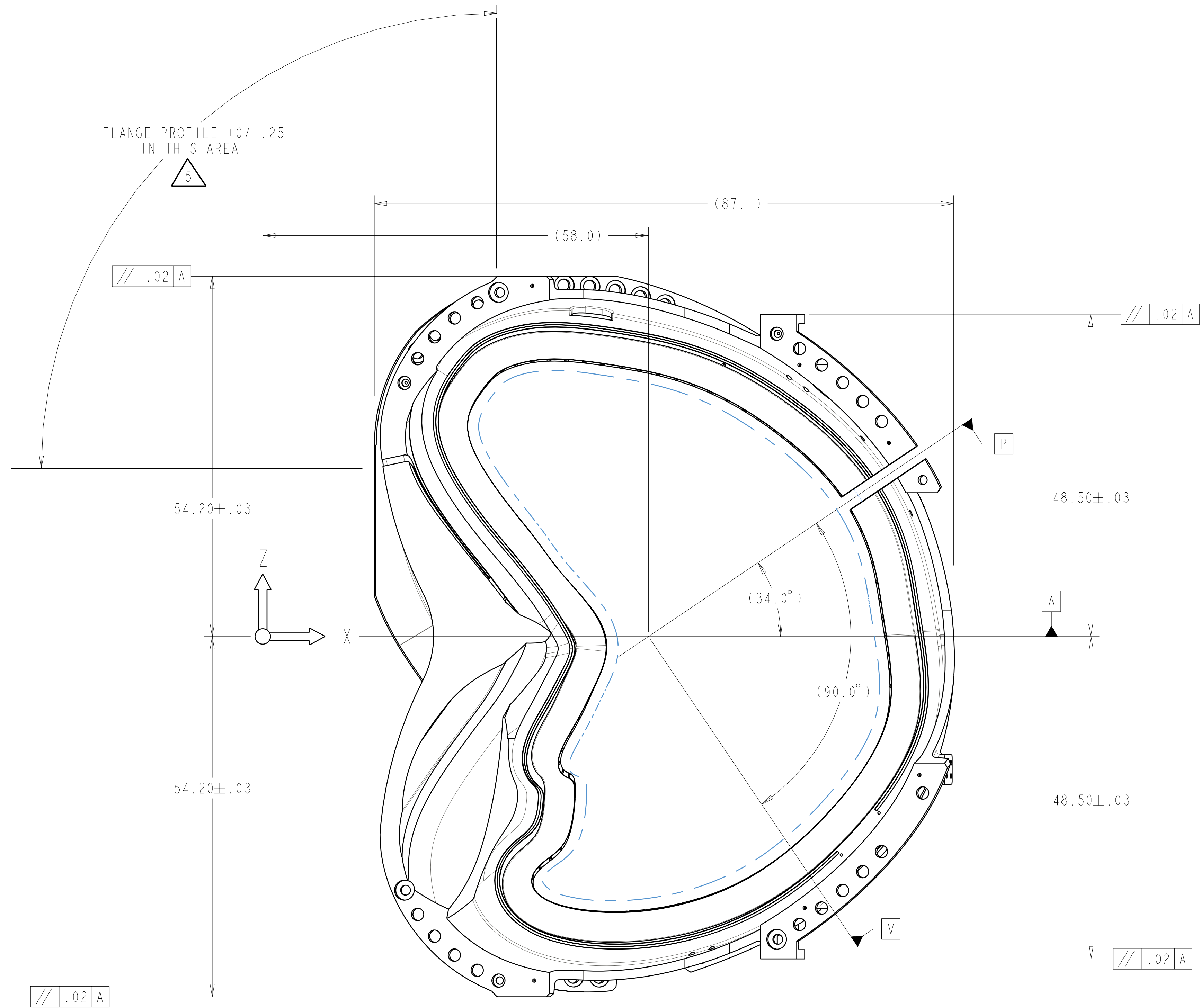


ISOMETRIC VIEW



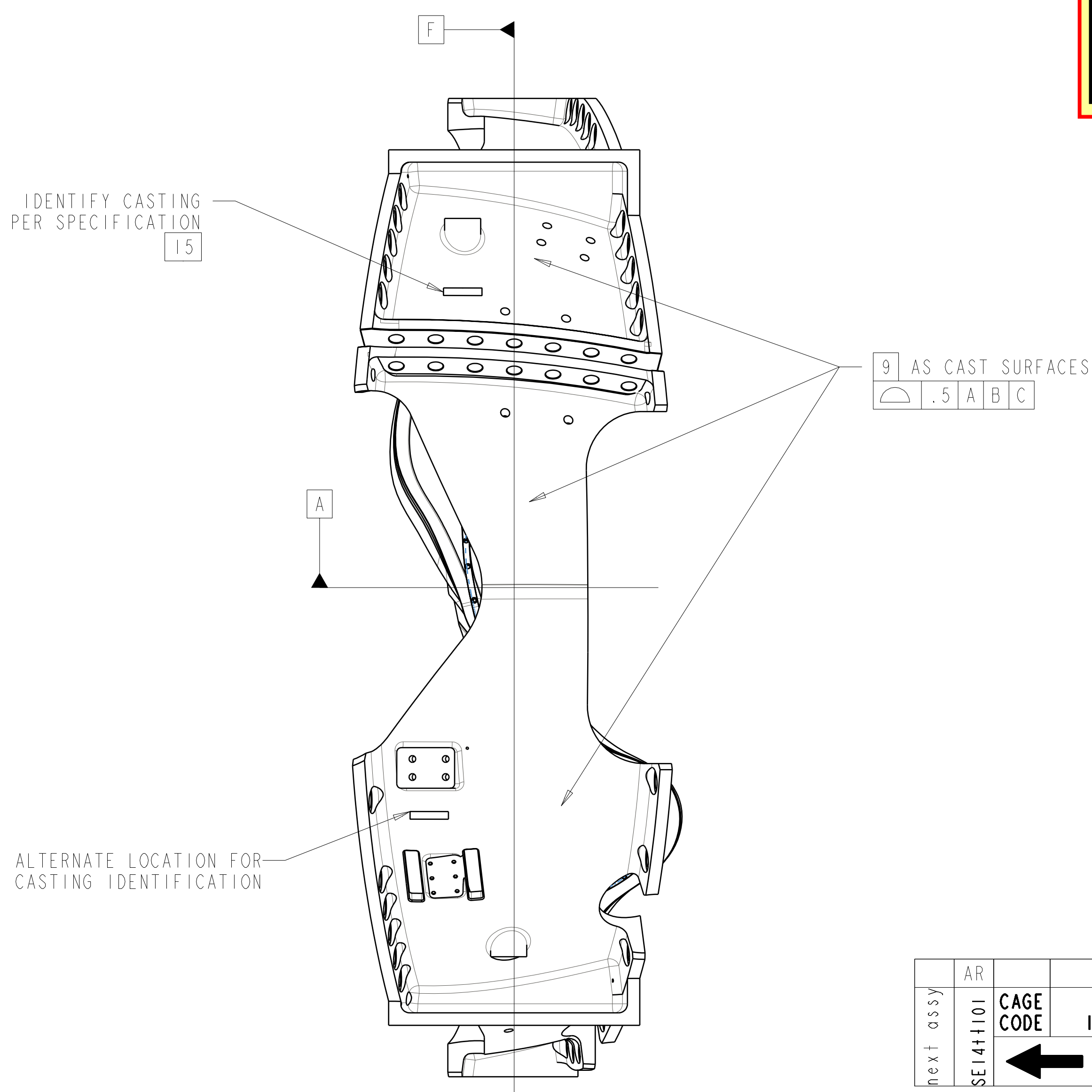
SCALE 0.10

NOTES:

1. DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.8M-1996.
2. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M-1994.
3. DIMENSIONS ARE IN INCHES.
4. DRAWING DEPICTS FINAL MACHINED STATE OF PART DEFINED BY PRO/ENGINEER FILE SEI41-114.PRT.
5. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE RELATED TO DATUM A- (PRIMARY X-Y PLANE, TOP) DATUM B- (SECONDARY Y-Z PLANE, SIDE) DATUM C- (TERTIARY X-Z PLANE, FRONT)
6. DIMENSIONS APPLY AT TEMPERATURE OF 20-30°C (68-86°F).
7. DIMENSIONS AND TOLERANCES EXCLUDE PROCESS MATERIAL ALLOWANCES WHICH MAY ADD MASS.
8. APPROXIMATE WEIGHT = 4819 LBS. WEIGHT OF FINISHED PART NOT TO EXCEED 6000 LBS.
- 9 UNLESS OTHERWISE SPECIFIED, AS-CAST SURFACE PROFILE TOLERANCE = +/- .25 INCH, WITH EXEMPTION FOR INTERSECTING SURFACES WHERE FILLETS ARE EXPECTED. MIN FILLET AND CORNER RADI = 0.5 +/- 0.1 IN.
- 10 DESIGNATED SURFACE REGIONS HAVE PROFILE TOLERANCE OF -.12 TO -.25-IN. WHERE POSITIVE INDICATES OUTWARD SURFACE NORMAL DIRECTION (ADDS MATERIAL).
11. MIN THICKNESS PER CAD GEOMETRY, TOLERANCE = +0.25 IN / -0.0 IN.
12. PARTING LINE EDGES, FLASH, GATES, RUNNER, AND RISER EXTENSIONS 0.25 IN MAX
- 13 UNLESS OTHERWISE SPECIFIED, MACHINED SURFACE PROFILE TOLERANCE = +/- 0.01 IN.
14. BACK SPOTFACE ALL THRU HOLES MINIMUM TO CLEAN UP.
- 15 SEE LATEST REVISION OF SPECIFICATION NCSX-CSPEC-141-03 FOR ADDITIONAL REQUIREMENTS.
- 16 GRIND TEE BASE AS REQUIRED TO ACHIEVE CLEARANCE DEFINED BY TEMPLATE SHOWN IN THE SPECIFICATION.

Rev 6-a: ECN-5120 (RFD-14-018) approved changing the two clearance holes shown on Sheet 5 to tapped holes. The clearance holes will be filled with weld

RELEASED FOR FABRICATION / INSTALLATION
 PPPL Drafting:



REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REG	DATE	ORNL	DOE	DATE
1	REMOVED SPHERICAL SEATS, REVISED LEAD BLOCK/COOLING PER ECN-4903	GL	9/04	MJC			DEW					
2	REVISED PART AND DRAWING PER ECN 4944	GL	1/05	MJC			DEW					
3	REVISED PART AND DRAWING PER ECN 4965	GL	3-05	MJC			DEW					
4	REVISED PART AND DRAWING PER ECN 4994	GL	6-05	MJC			DEW					
5	REVISE PART AND DRAWING PER ECN 5009	GL	7-05	MJC			DEW					
6	REVISE PART AND DRAWING PER ECN 5059 AND 5064	GL	8/08	MJC			DEW					

REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REG	DATE	ORNL	DOE	DATE
1	REMOVED SPHERICAL SEATS, REVISED LEAD BLOCK/COOLING PER ECN-4903	GL	9/04	MJC			DEW					
2	REVISED PART AND DRAWING PER ECN 4944	GL	1/05	MJC			DEW					
3	REVISED PART AND DRAWING PER ECN 4965	GL	3-05	MJC			DEW					
4	REVISED PART AND DRAWING PER ECN 4994	GL	6-05	MJC			DEW					
5	REVISE PART AND DRAWING PER ECN 5009	GL	7-05	MJC			DEW					
6	REVISE PART AND DRAWING PER ECN 5059 AND 5064	GL	8/08	MJC			DEW					

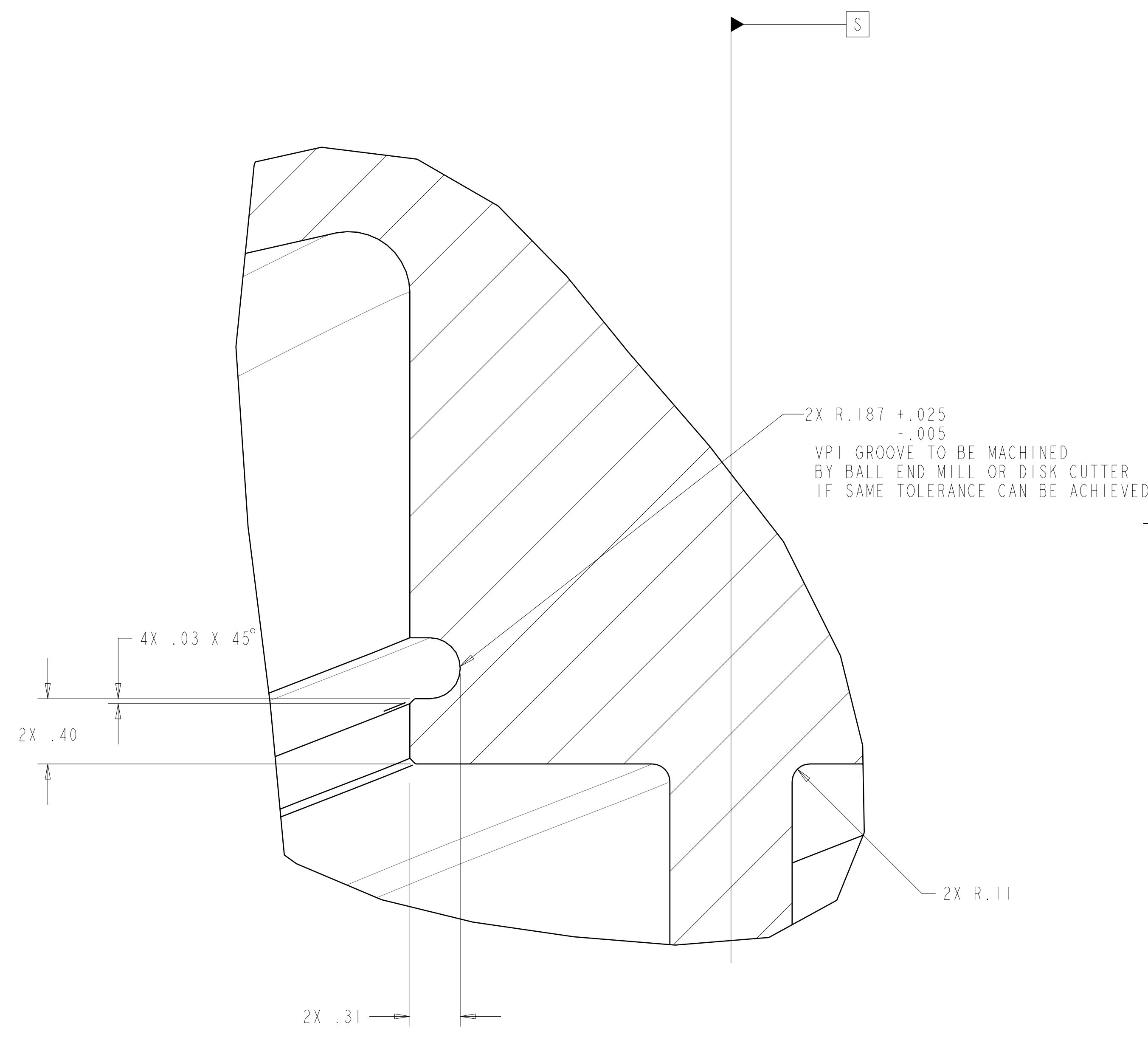
SCALE NOTED	DES T BROWN 06-01-04	DRW P MILLER 06-02-04	CHK M COLE 7/22/04	SECT :	DEPT :	PE D WILLIAMSON 7/22/04	CR :	PJ :	RD :	PPPL DRFT J SIEGEL 7/22/04	VERSION NO. 13	PLANT X-10	BLDG 5700	FL 3	SHT OF 11	TYPE IIS	CLASS U
TOLERANCES UNLESS OTHERWISE SPECIFIED	Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee NATIONAL COMPACT STELLARATOR EXPERIMENT PRODUCTION WINDING FORM TYPE-A RELEASE LEVEL Fabrication																
FRACTIONS ± .01	DRAWING APPROVALS DATE																
XX DECIMALS ± .005	SEI41-114 REV 6																
ANGLES ± 0°15'	DRAWING APPROVALS DATE																
BREAK SHARP EDGES .06 MAX	DRAWING APPROVALS DATE																
FINISH .125 UNLESS OTHERWISE SPECIFIED	DRAWING APPROVALS DATE																

NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, IS MADE AS TO THE ACCURACY, COMPLETENESS OR USEFULNESS OF THE INFORMATION OR STATEMENTS CONTAINED IN THESE DRAWINGS, OR THAT THE USE OR DISCLOSURE OF ANY INFORMATION, APPARATUS, METHOD OR PROCESS DISCLOSED IN THESE DRAWINGS MAY NOT INFRINGE PRIVATE RIGHTS OF OTHERS. NO LIABILITY IS ASSUMED WITH RESPECT TO THE USE OF, OR FOR DAMAGES RESULTING FROM THE USE OF, ANY INFORMATION, APPARATUS, METHOD OR PROCESS DISCLOSED IN THESE DRAWINGS. DRAWINGS MADE AVAILABLE FOR INFORMATION TO BIDDER ARE NOT TO BE USED FOR OTHER PURPOSES, AND ARE TO BE RETURNED UPON REQUEST OF THE FORWARDING CONTRACTOR.

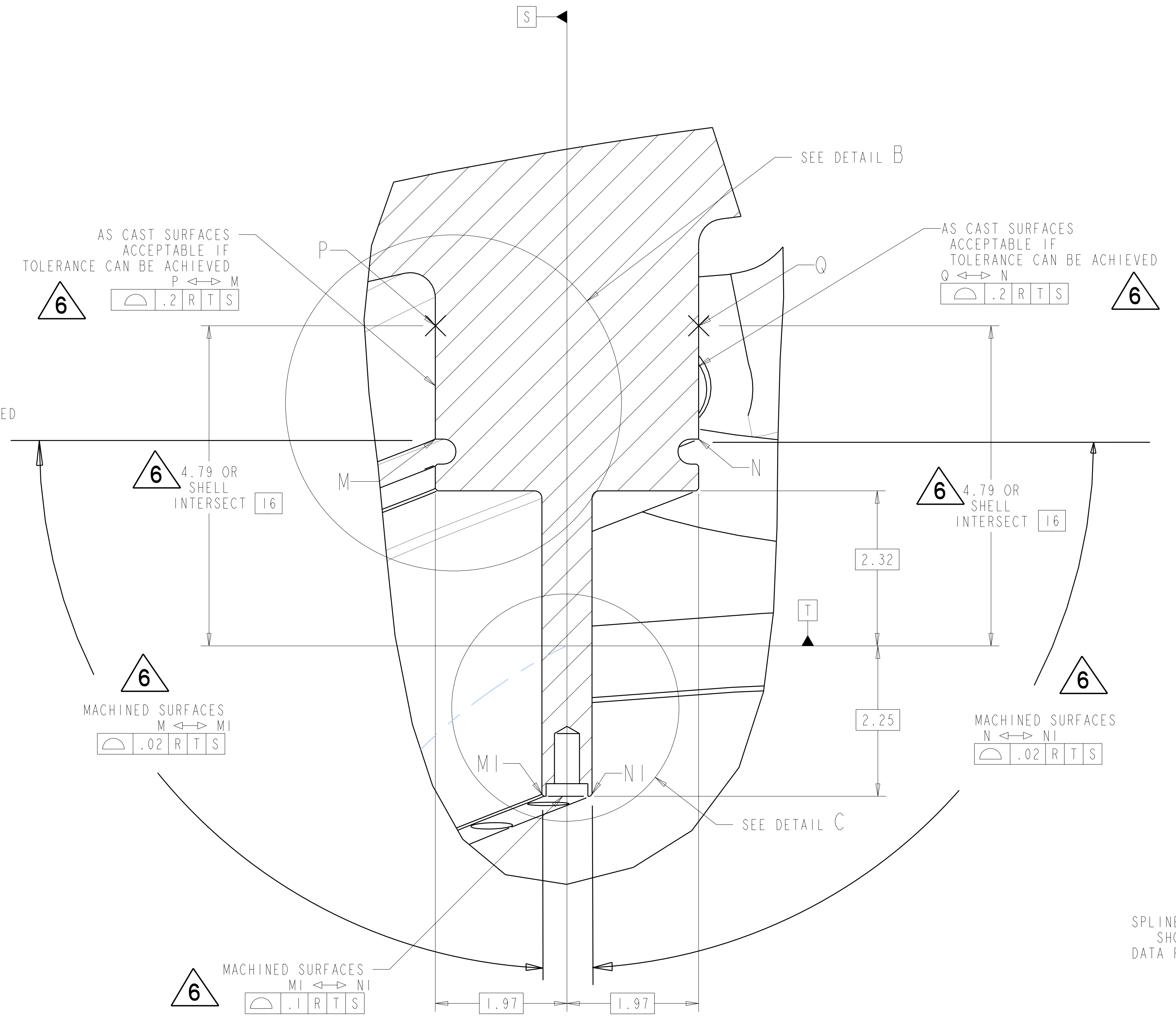
P THIS DRAWING PRODUCED ON PRO-ENGINEER

H
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FOR NOTES AND PARTS LIST SEE SHEET 1

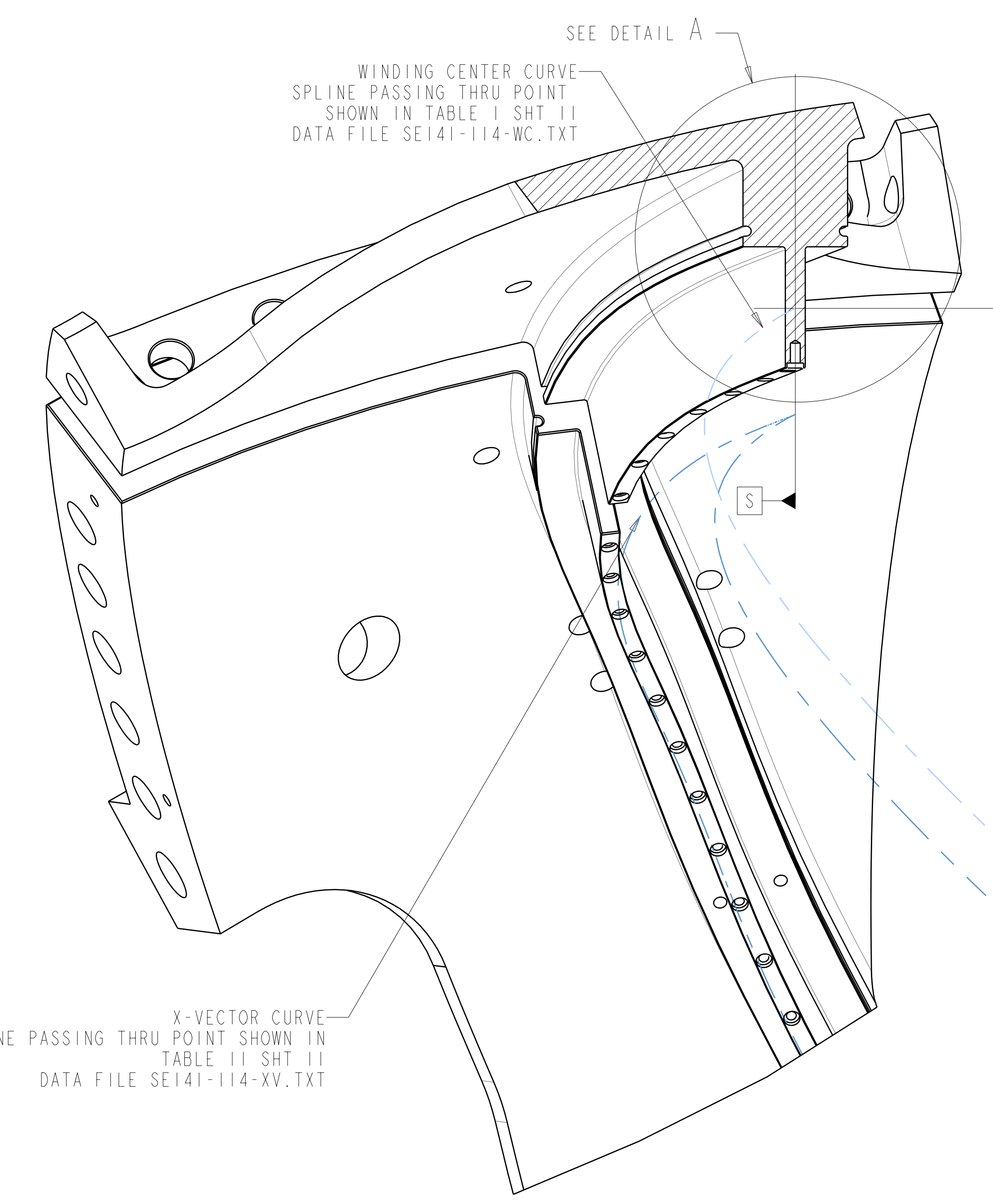


DETAIL B
SCALE 2.00

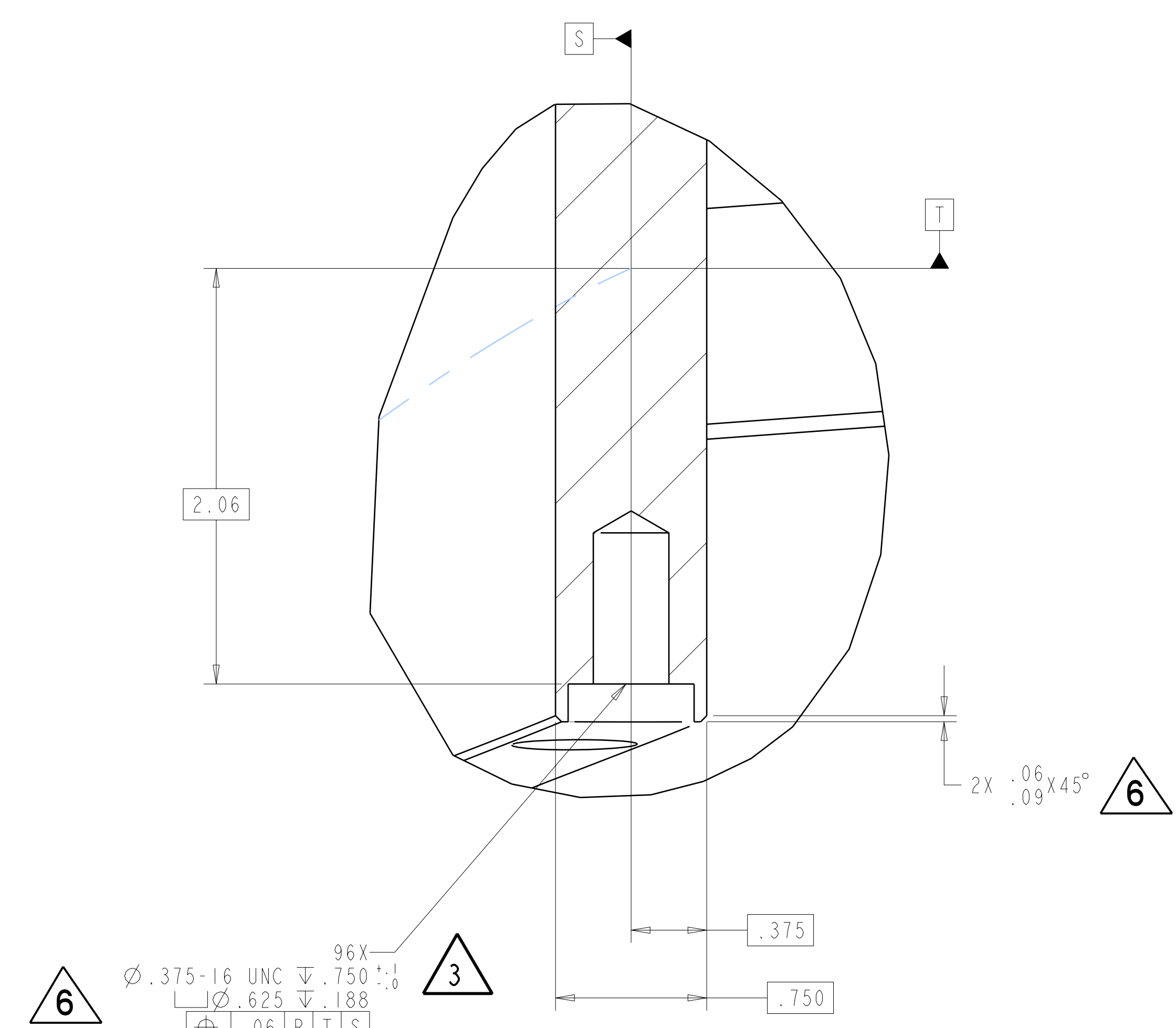
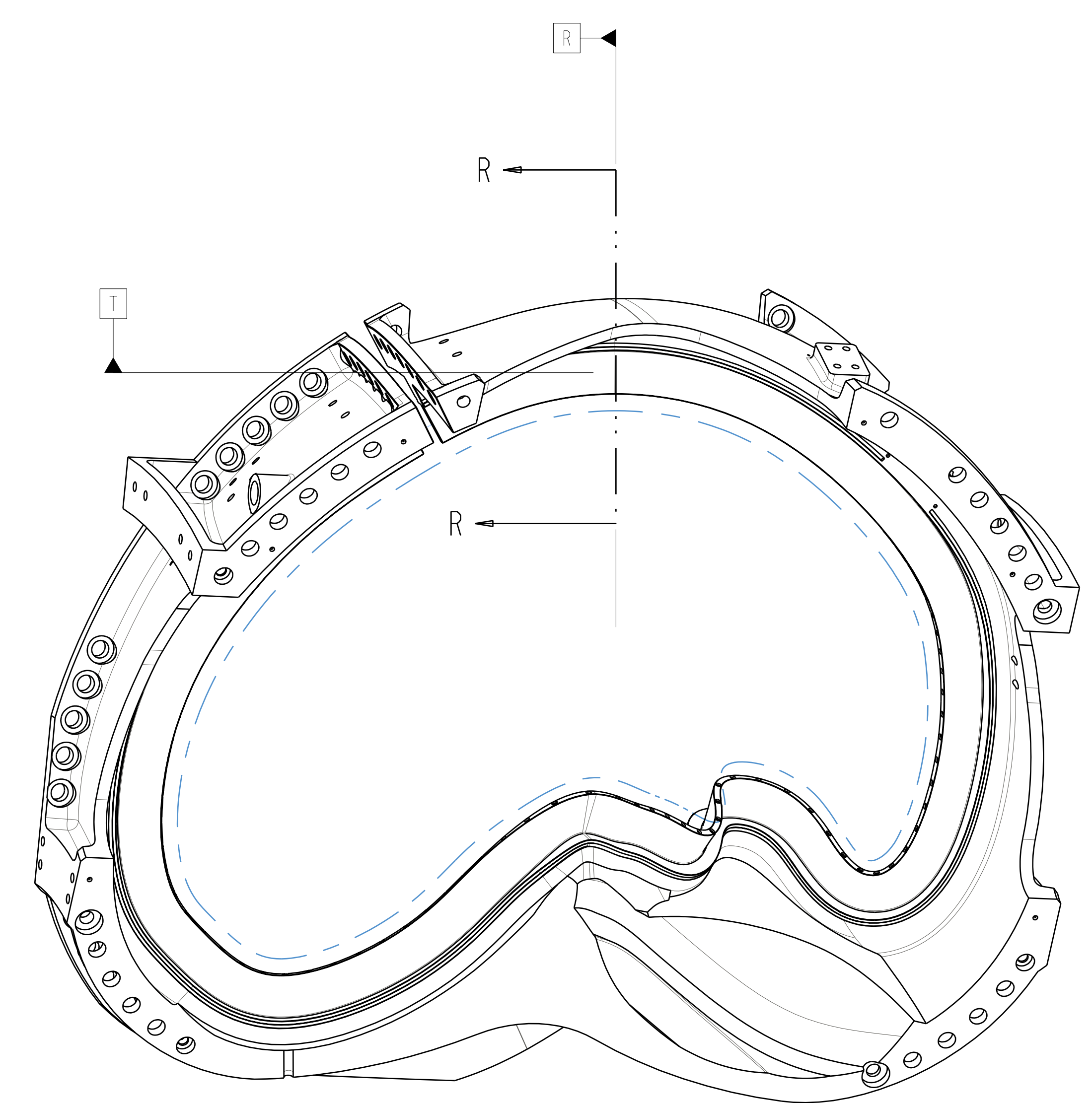


DETAIL A
SCALE 1.00

TYPICAL FOR ALL POINTS ALONG WINDING CENTER



SECTION R-R
SCALE 0.30



DETAIL C
SCALE 2.00

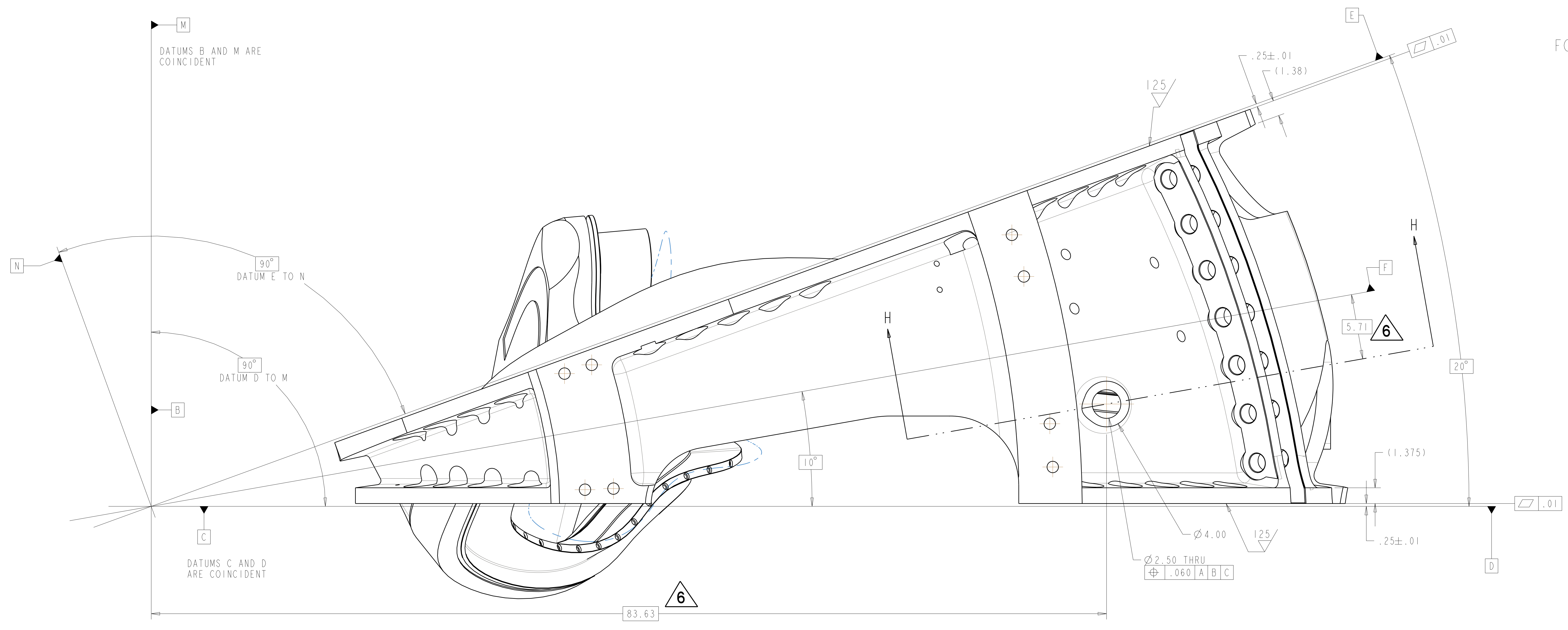
DATUM R = PLANE NORMAL TO WINDING CENTER
 DATUM S = PLANE PASSING THRU WINDING CENTER AND X VECTOR AT DATUM R
 DATUM T = PLANE PASSING THRU WINDING CENTER ORTHOGONAL TO DATUM S

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 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							
UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT							
PRODUCTION WINDING FORM TYPE-A							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
13	X-10	5700	3	2	11	S	U
RELEASE LEVEL	SE141-114						REV
Fabrication							6

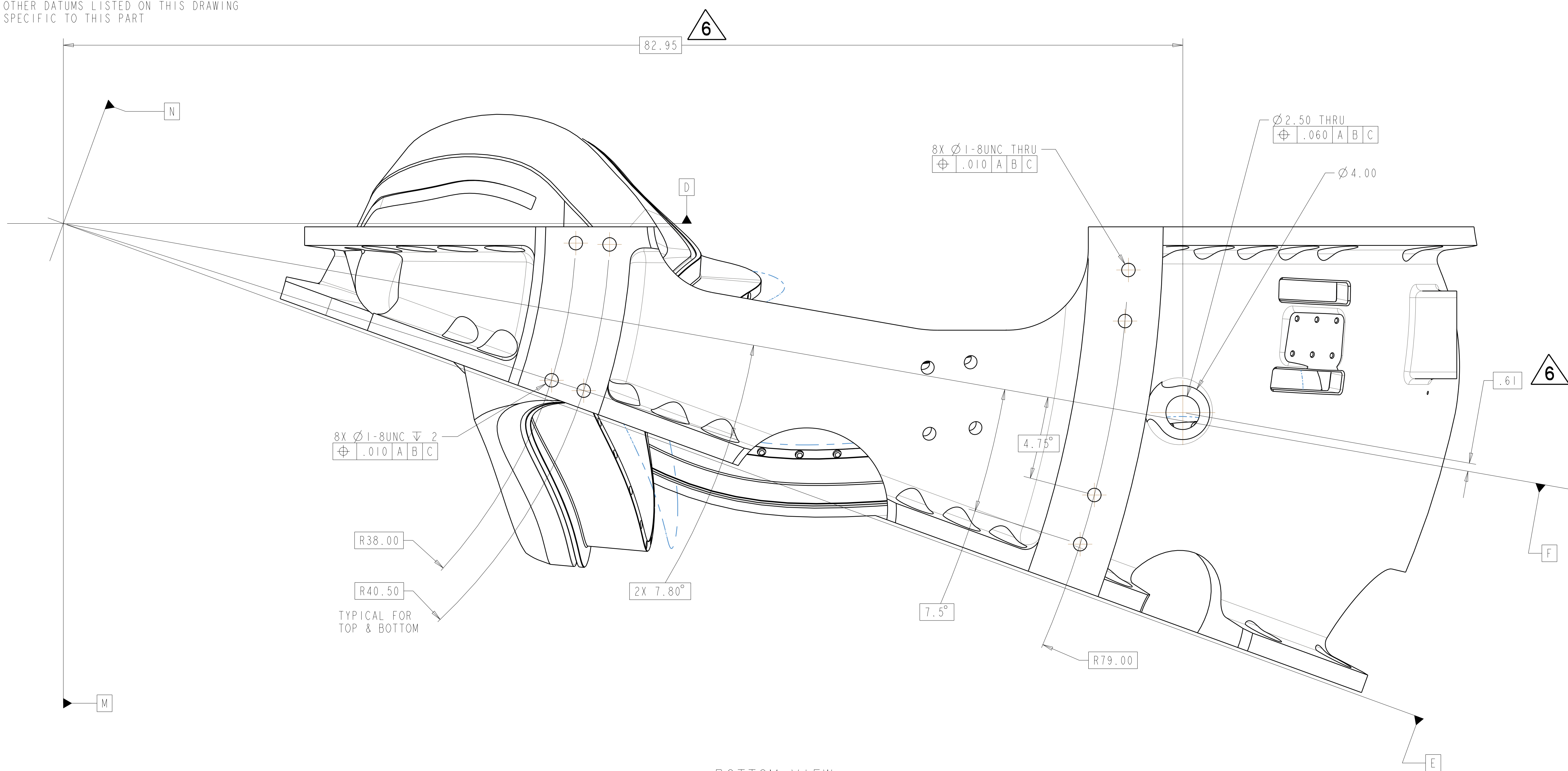
H
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FOR NOTES AND PARTS LIST SEE SHEET 1



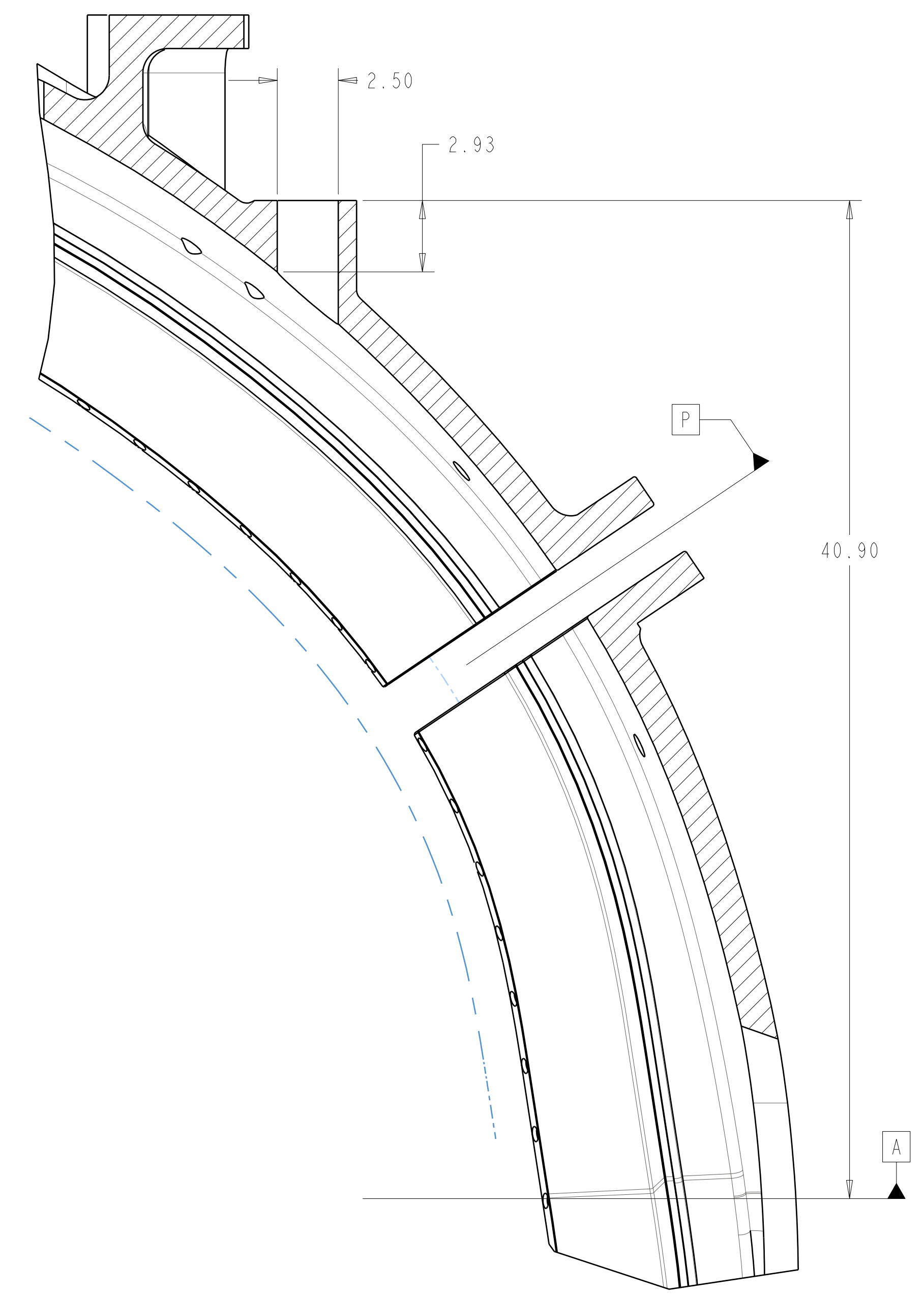
TOP VIEW
SCALE 0.25

DATUMS A B & C ARE MACHINE SPECIFIC.
ALL OTHER DATUMS LISTED ON THIS DRAWING
ARE SPECIFIC TO THIS PART



BOTTOM VIEW
SCALE 0.25

TYPICAL FOR
TOP & BOTTOM



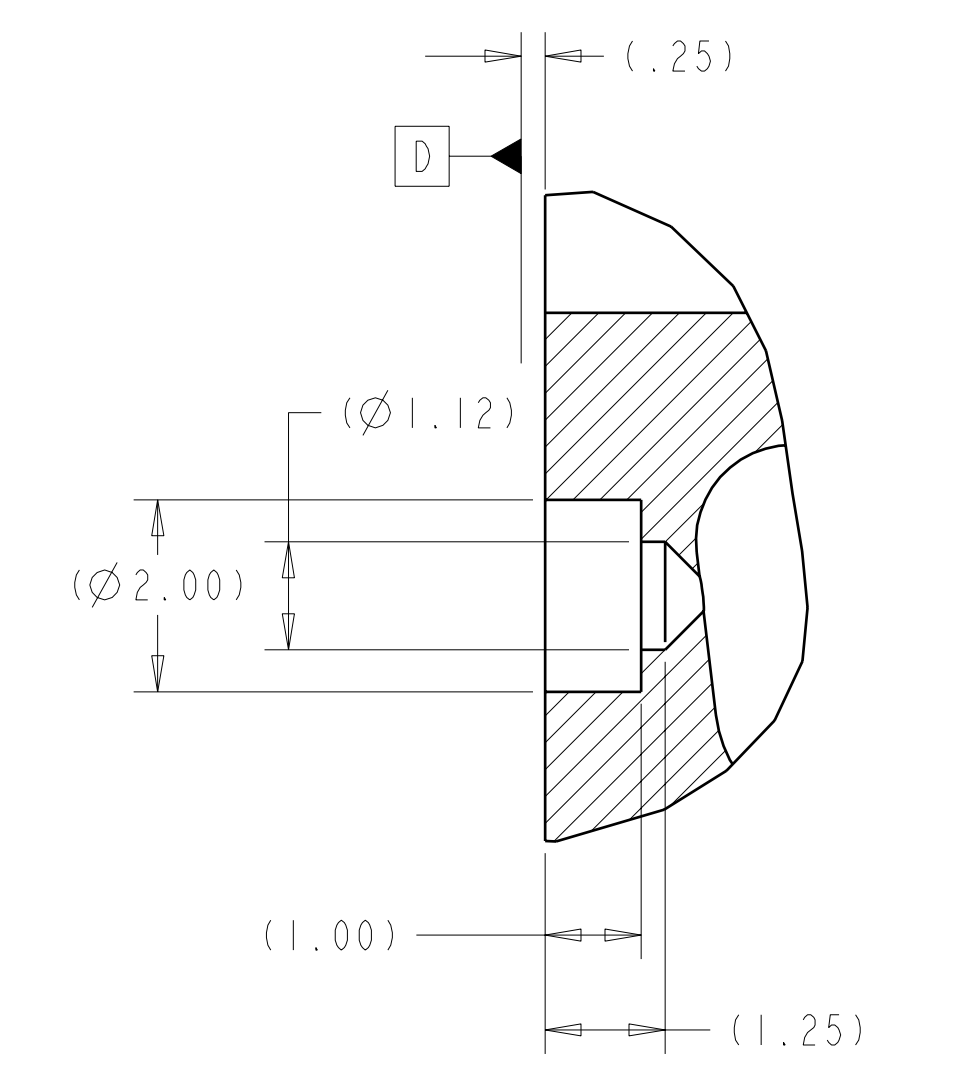
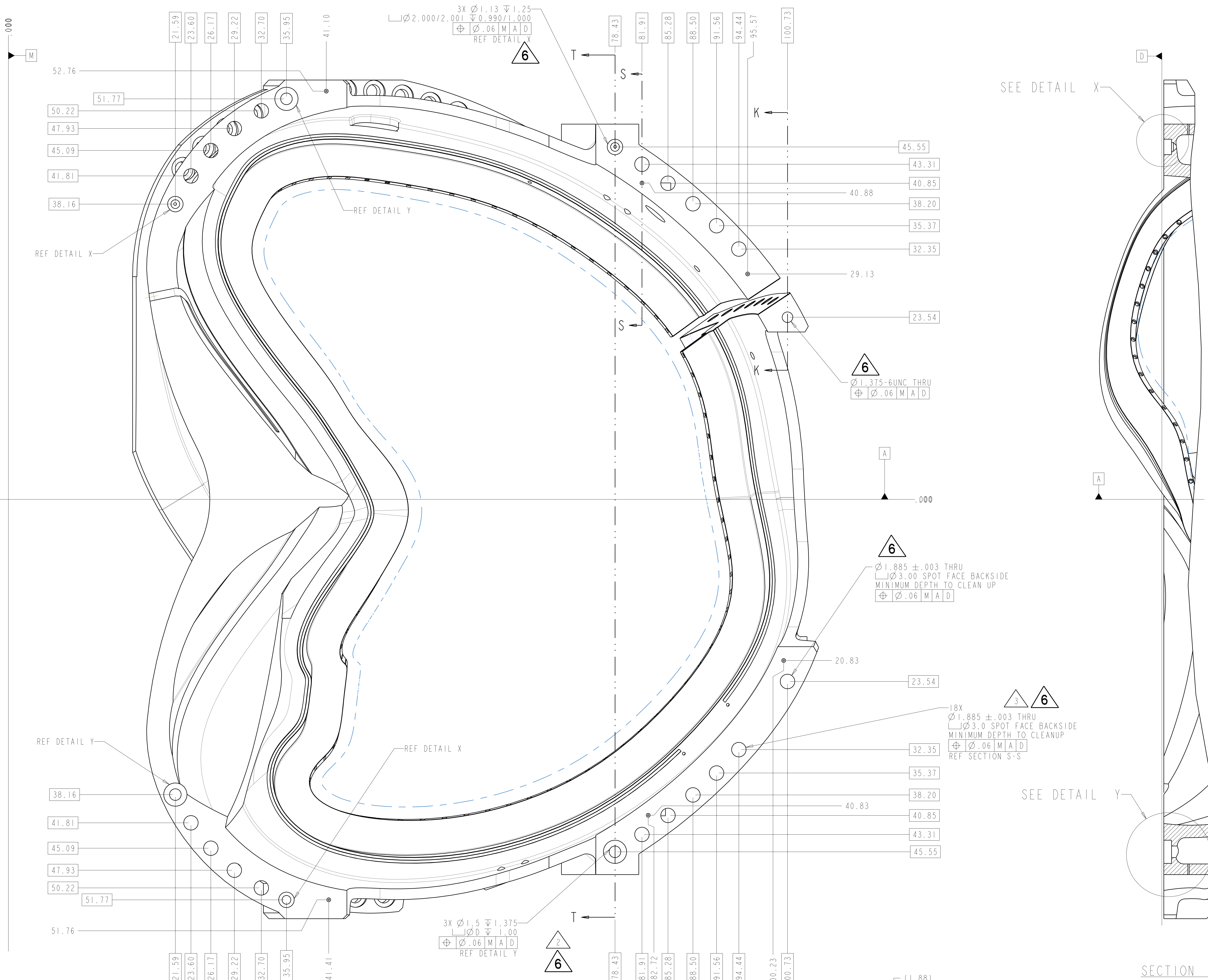
SECTION H-H
SCALE 0.25

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PPPL Drafting:

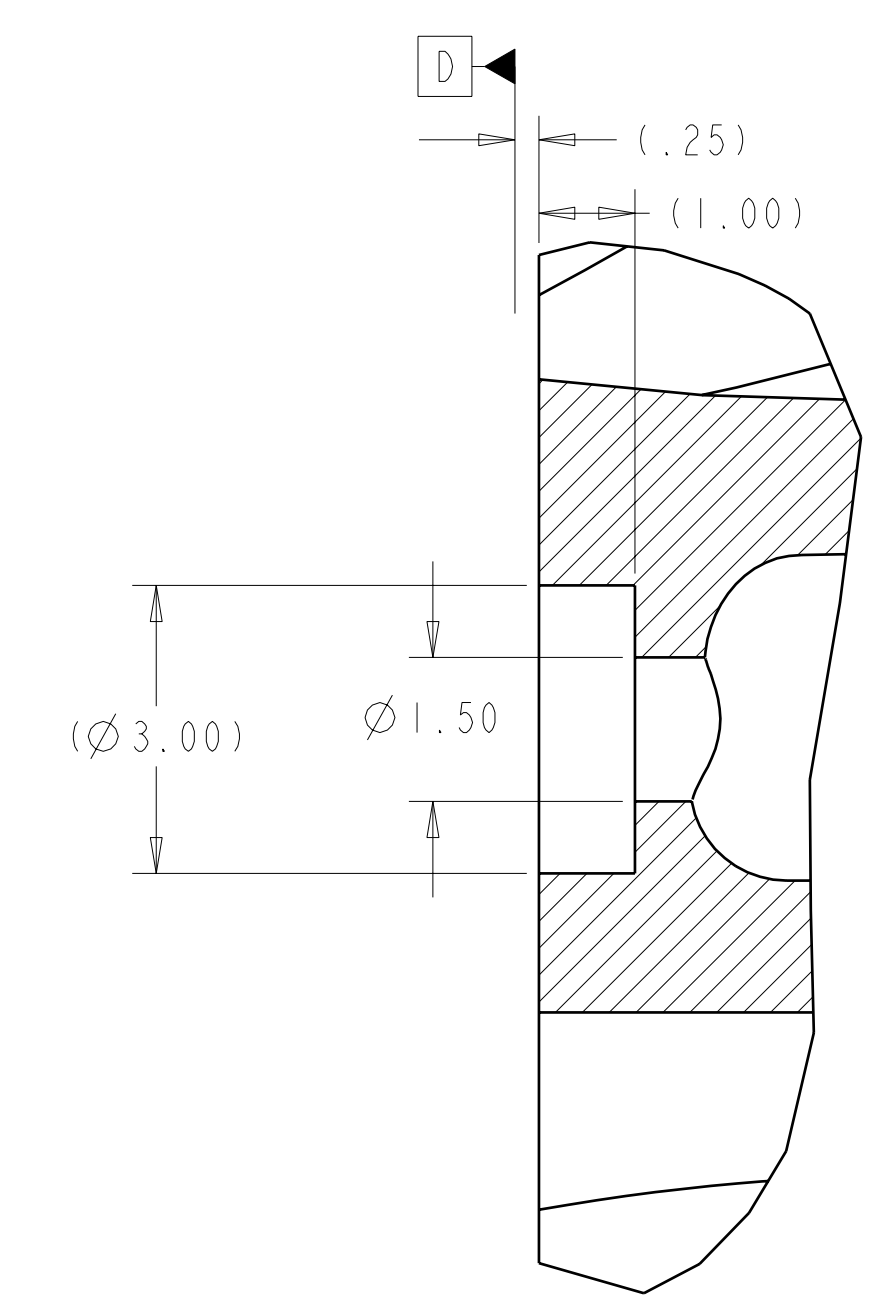
UT-BATTELLE Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee PROJECT NAME:							
NATIONAL COMPACT STELLARATOR EXPERIMENT							
PRODUCTION WINDING FORM TYPE-A							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
13	X-10	5700	3	3	11	S	U
RELEASE LEVEL							
Fabrication		SEI41-114					
						REV	6

SEI41-114

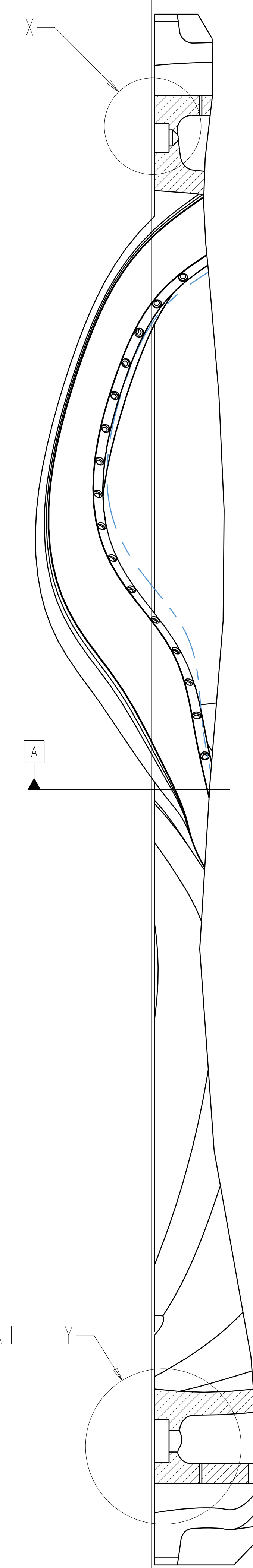
FOR NOTES AND PARTS LIST SEE SHEET I



DETAIL X
SCALE 0.50



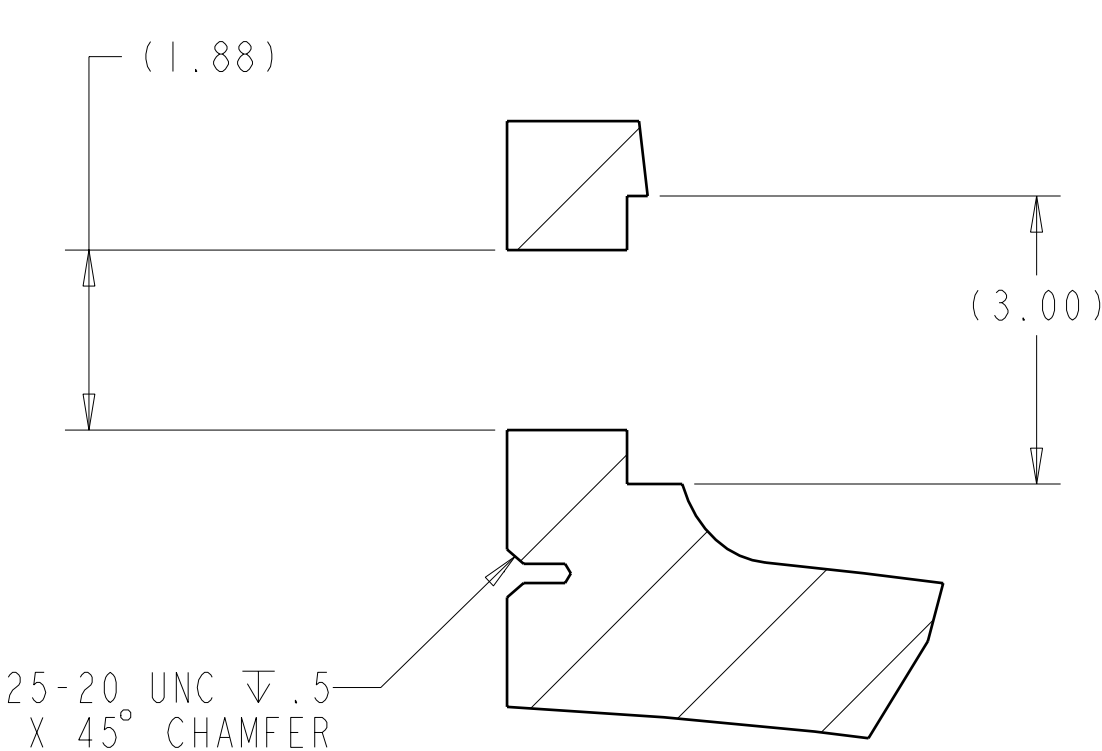
DETAIL Y
SCALE 0.50



SECTION T-T

SECTION K-K
SCALE 0.50

VIEW AT DATUM D
SCALE 0.20



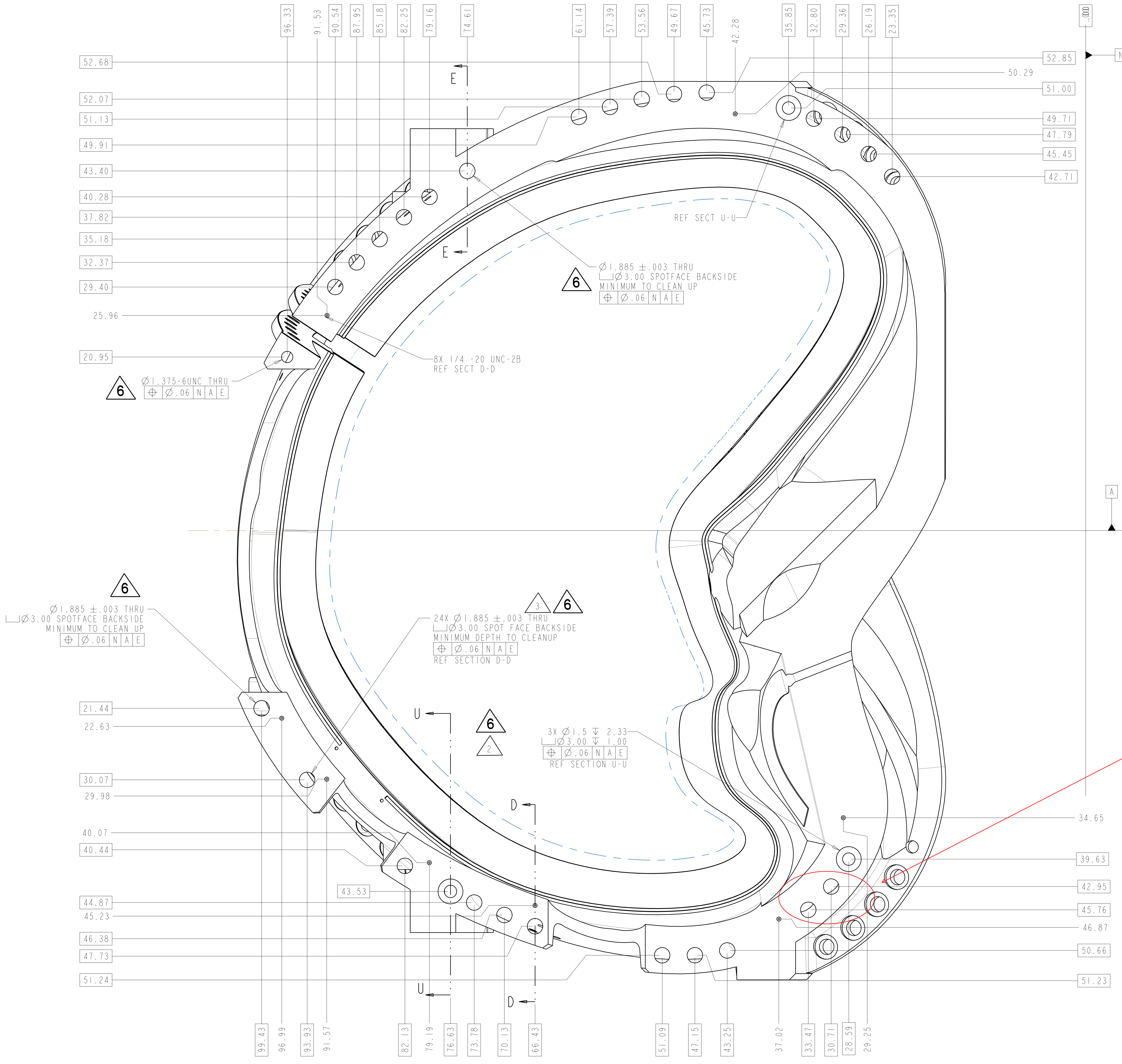
SECTION S-S
SCALE 0.50

RELEASED FOR FABRICATION / INSTALLATION
 PPPL Drafting:

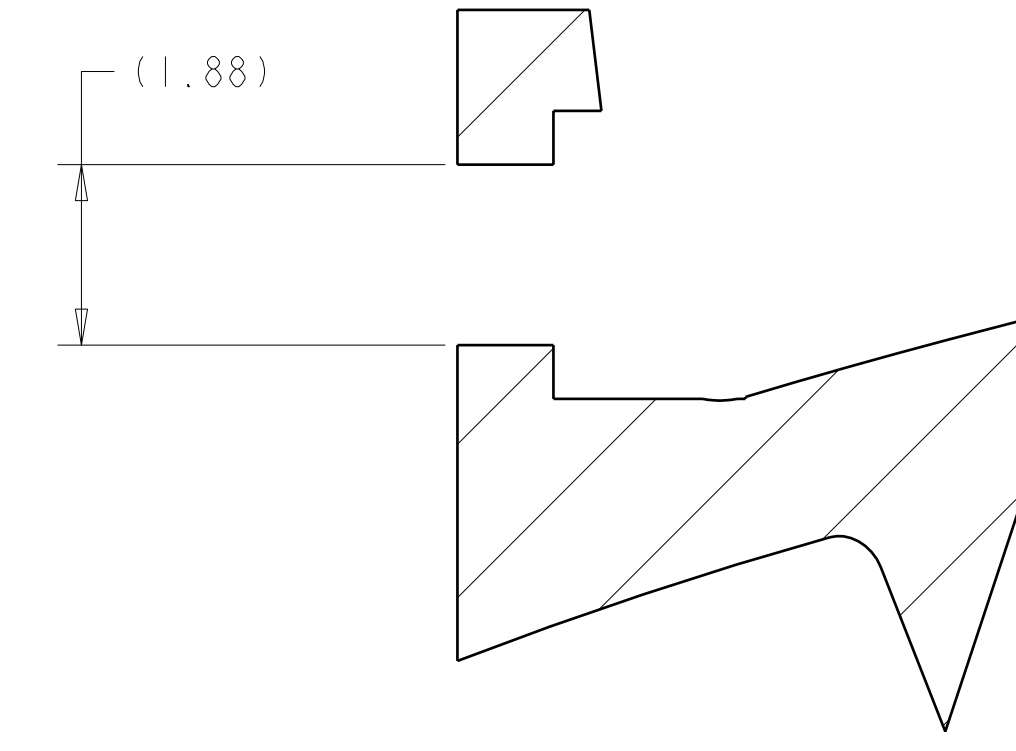
Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee PROJECT NAME:							
UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT PRODUCTION WINDING FORM TYPE-A							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
13	X-10	5700	3	4	11	S	U
RELEASE LEVEL	SEI41-114						REV
Fabrication							6

H
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 SEI41-114

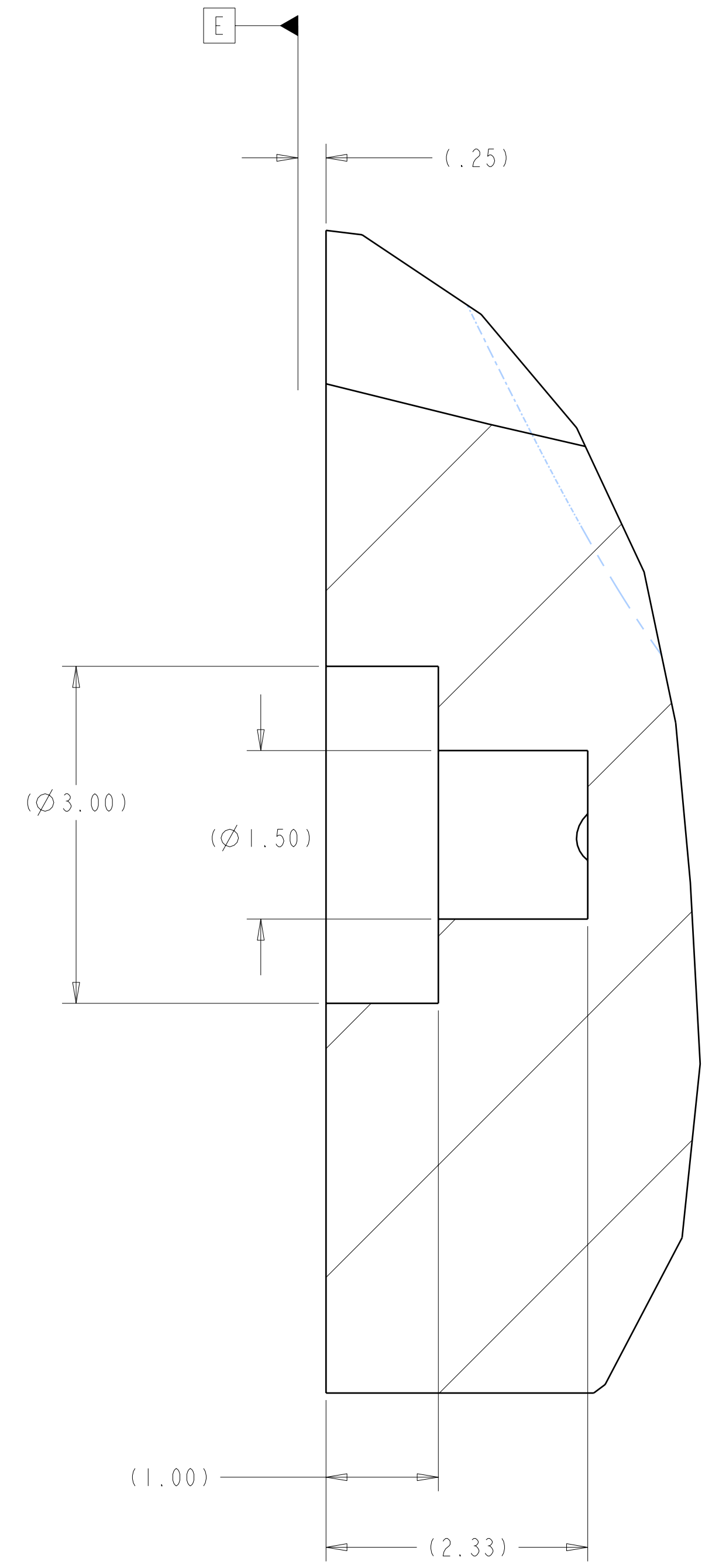
FOR NOTES AND PARTS LIST SEE SHEET 1



VIEW AT DATUM E
 SCALE 0.20

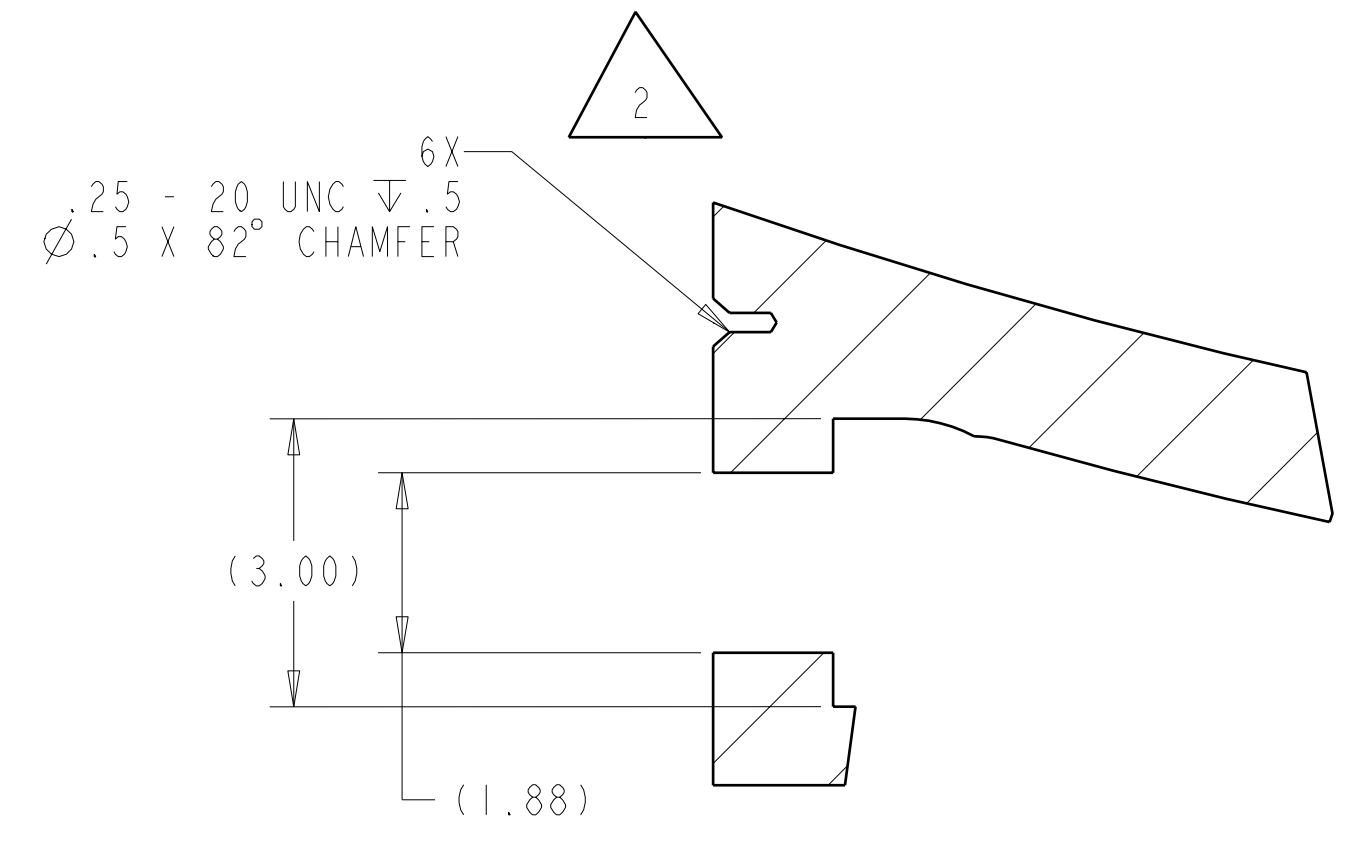


SECTION E-E
 SCALE 0.50



SECTION U-U
 SCALE 1.00

Rev 6-a: ECN-5120 (RFD-14-018) approved changing the two clearance holes shown on Sheet 5 to tapped holes. The clearance holes will be filled with weld



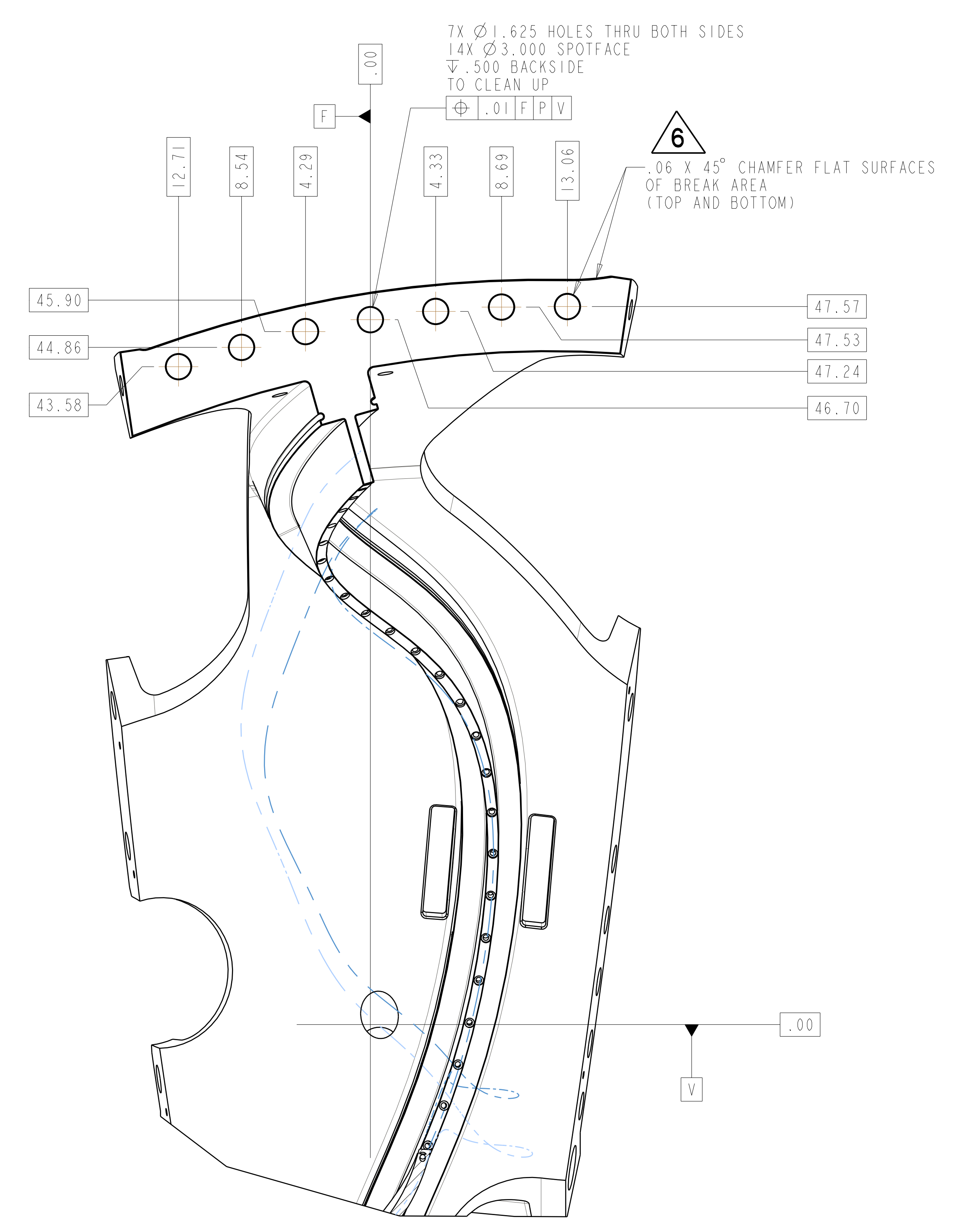
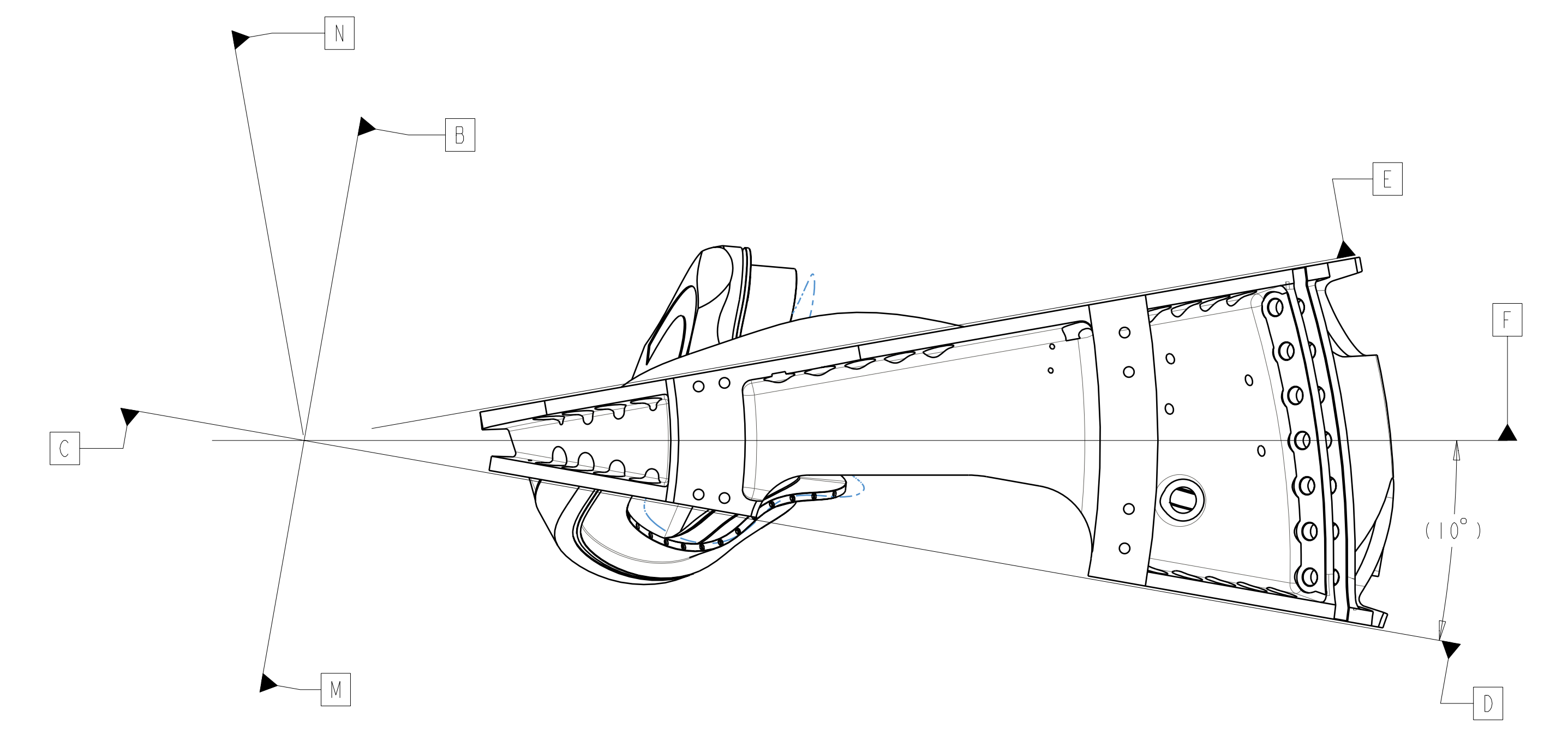
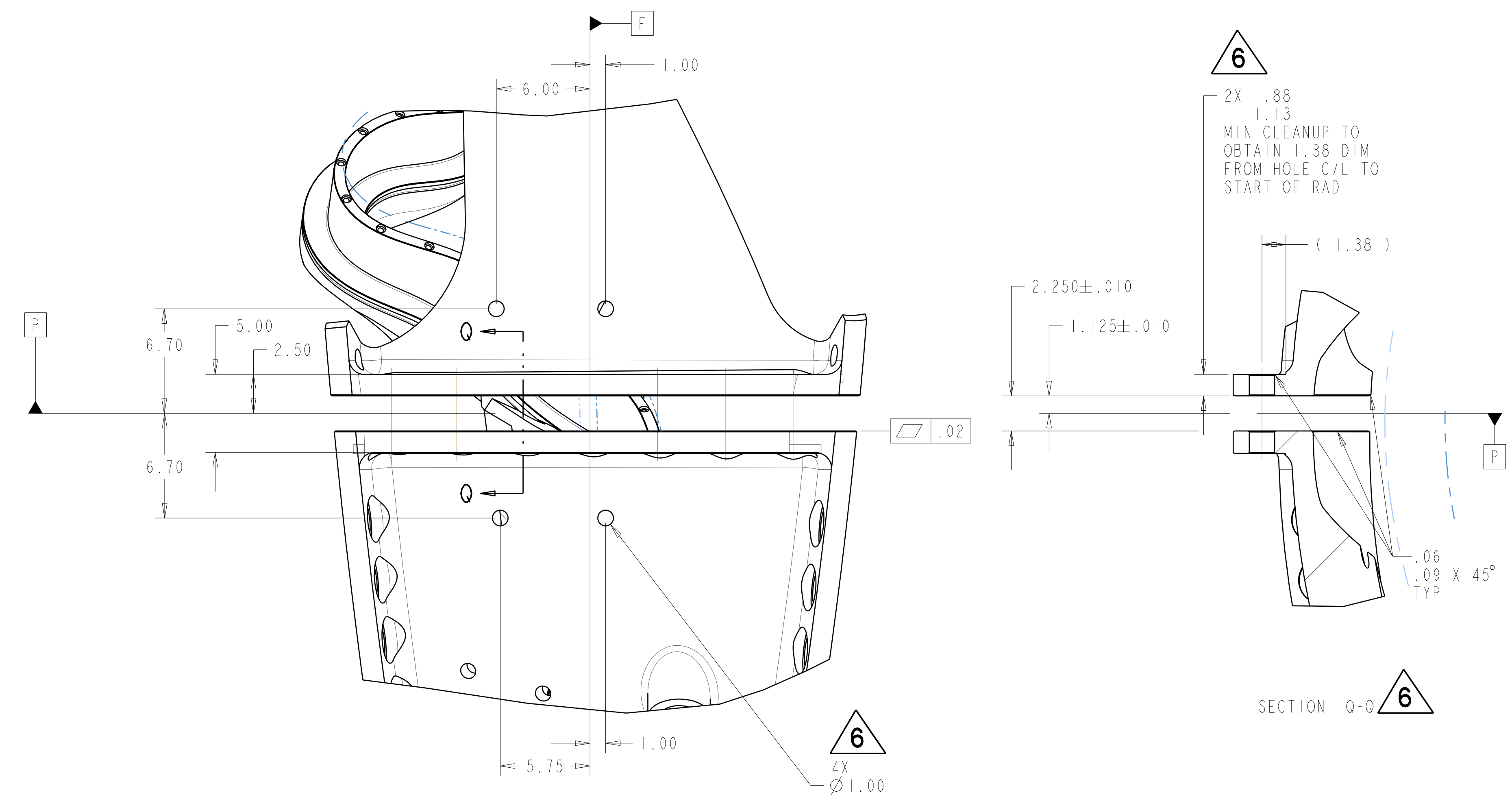
SECTION D-D
 SCALE 0.50

RELEASED FOR FABRICATION / INSTALLATION
 PPPL Drafting:

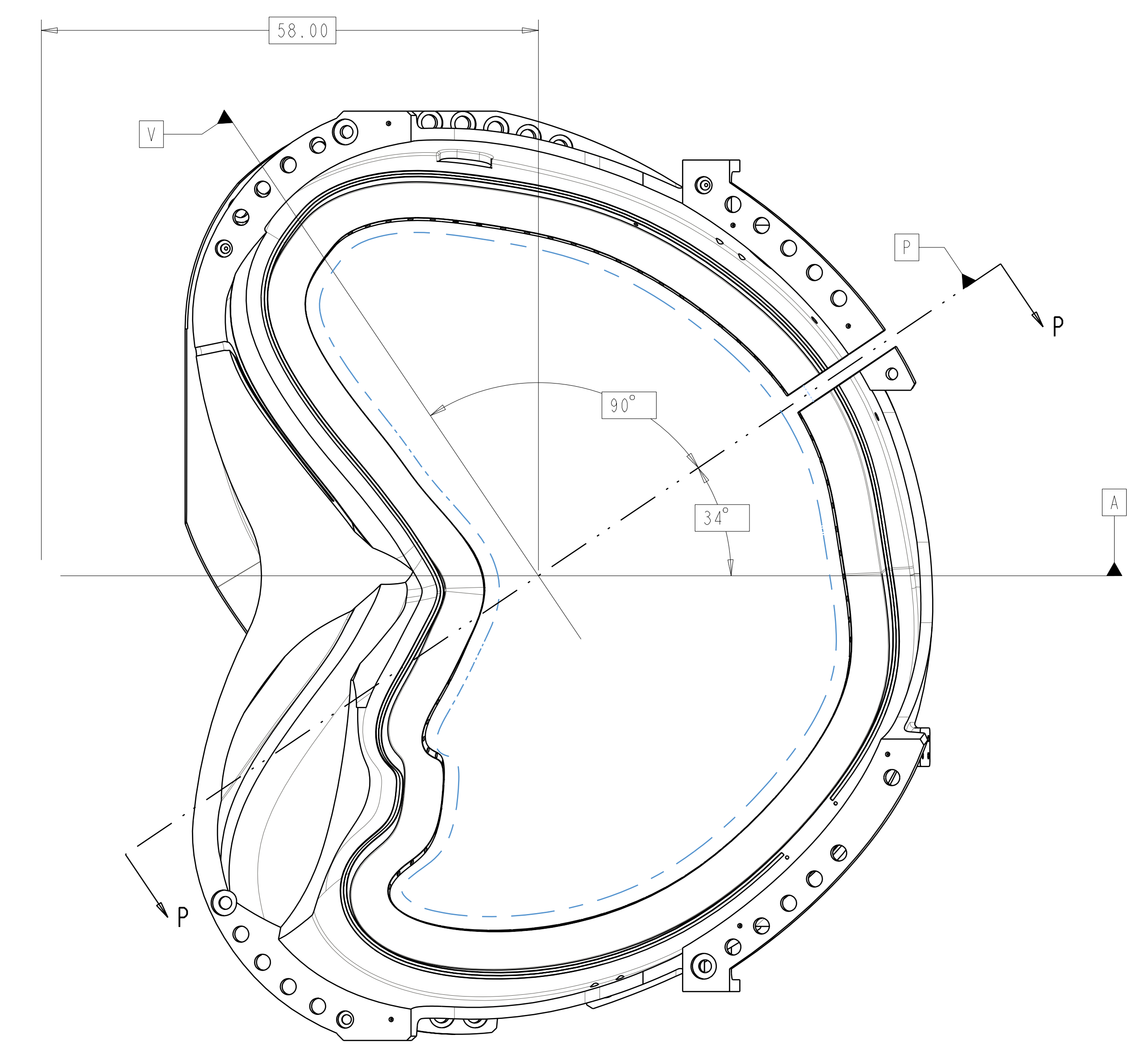
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UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT							
PRODUCTION WINDING FORM TYPE-A							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
13	X-10	5700	3	5	11	S	U
RELEASE LEVEL	SEI41-114						REV
Fabrication							6

H
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 SEI41-114

FOR NOTES AND PARTS LIST SEE SHEET 1



SECTION P-P
SCALE 0.20



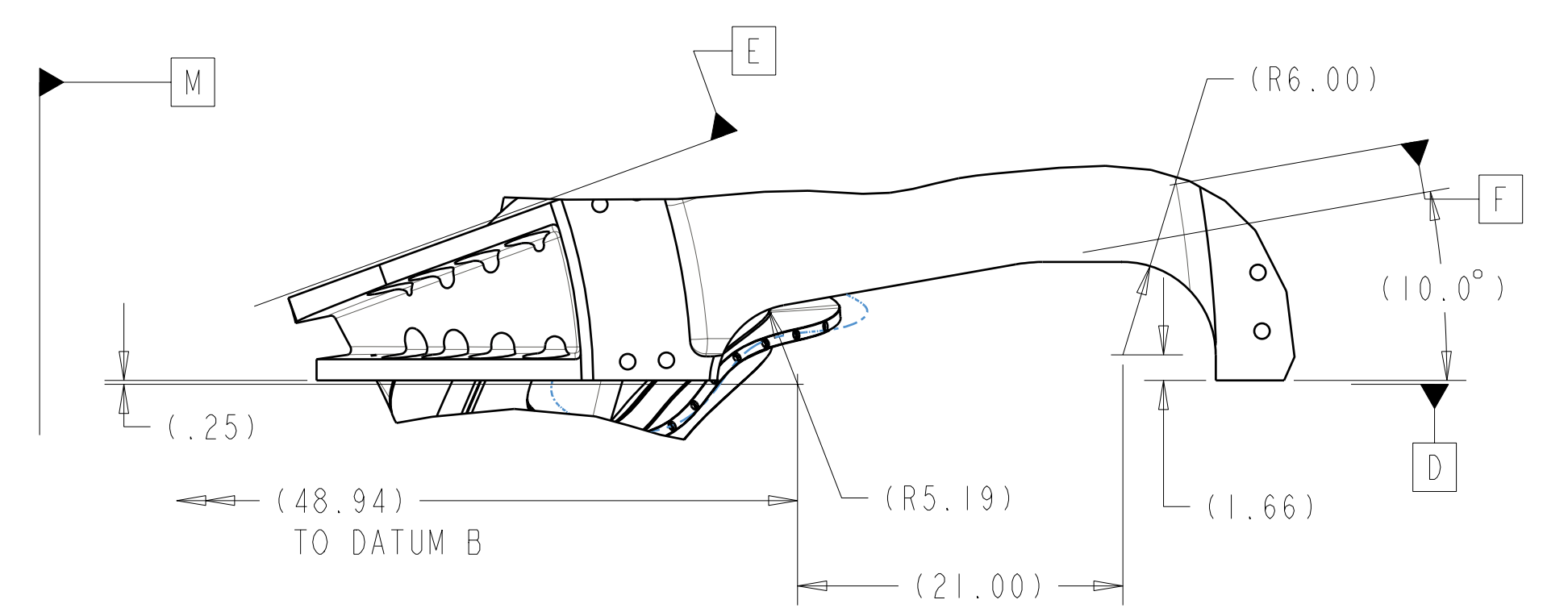
POLOIDAL BREAK DETAIL
SCALE 0.10

RELEASED FOR FABRICATION / INSTALLATION
PPPL Drafting:

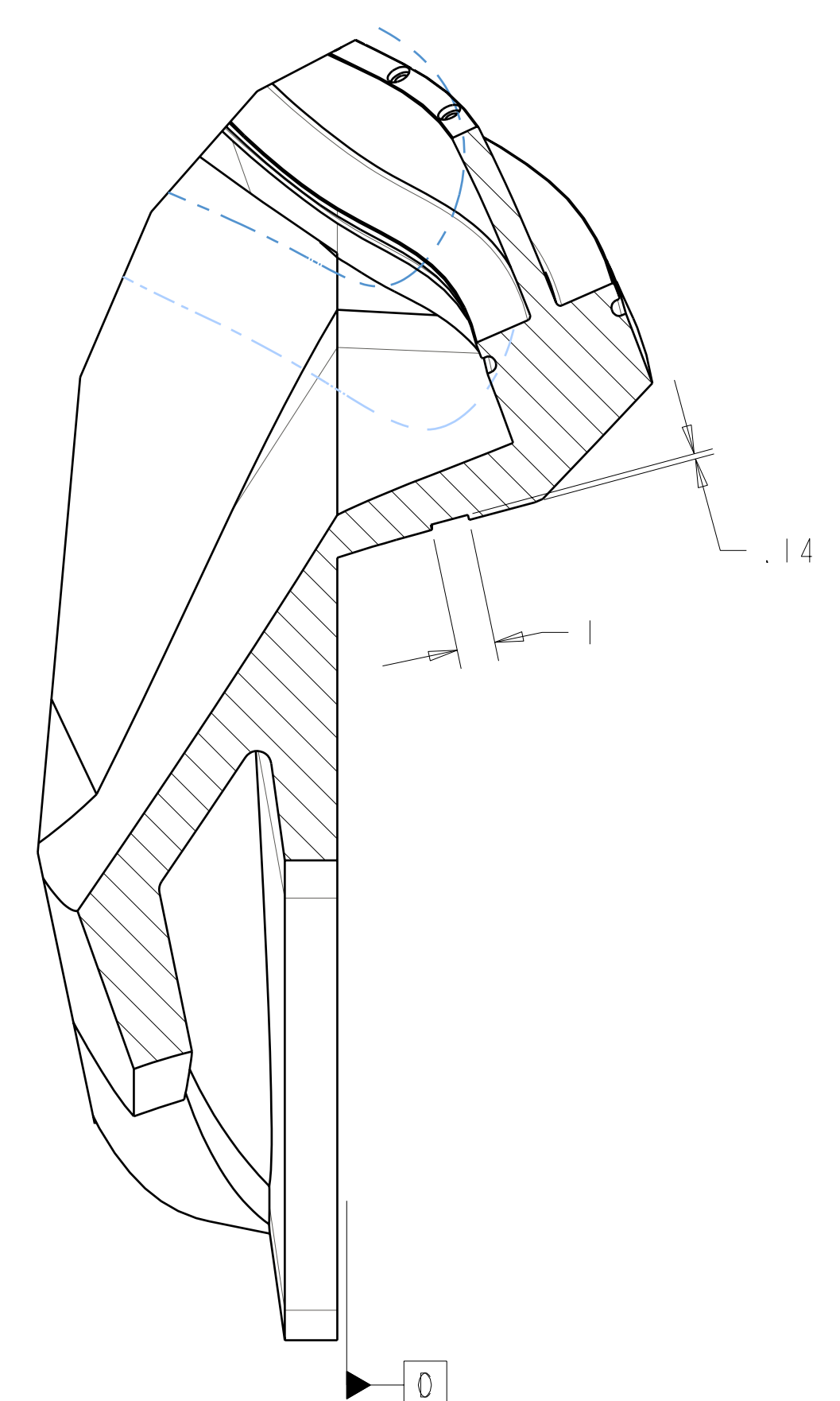
Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee PROJECT NAME:							
UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT PRODUCTION WINDING FORM TYPE-A							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
13	X-10	5700	3	6	11	S	U
RELEASE LEVEL	SEI41-114						REV
Fabrication							6

SEI41-114

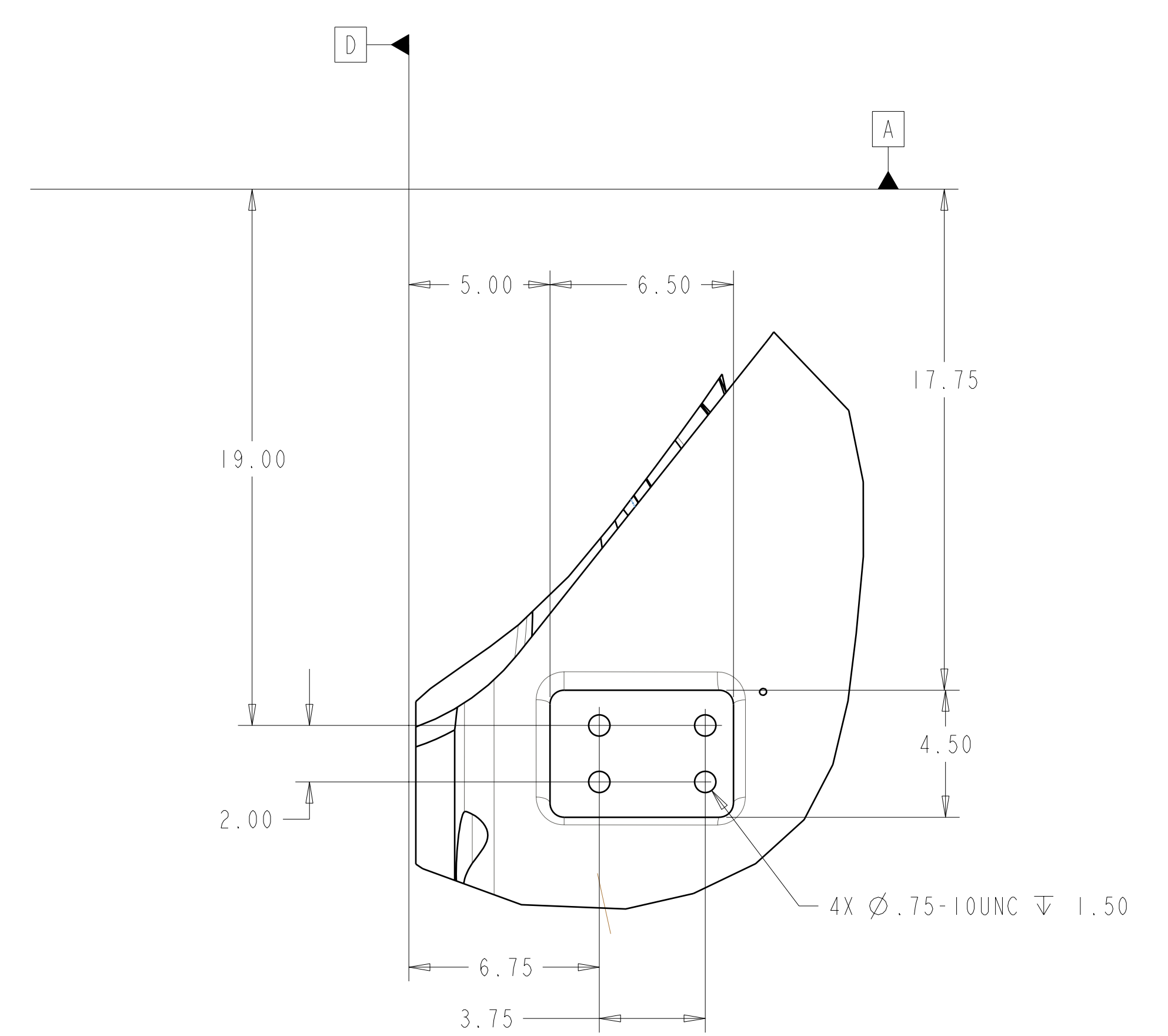
FOR NOTES AND PARTS LIST SEE SHEET 1



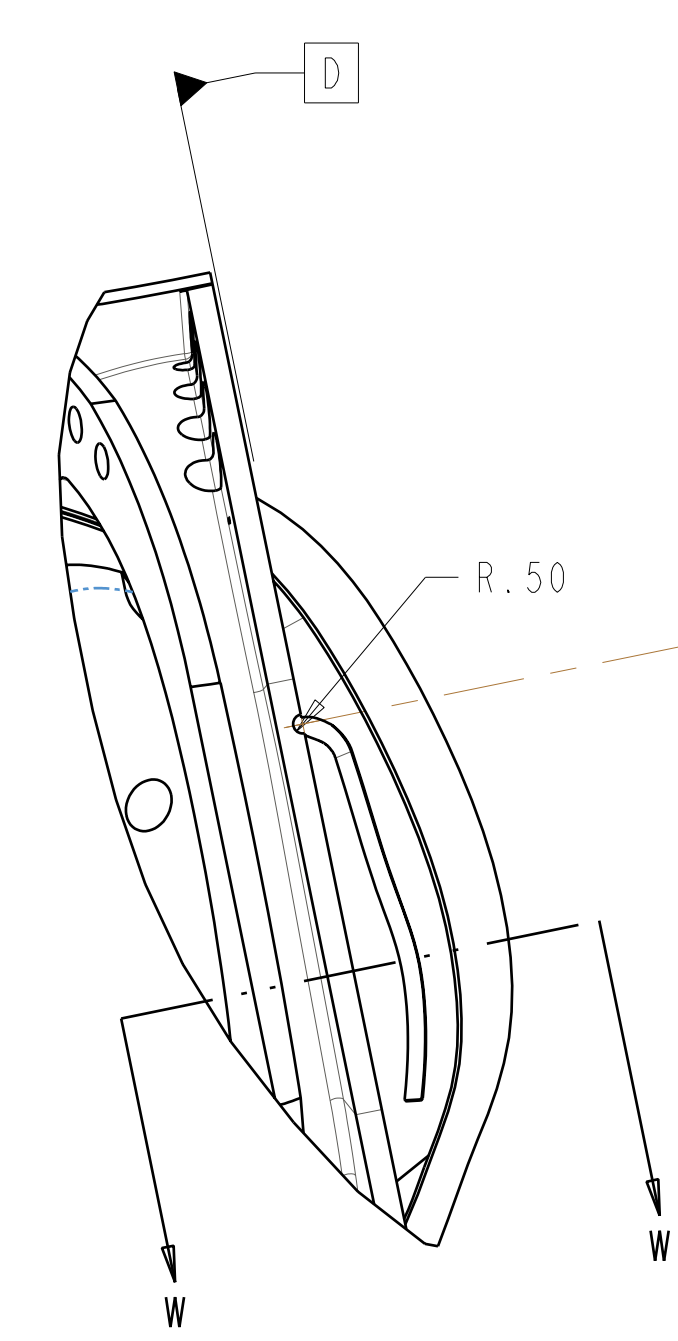
TOP VIEW $\triangle 6$



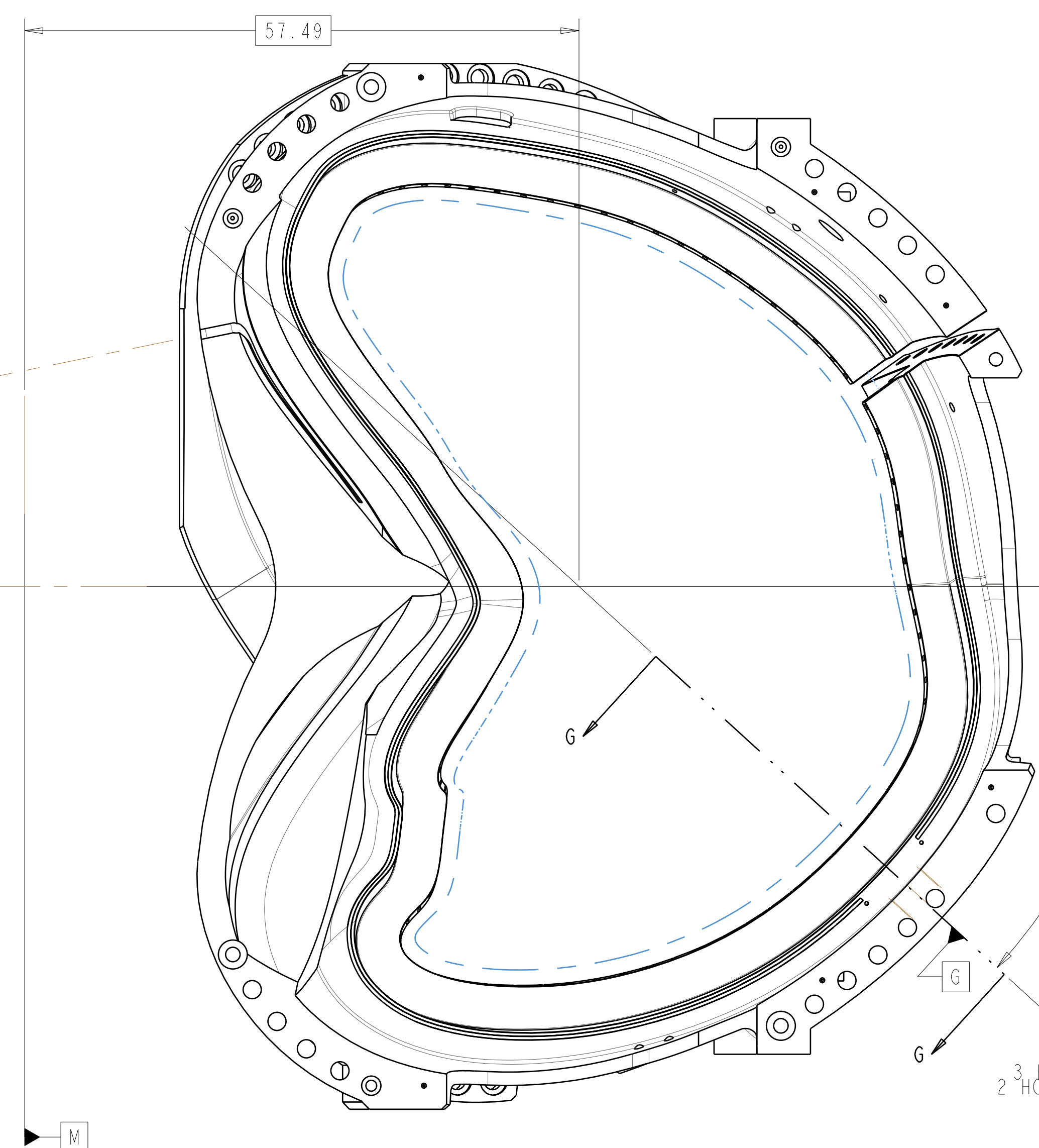
SECTION W-W
WING SHIM POCKET
SCALE 0.25



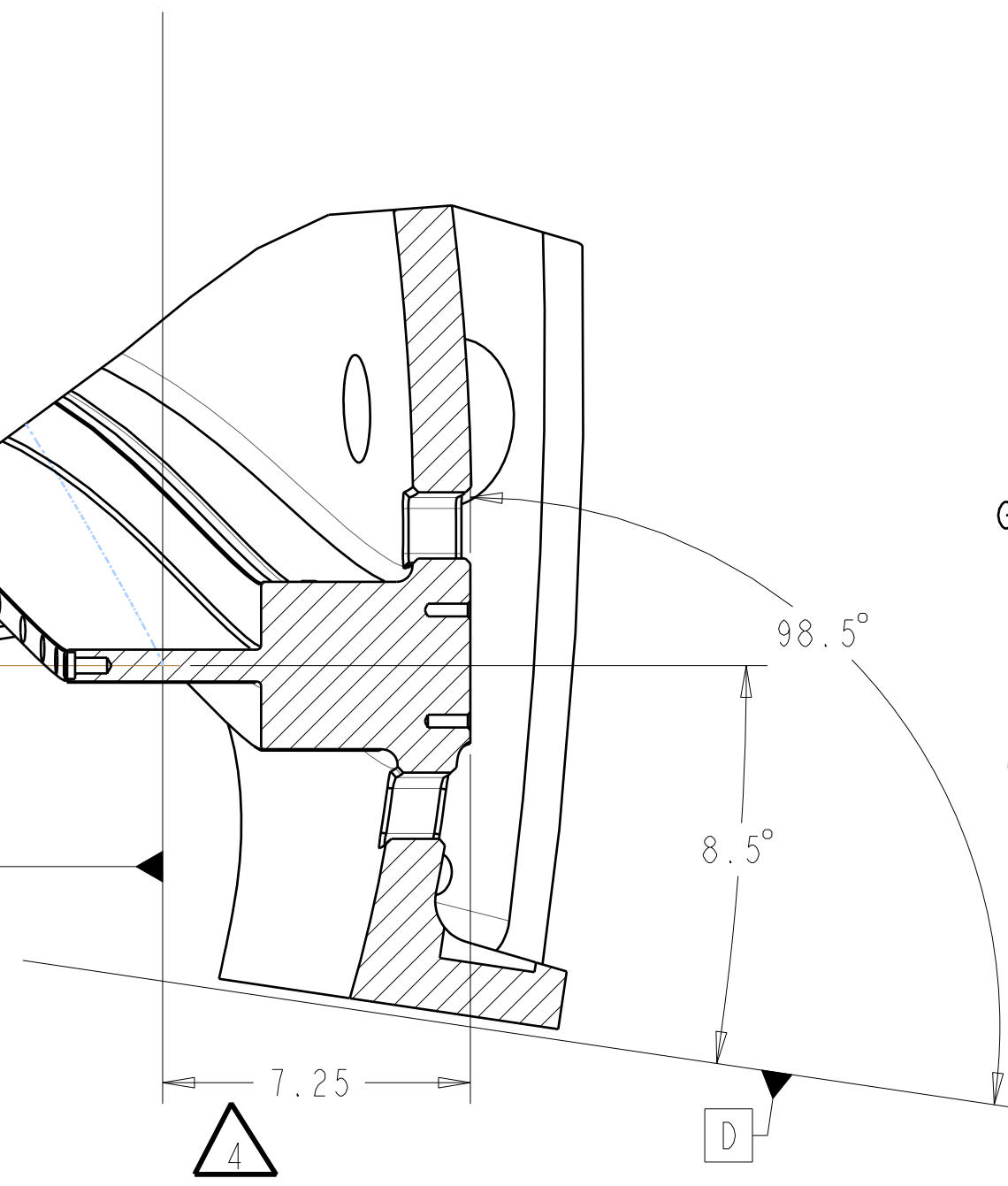
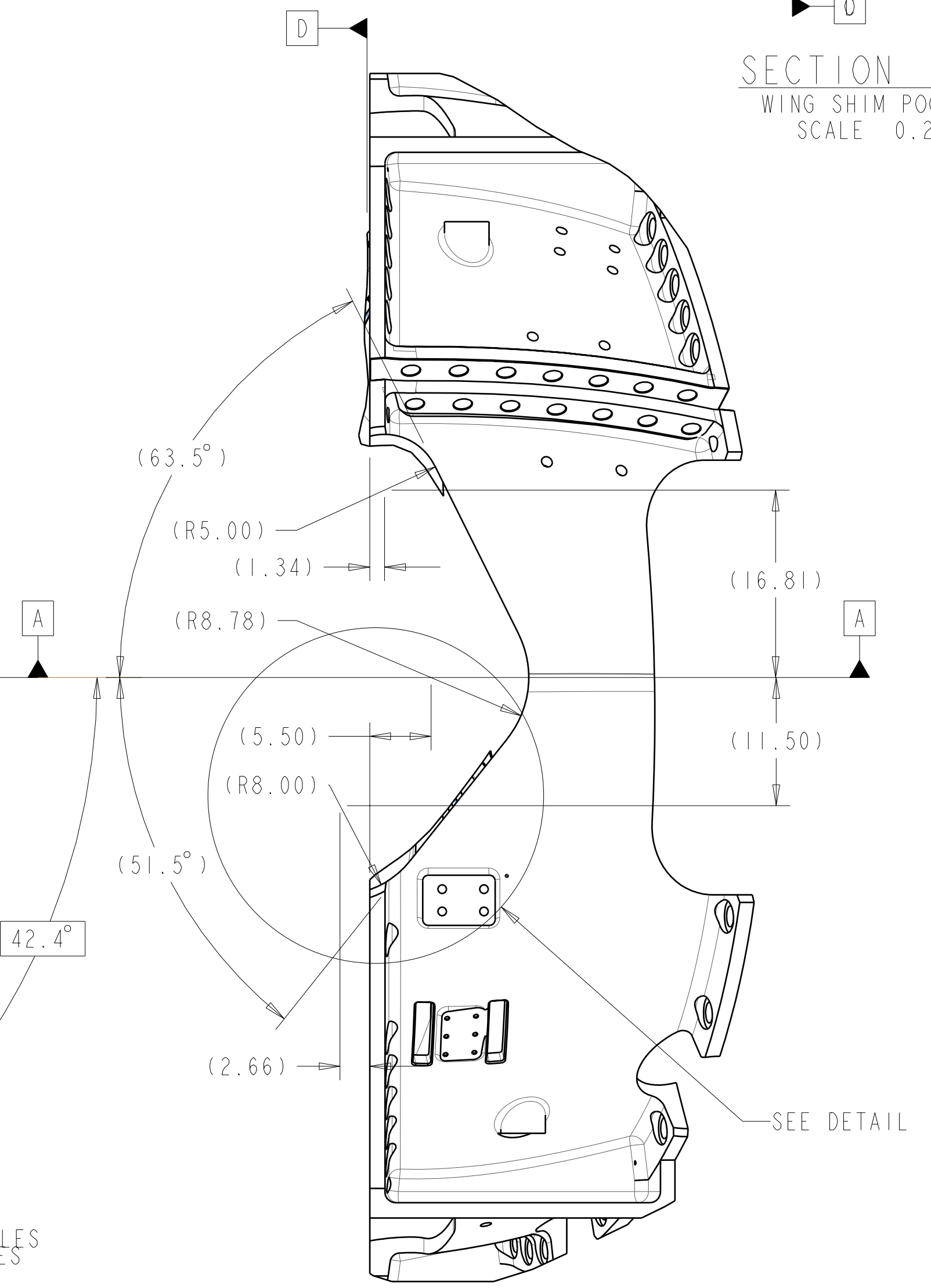
DETAIL J
ASSEMBLY FIXTURE MOUNT
SCALE 0.25



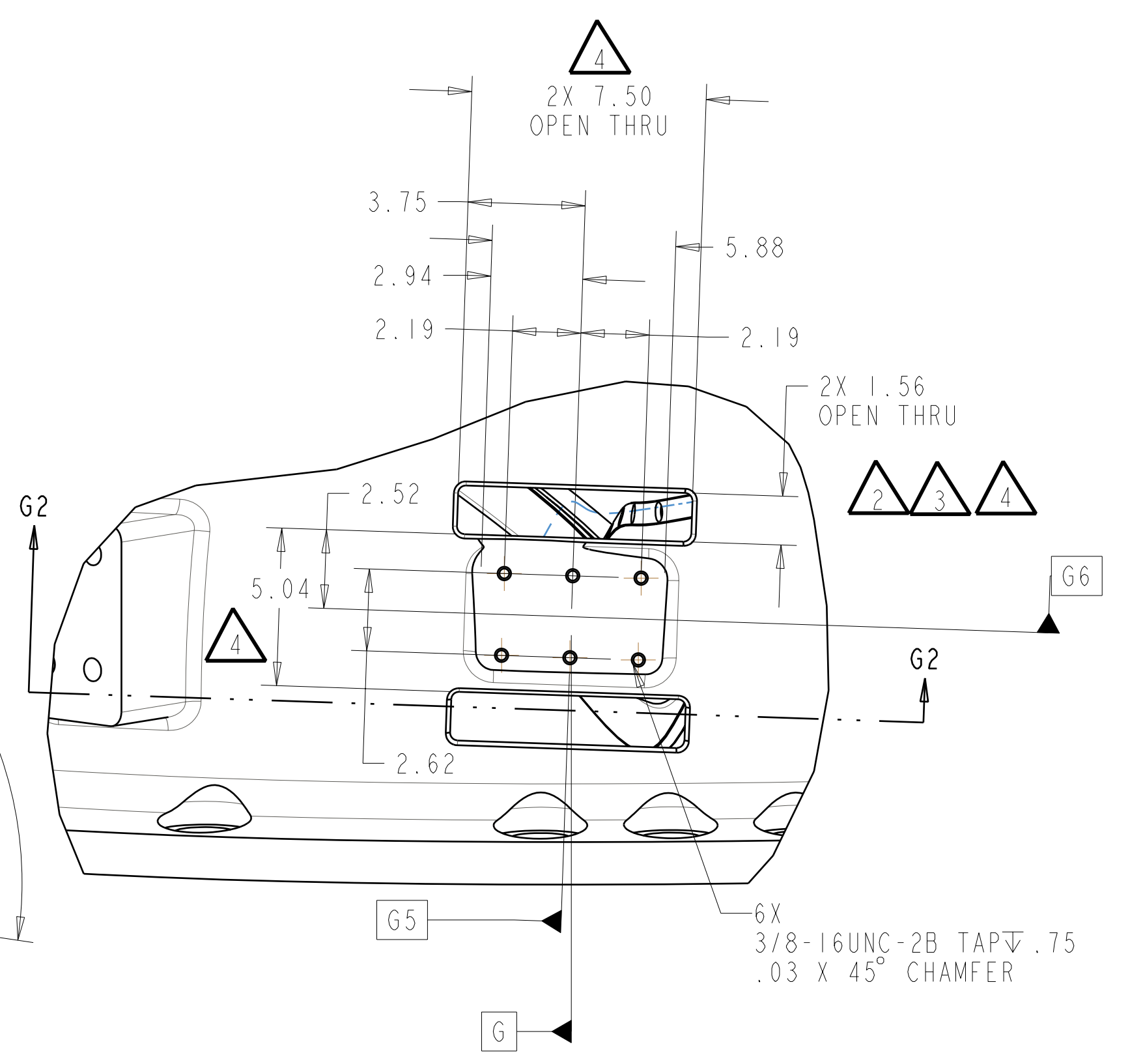
AUX VIEW TO SHOW
WING SHIM POCKET



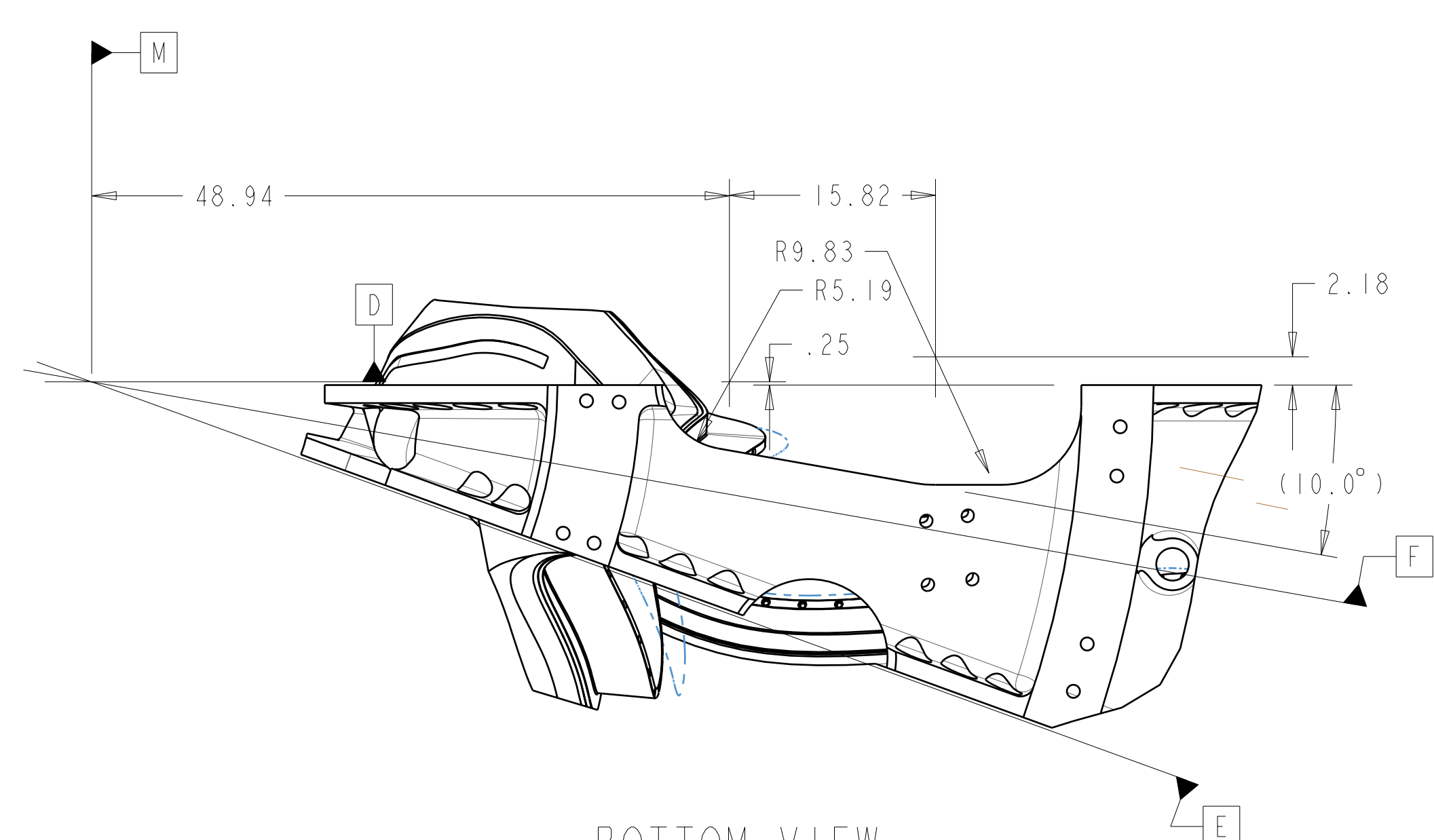
VIEW AT DATUM D
SCALE 0.1



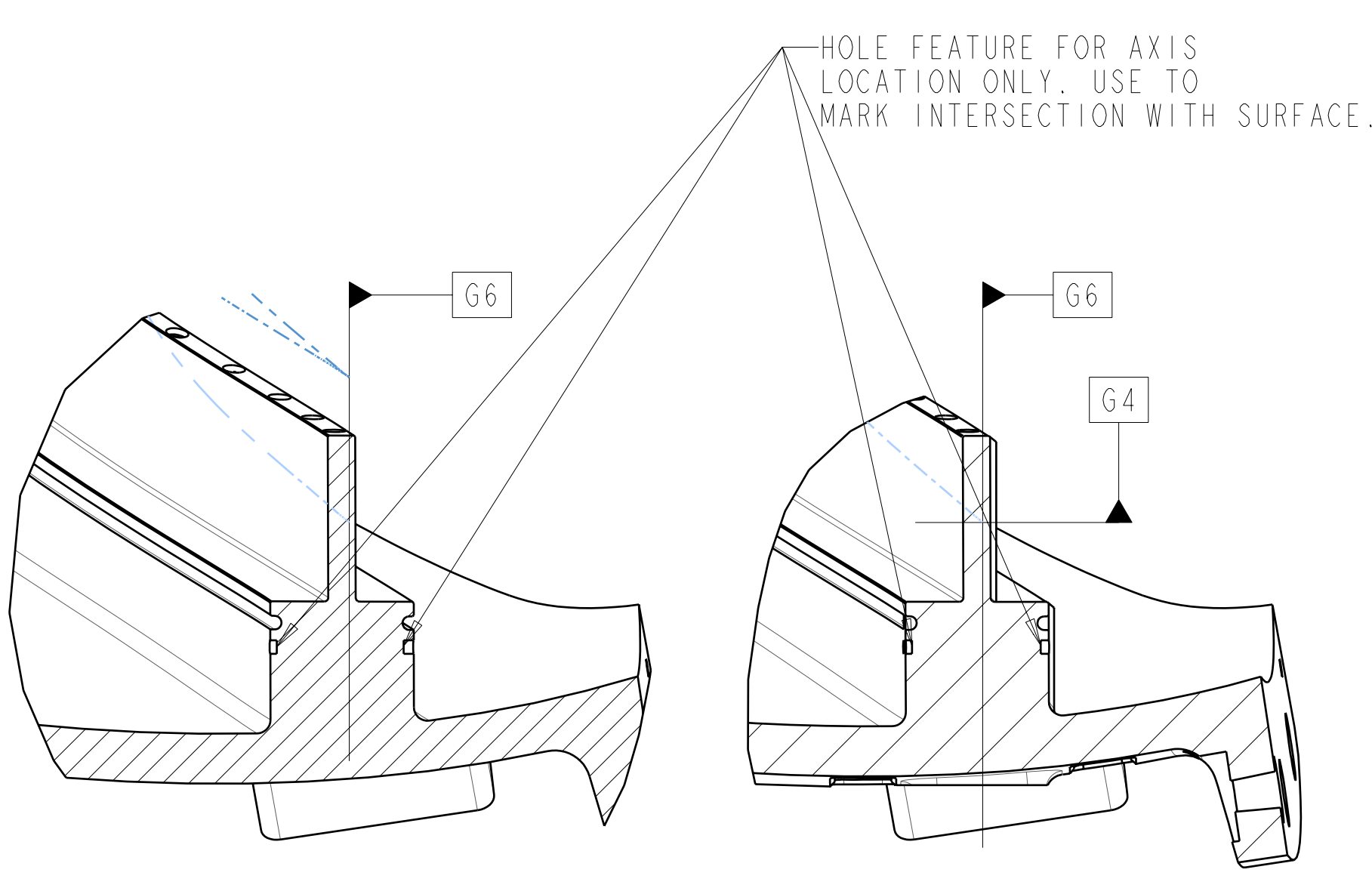
SECTION G-G
LEAD BLOCK DETAIL
SCALE 0.25



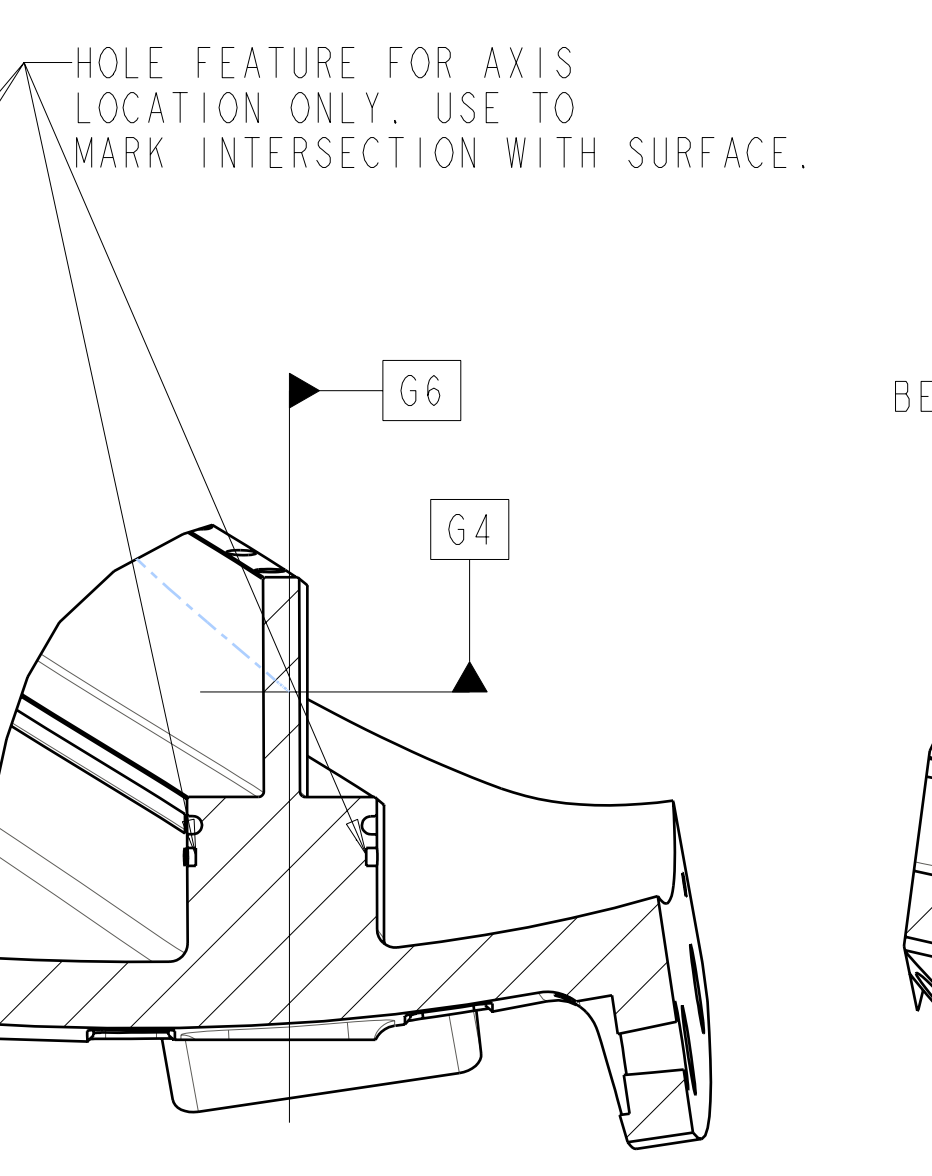
$\triangle 6$ SOME FEATURES NOT SHOWN FOR CLARITY



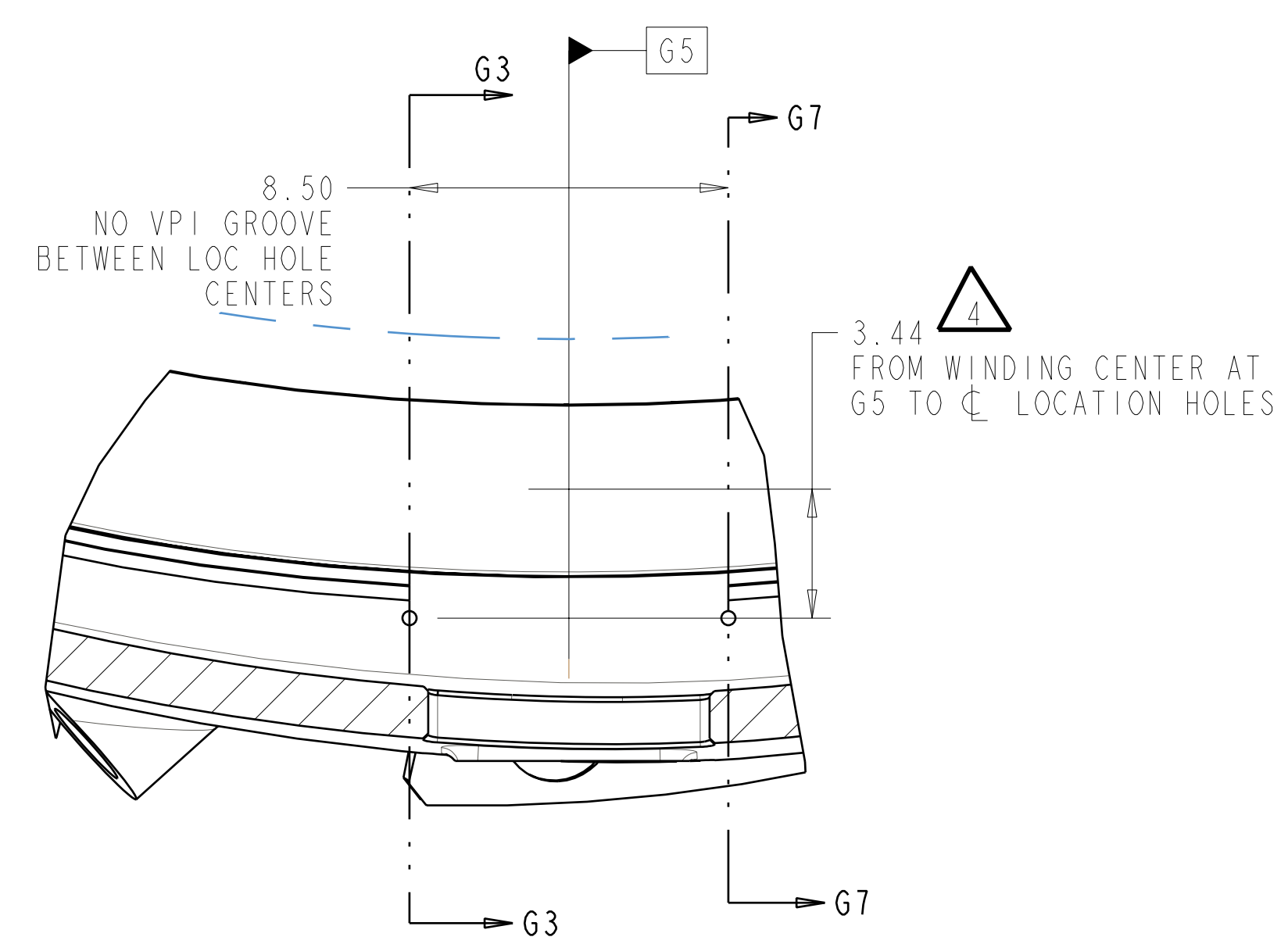
BOTTOM VIEW



SECTION G7-G7 $\triangle 4$ $\triangle 5$



SECTION G3-G3 $\triangle 3$ $\triangle 4$ $\triangle 5$

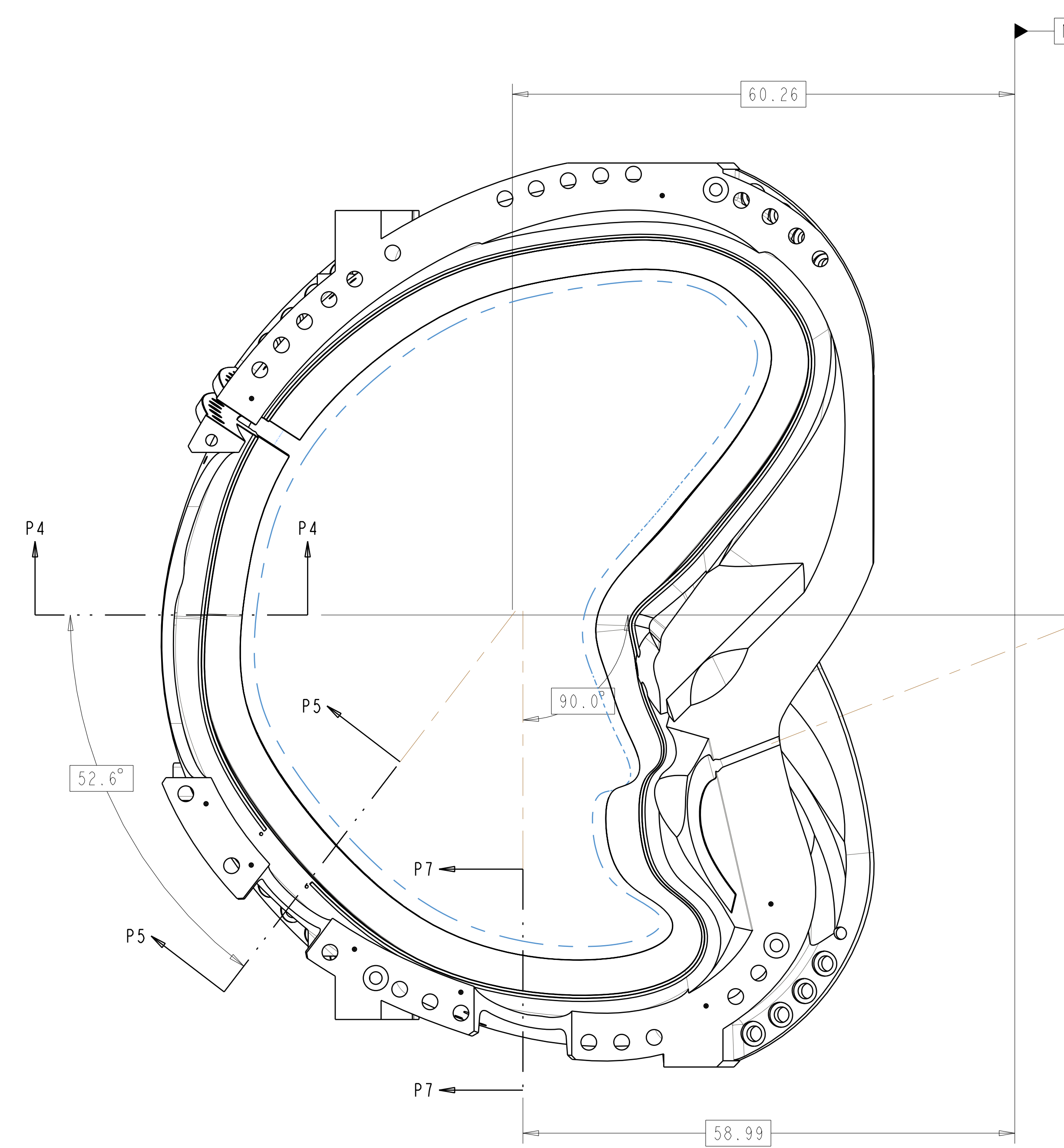


SECTION G2-G2
SCALE 0.250 $\triangle 4$ $\triangle 5$

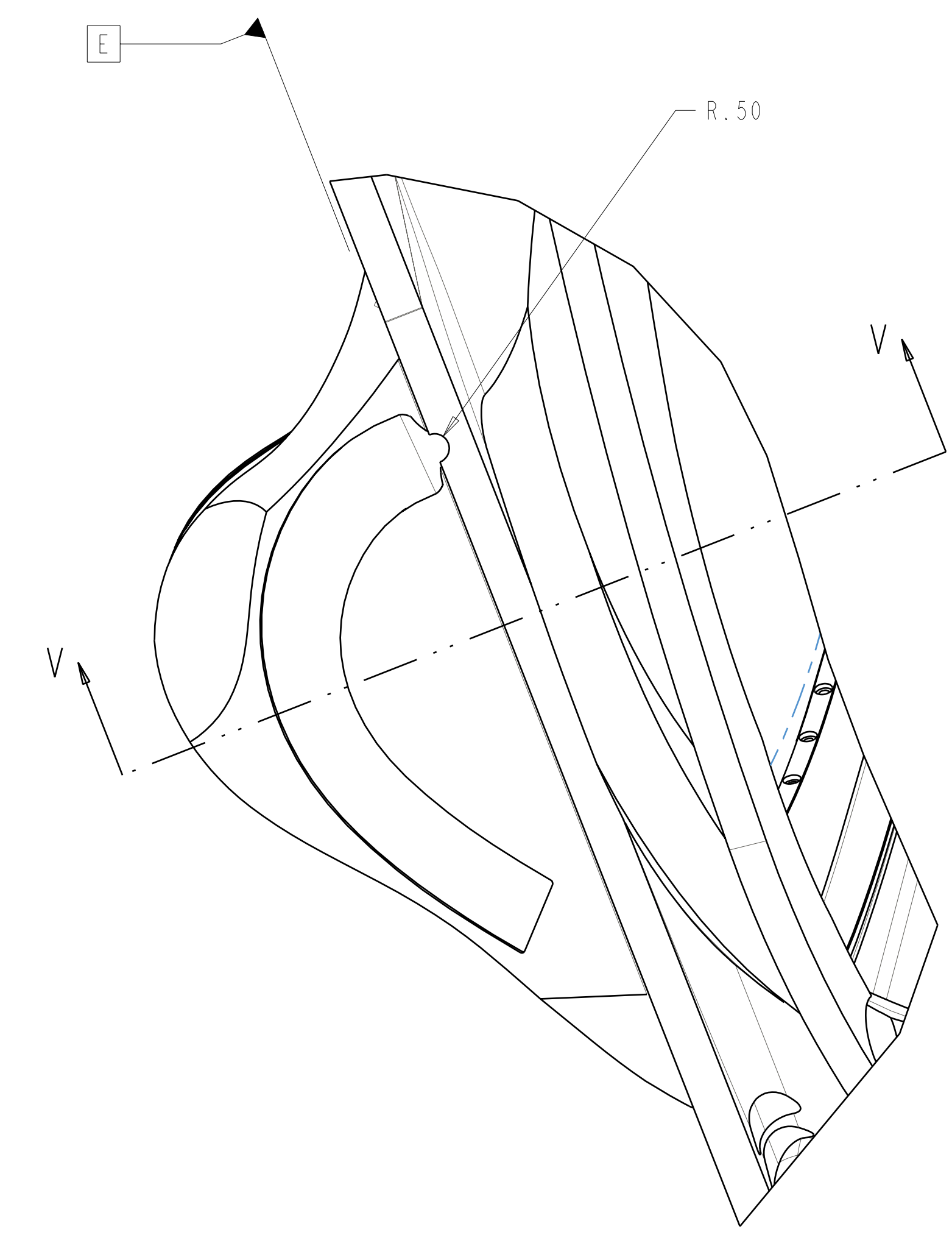
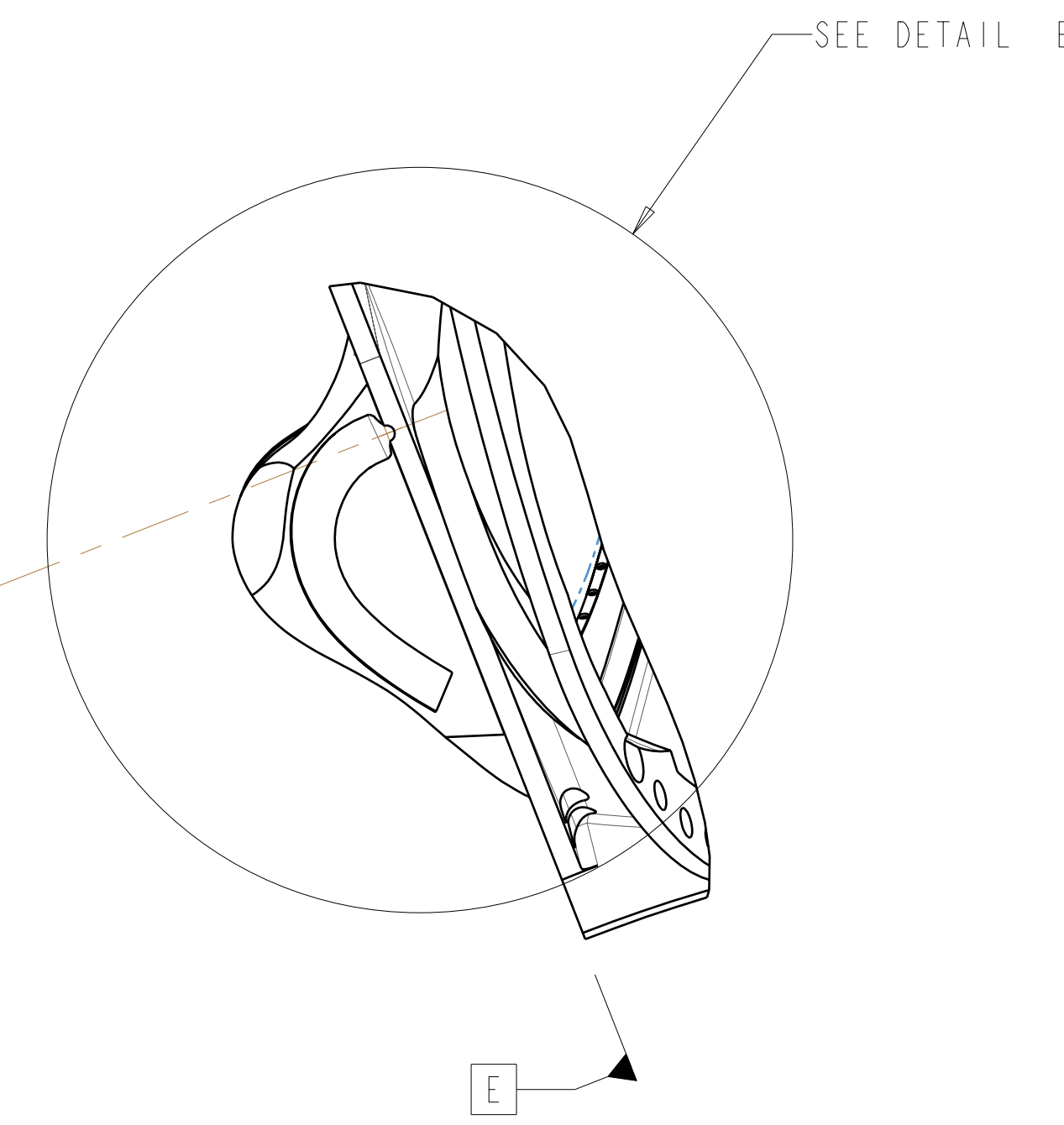
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NATIONAL COMPACT STELLARATOR EXPERIMENT							
PRODUCTION WINDING FORM TYPE-A							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
13	X-10	5700	3	7	11	S	U
RELEASE LEVEL							REV
Fabrication	SEI41-114						6

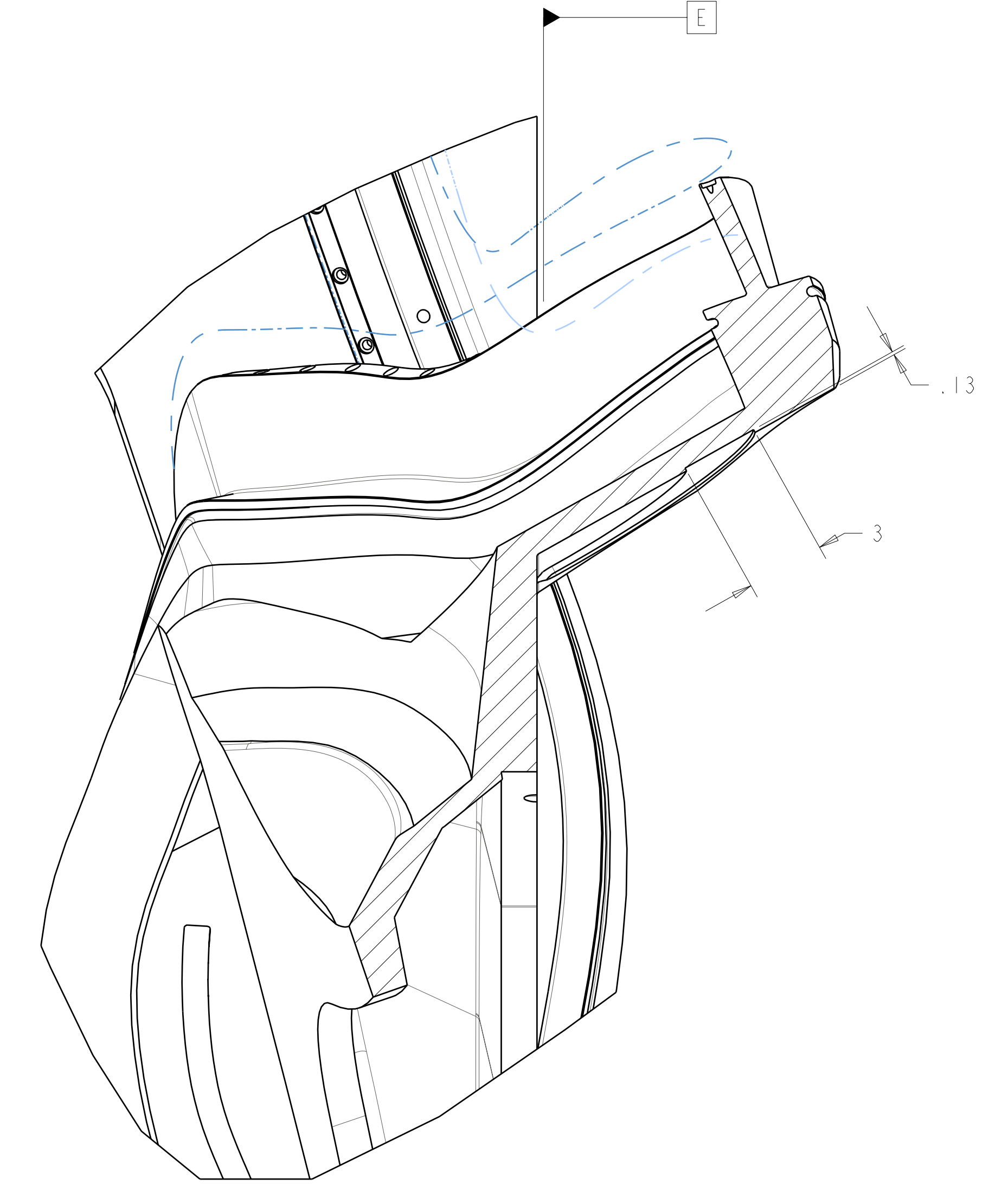
FOR NOTES AND PARTS LIST SEE SHEET 1



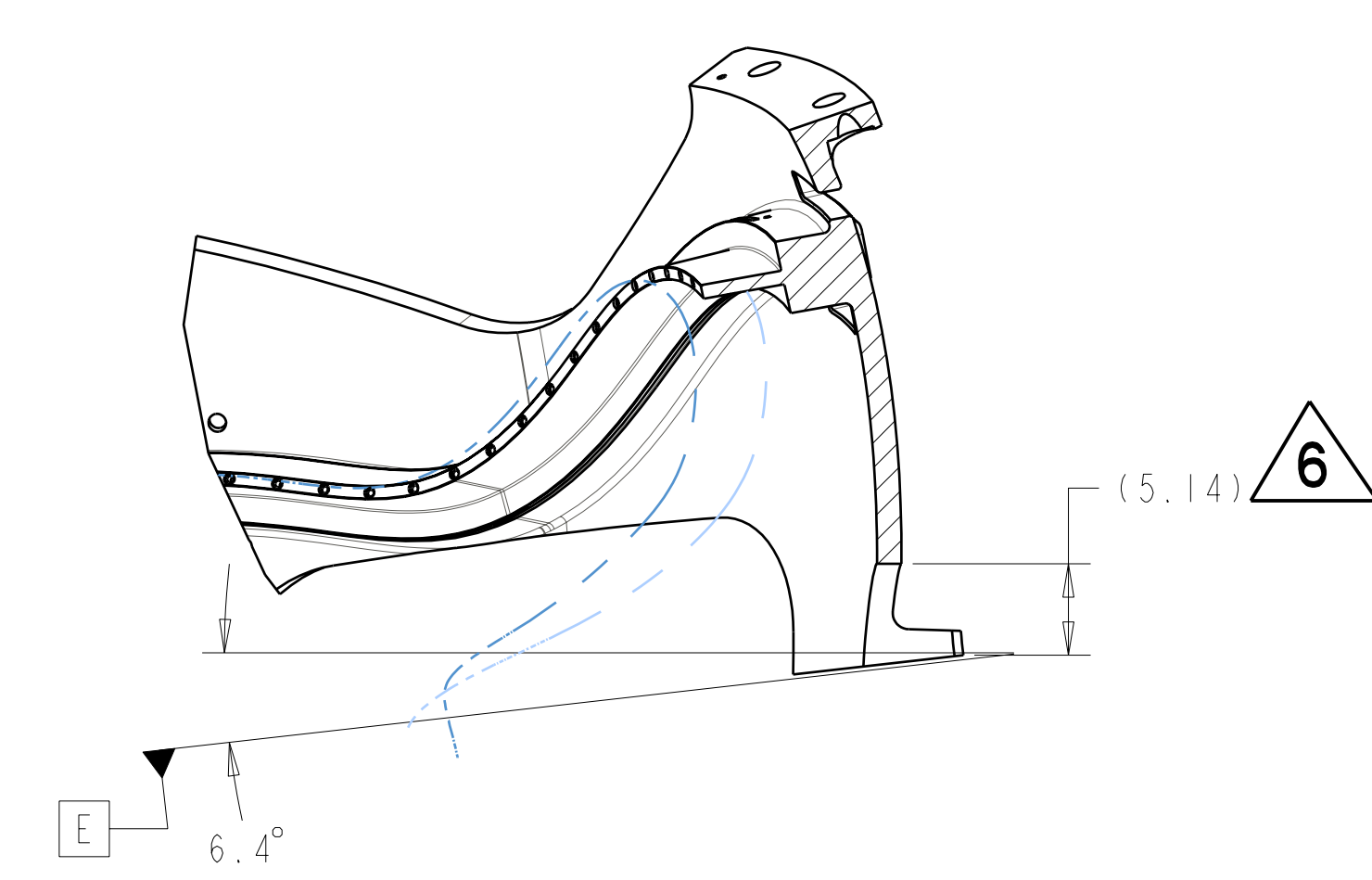
VIEW AT DATUM E
 SCALE 0.1



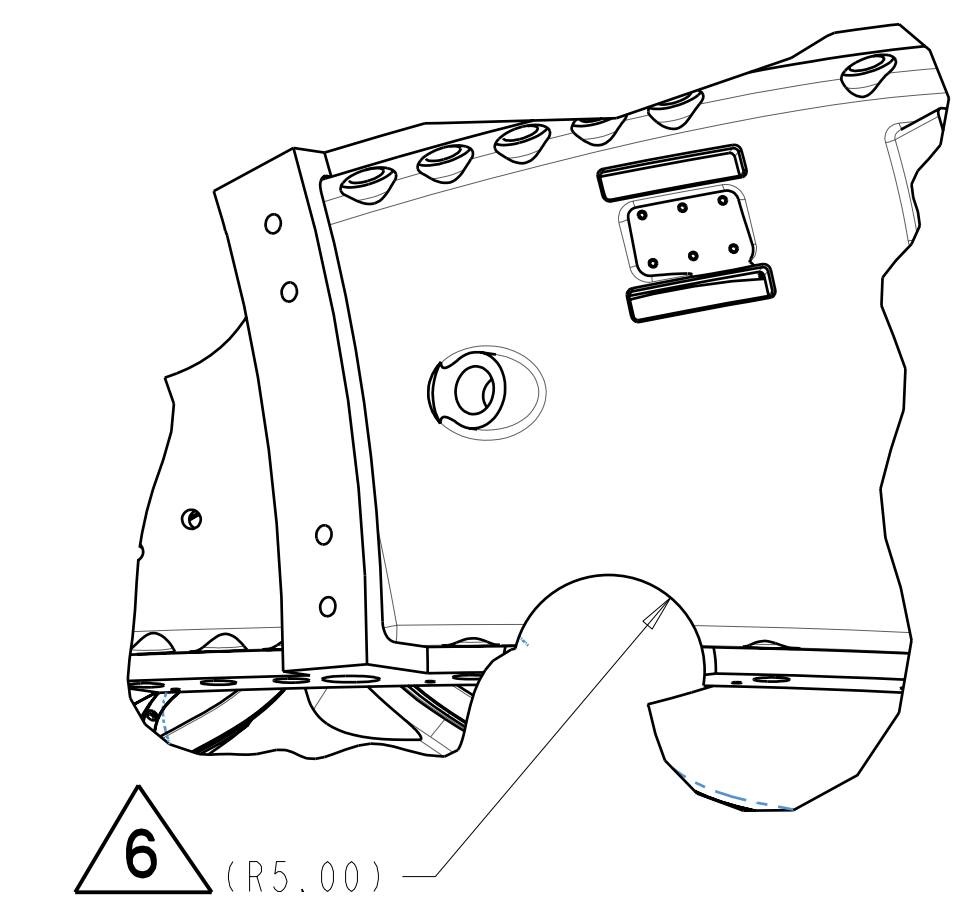
DETAIL E
 WING SHIM POCKET
 SCALE 0.25



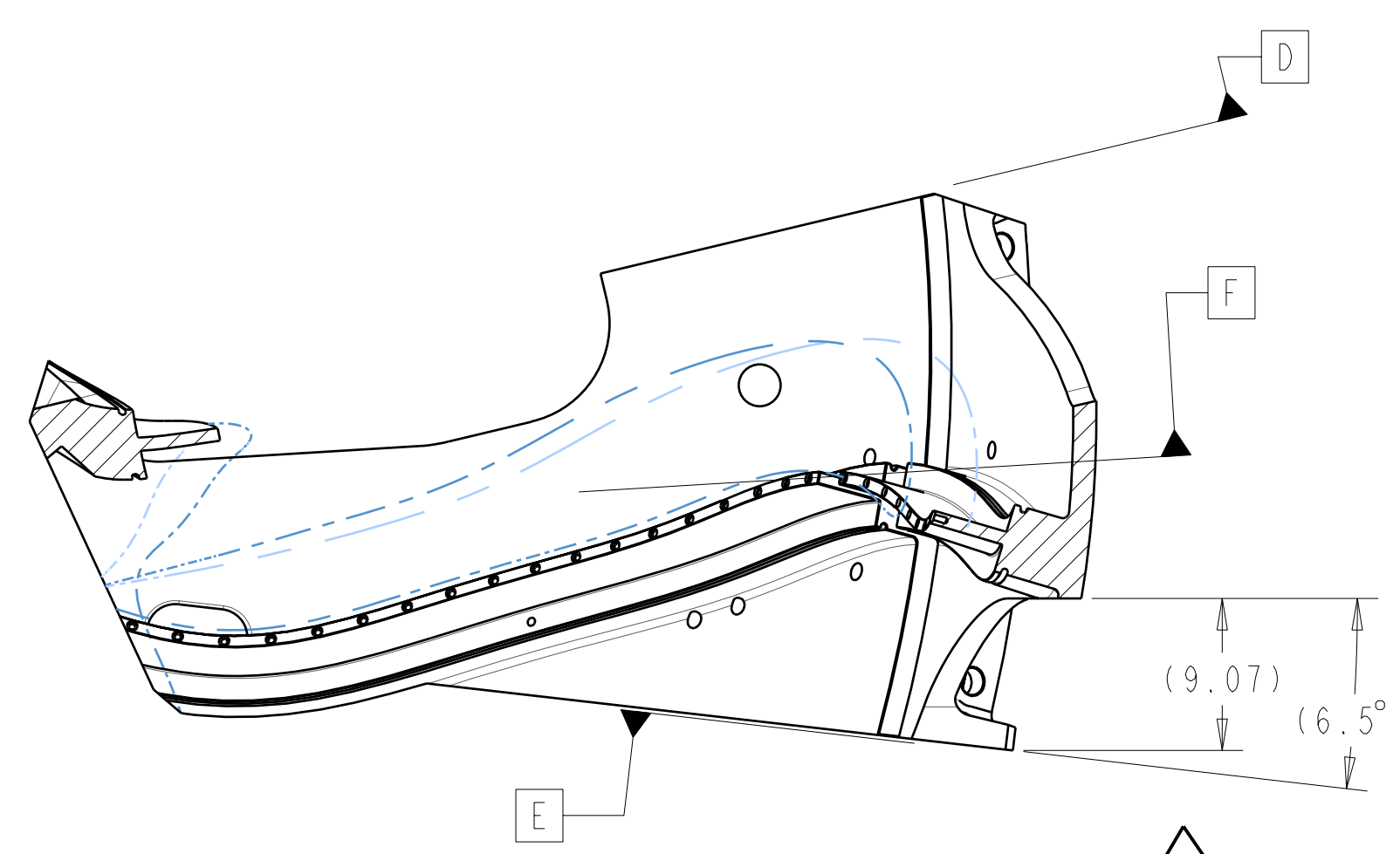
SECTION V-V
 SCALE 0.25



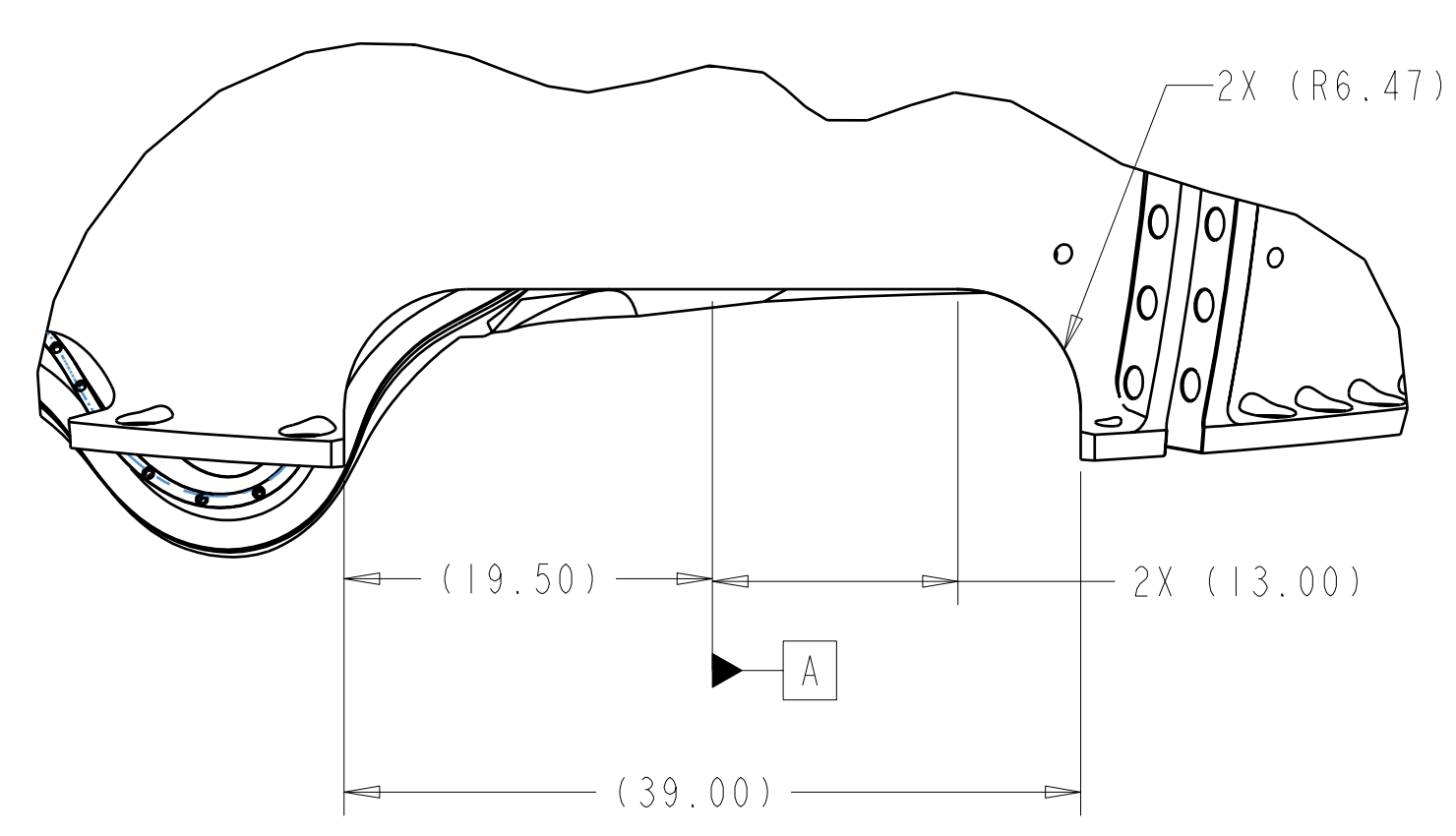
SECTION P5-P5
 SCALE 0.1



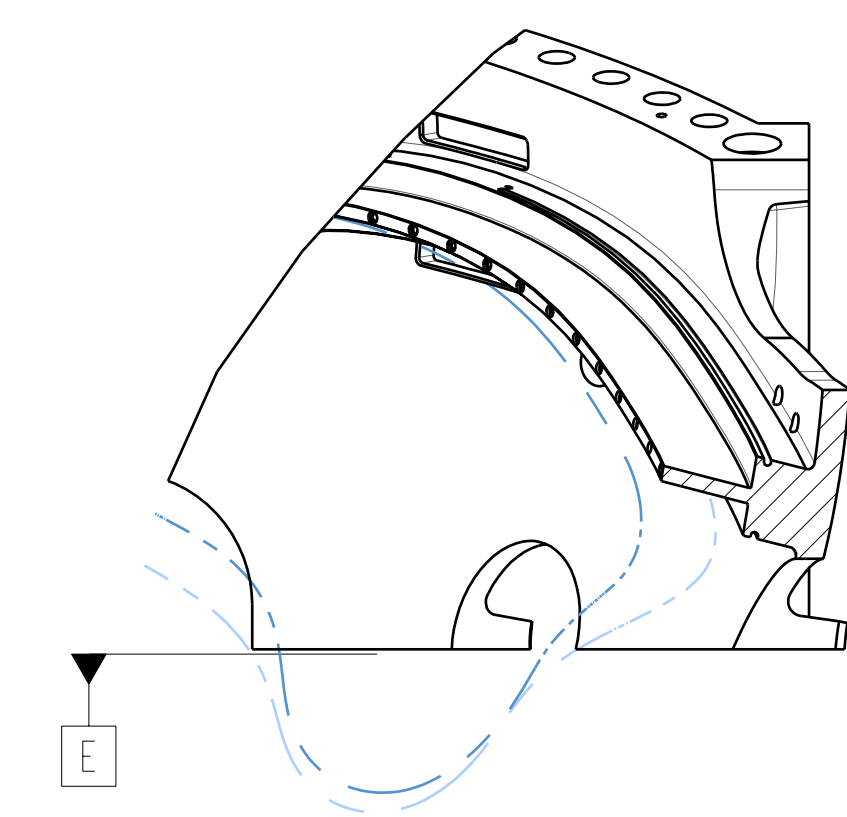
SOME FEATURES NOT SHOWN FOR CLARITY



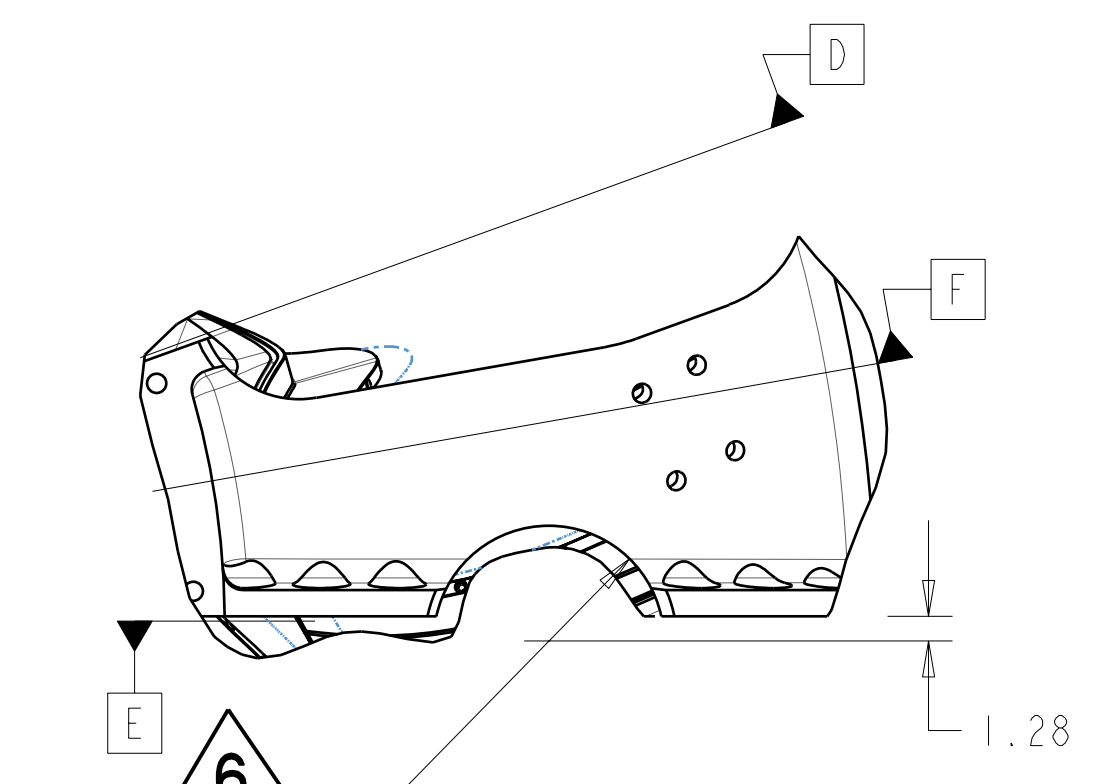
SECTION P4-P4
 SCALE 0.1



6



SECTION P7-P7
 SCALE 0.1



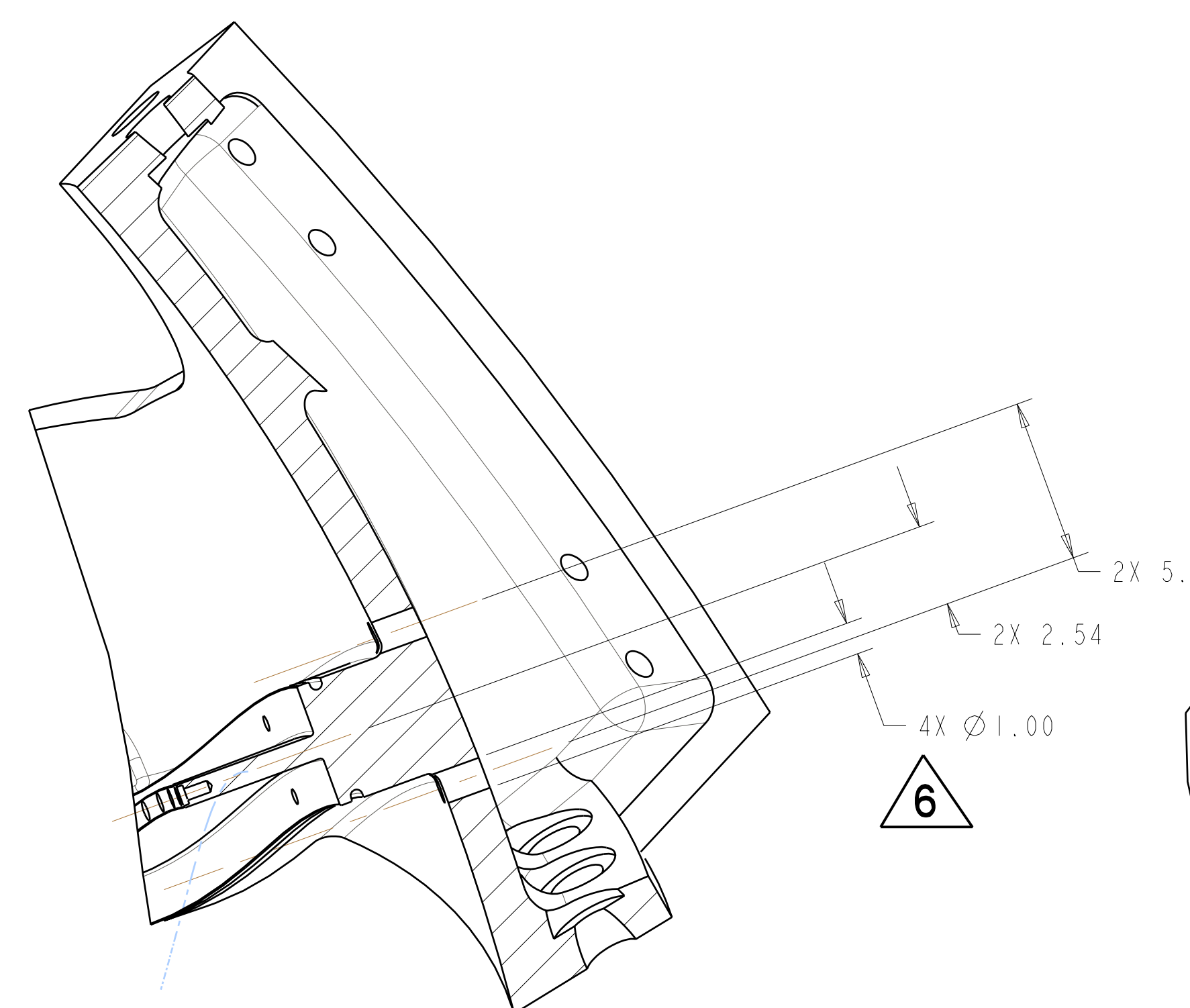
SOME FEATURES NOT SHOWN FOR CLARITY

RELEASED FOR FABRICATION / INSTALLATION
 PPPL Drafting:

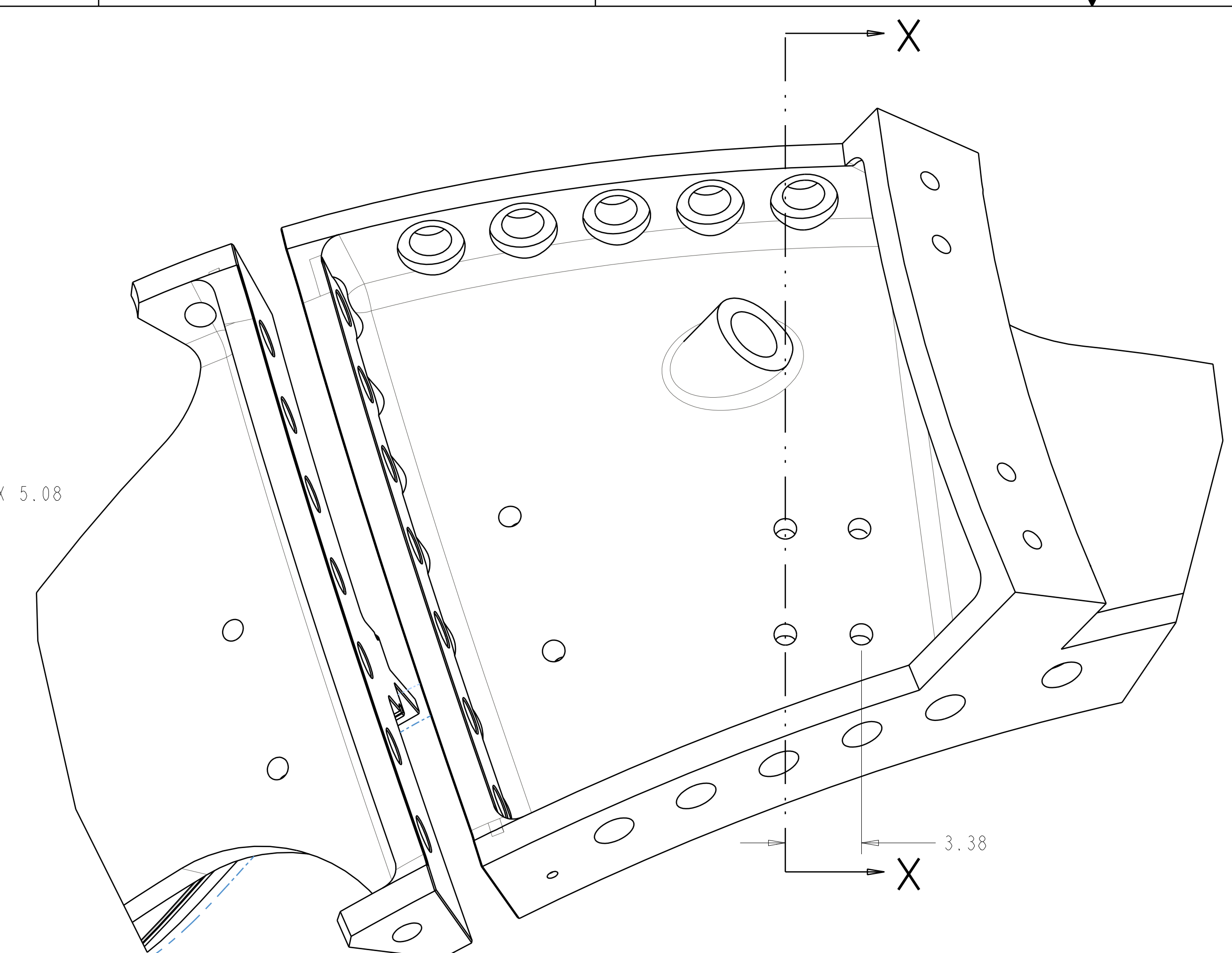
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NATIONAL COMPACT STELLARATOR EXPERIMENT							
PRODUCTION WINDING FORM TYPE-A							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
13	X-10	5700	3	8	11	S	U
RELEASE LEVEL	SEI41-114						REV
Fabrication							6

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FOR NOTES AND PARTS LIST SEE SHEET 1

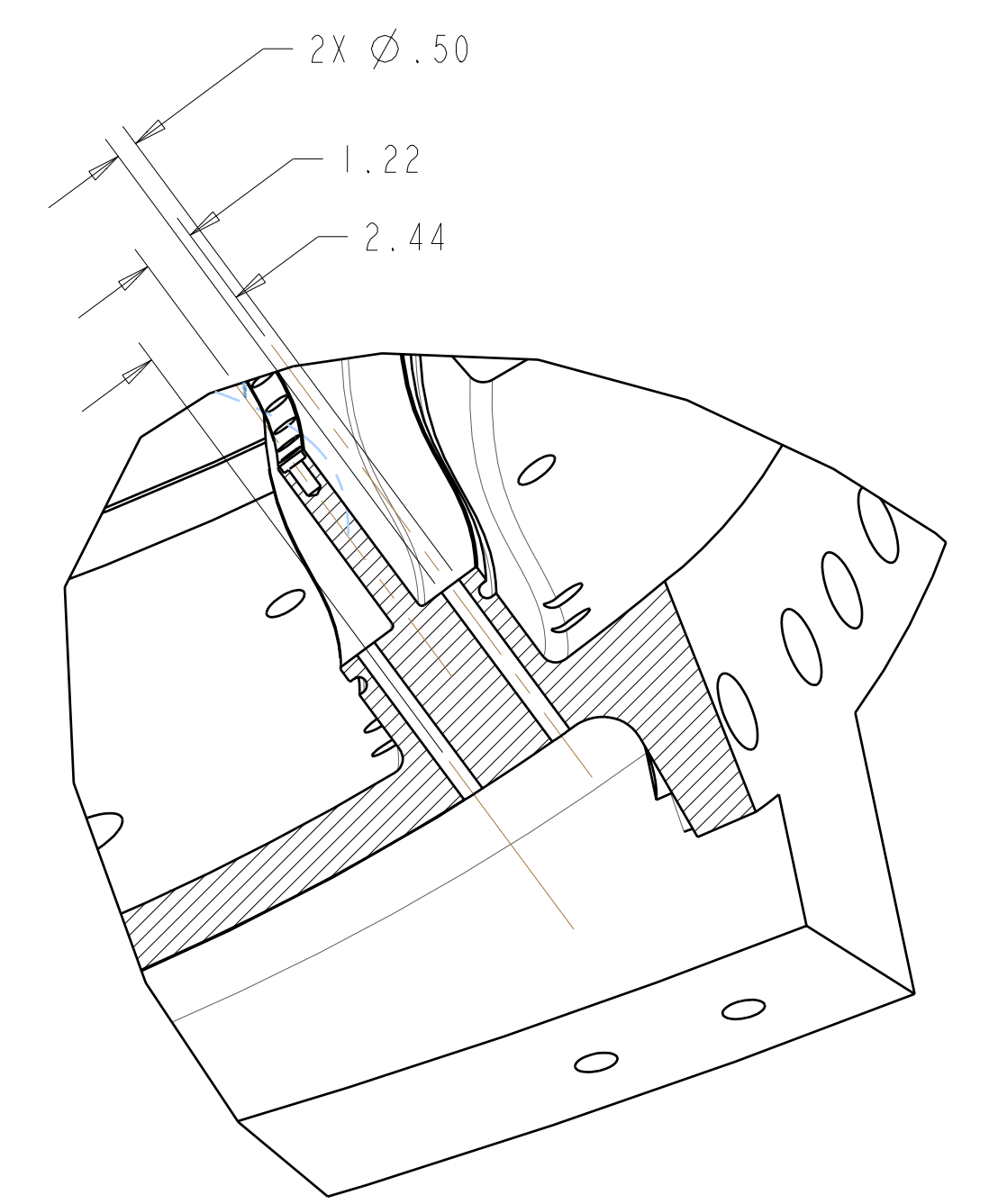


SECTION X-X

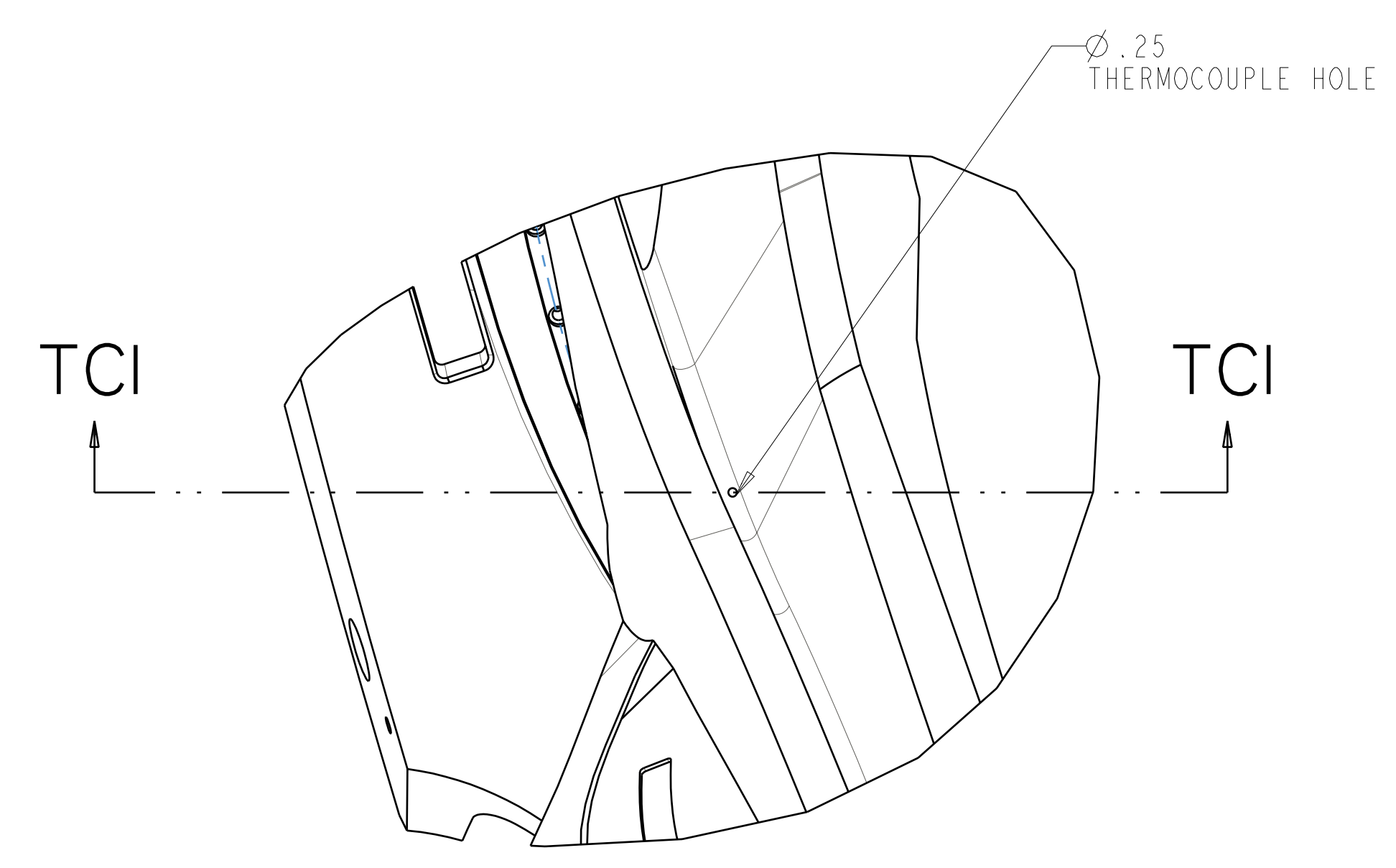


COOLING INLET / OUTLET HOLES
 TYPICAL 2 PLACES

SCALE 0.250
 USE PRO/E MODEL GEOMETRY TO
 DETERMINE SECTION ORIENTATION

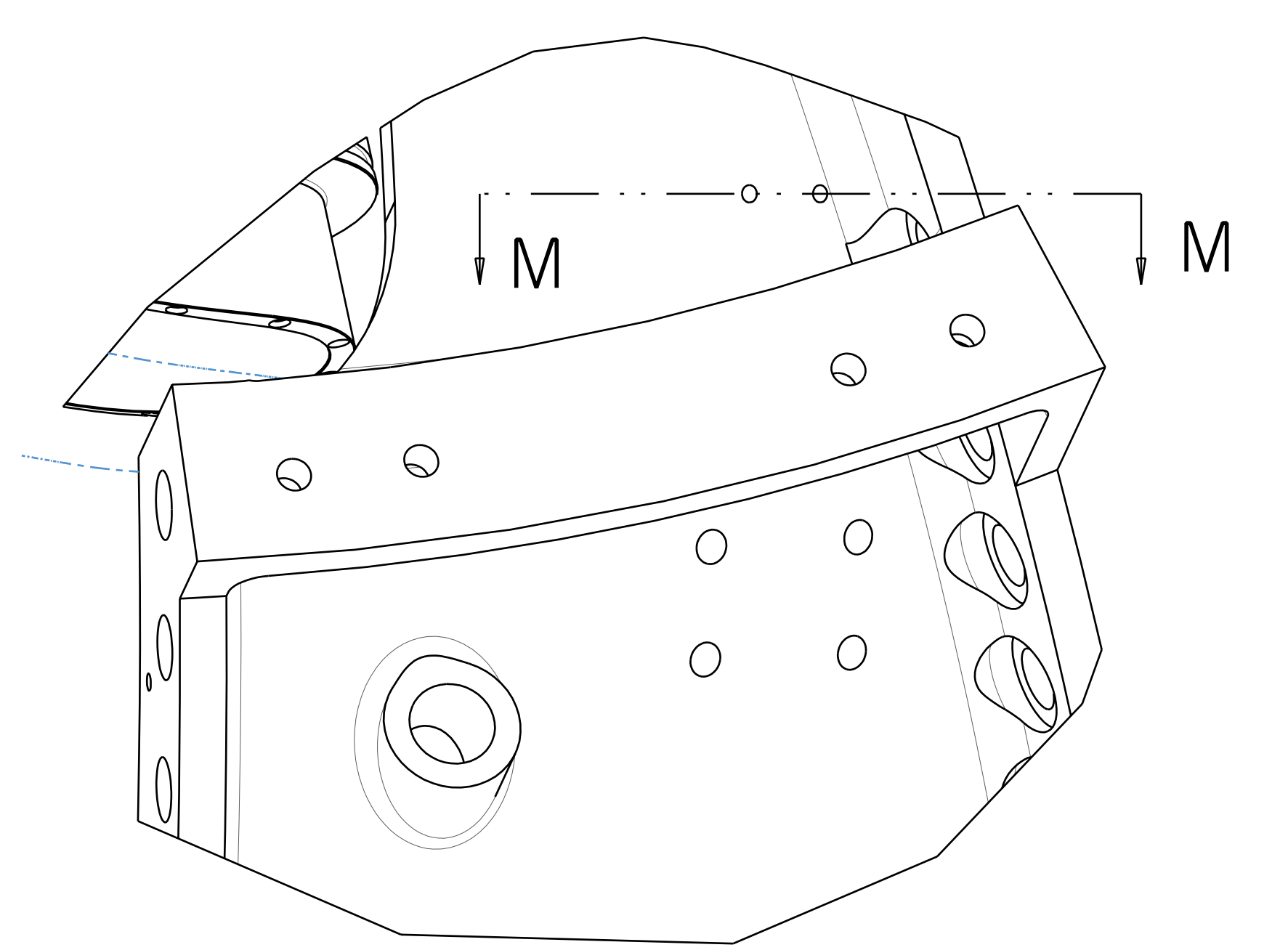


SECTION M-M



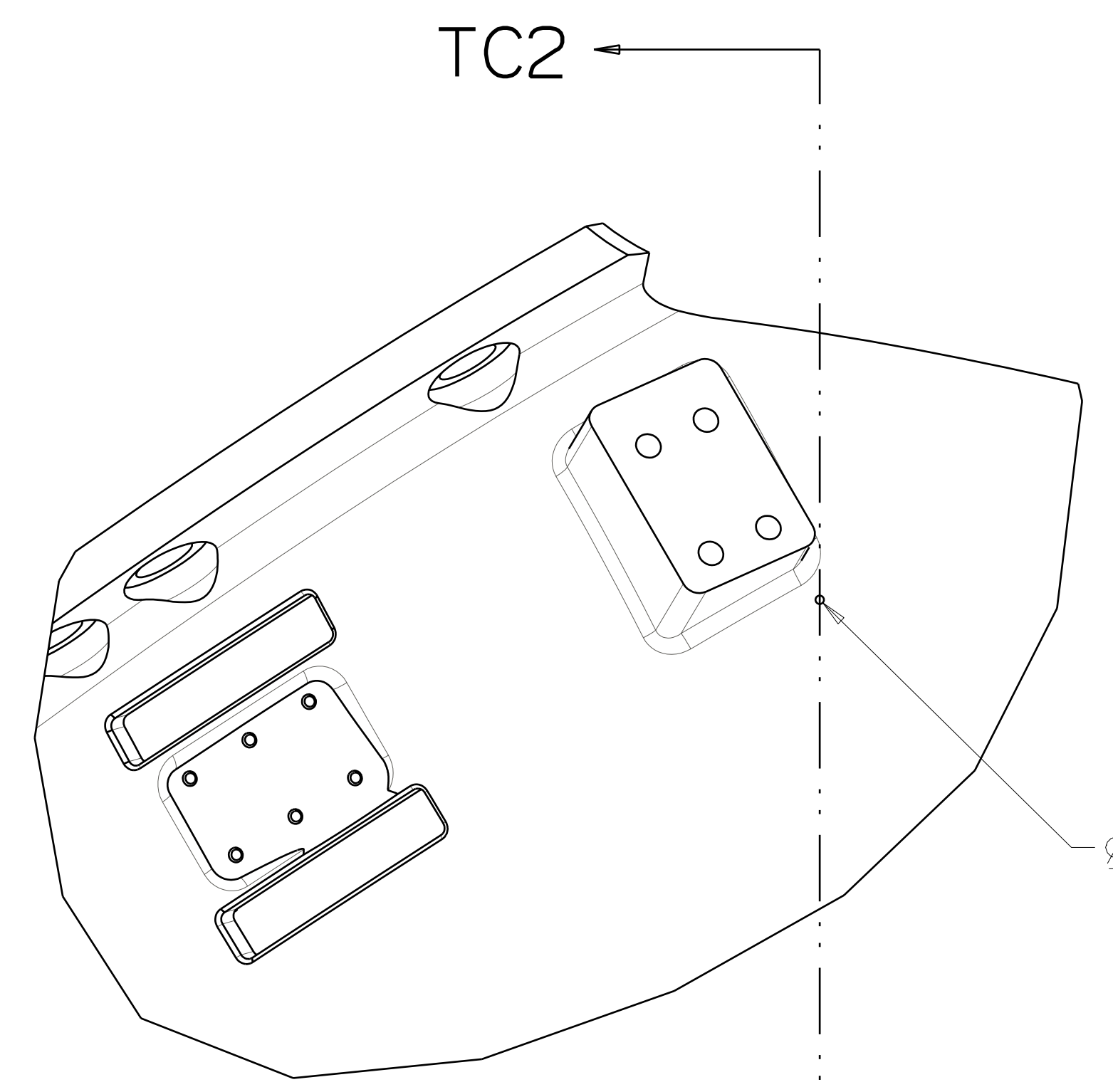
THERMOCOUPLE HOLE

SCALE 0.250
 USE PRO/E MODEL GEOMETRY TO
 DETERMINE SECTION ORIENTATION



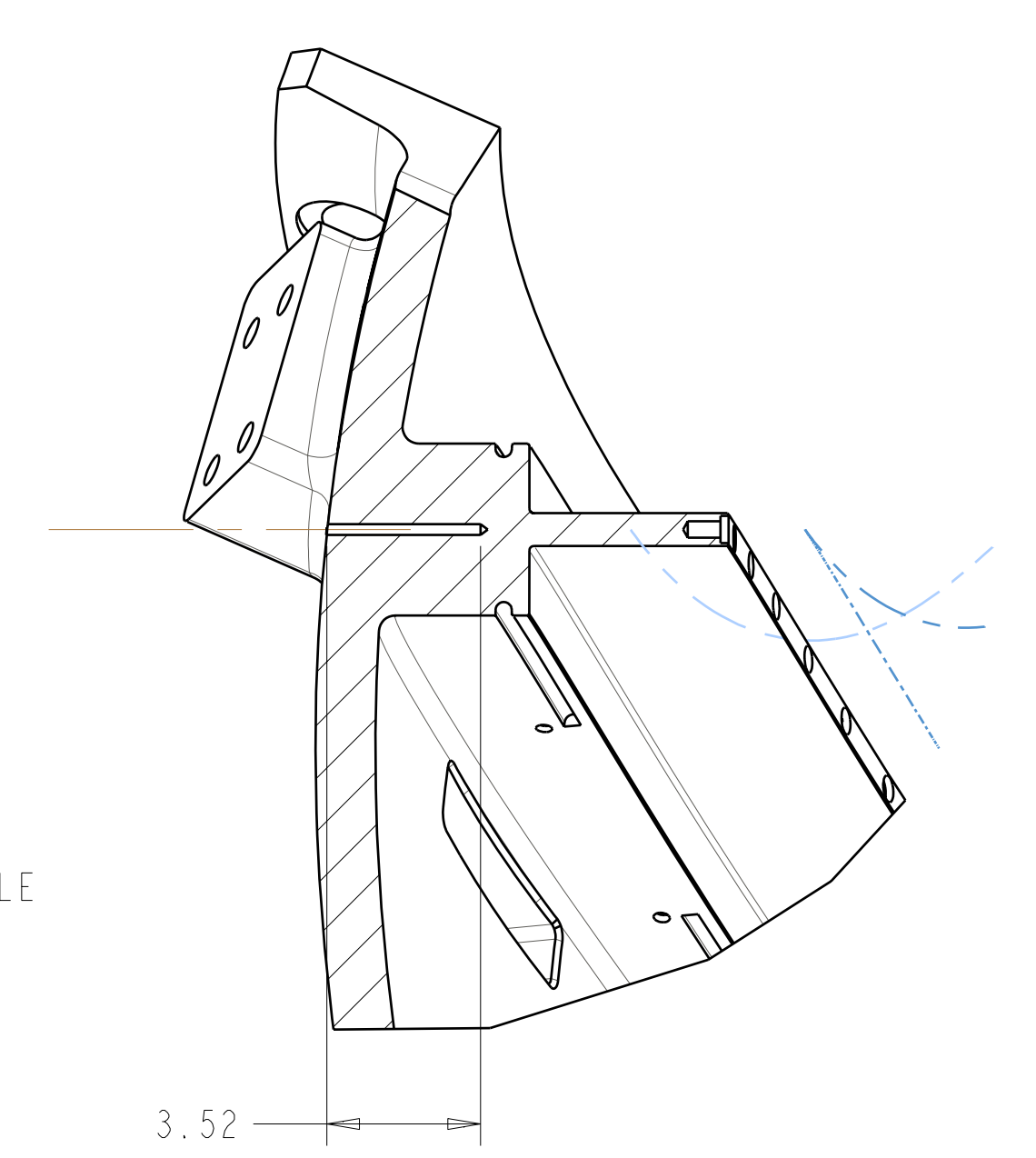
VPI BLEED HOLES

SCALE 0.250
 USE PRO/E MODEL GEOMETRY TO
 DETERMINE SECTION ORIENTATION

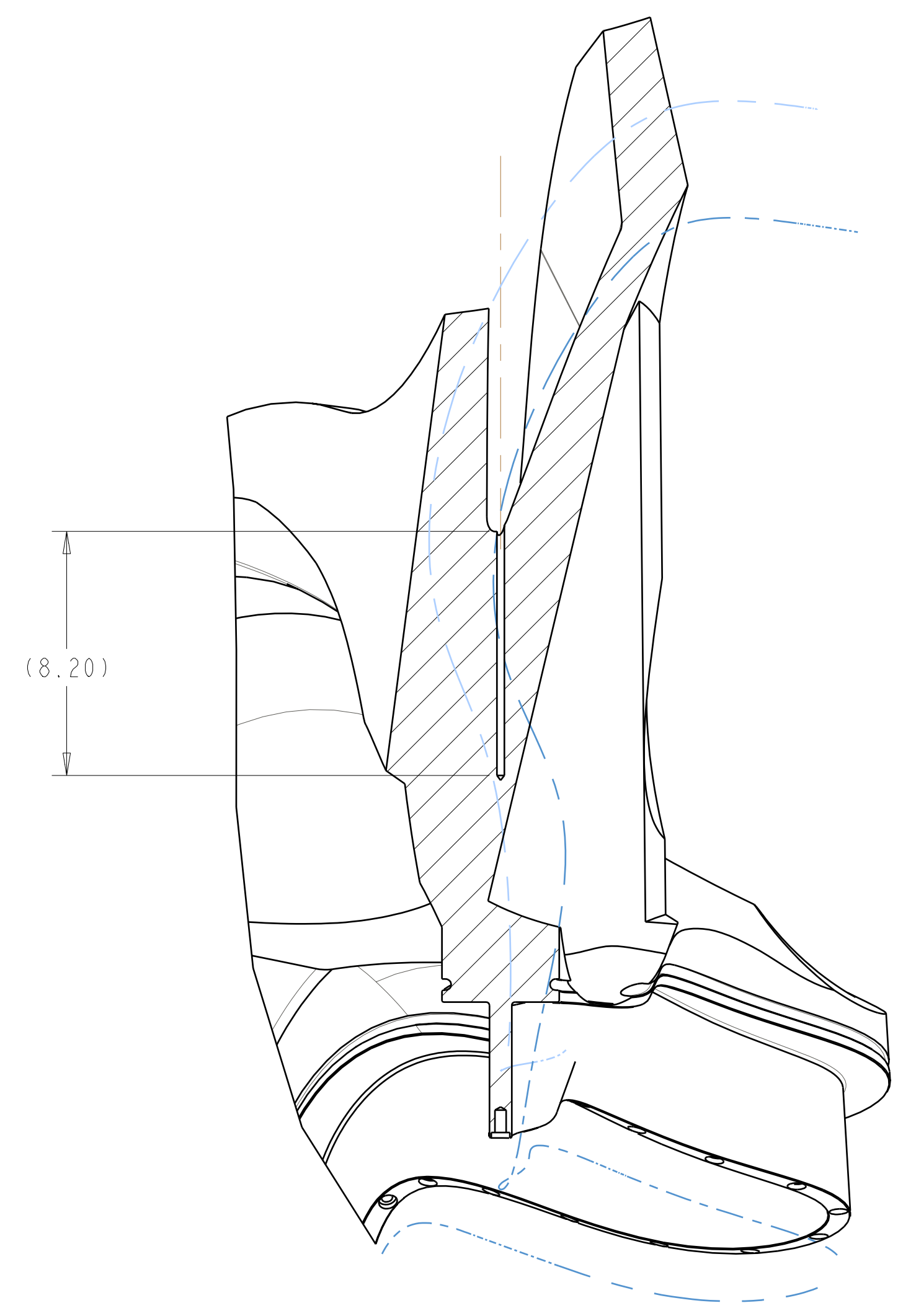


THERMOCOUPLE HOLE

SCALE 0.250
 USE PRO/E MODEL GEOMETRY TO
 DETERMINE SECTION ORIENTATION



SECTION TC2-TC2



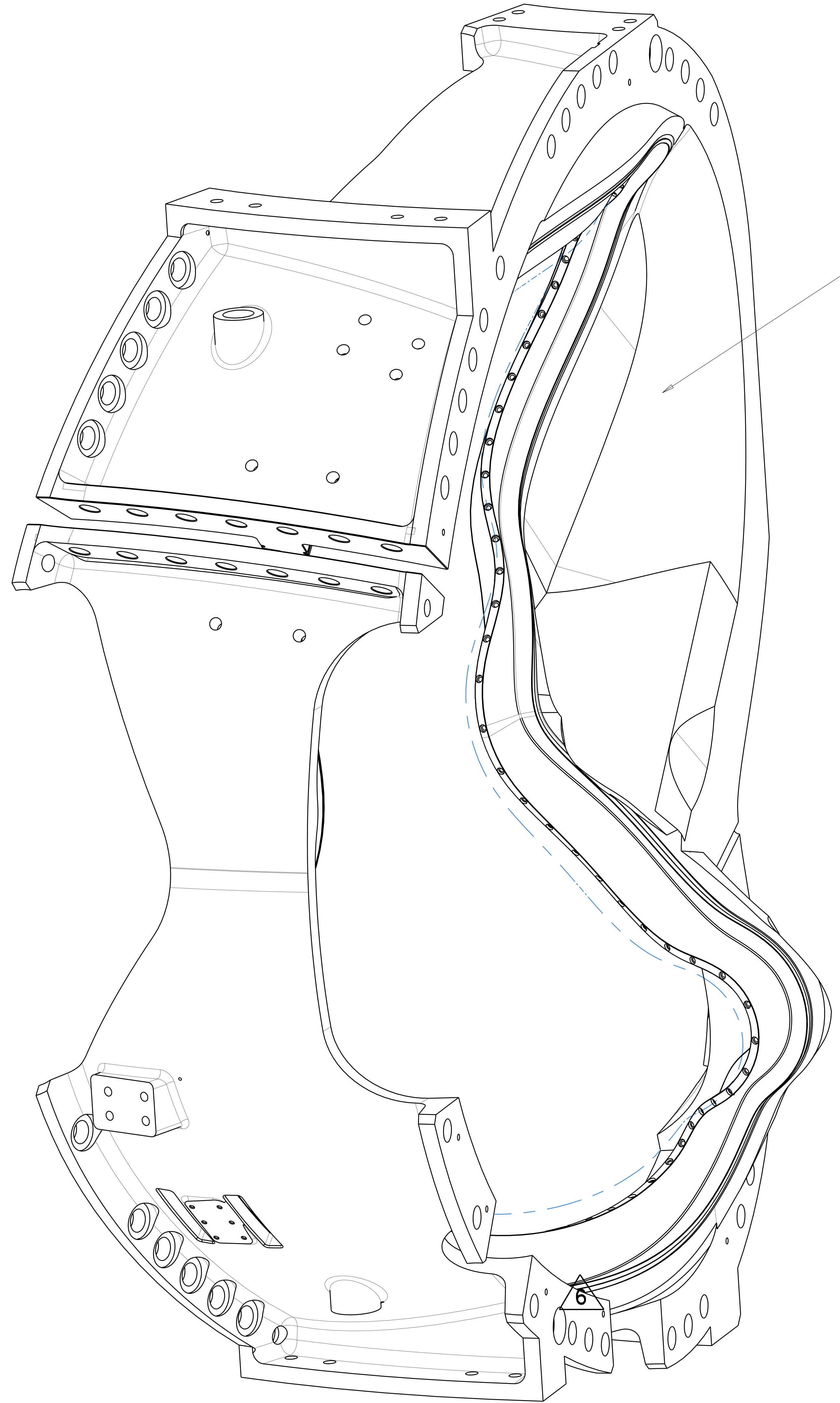
SECTION TCI-TCI

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 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							
PRODUCTION WINDING FORM TYPE-A							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
13	X-10	5700	3	9	11	S	U
RELEASE LEVEL							REV
Fabrication	SEI41-114						6

H
G
F
E
D
C
B
A

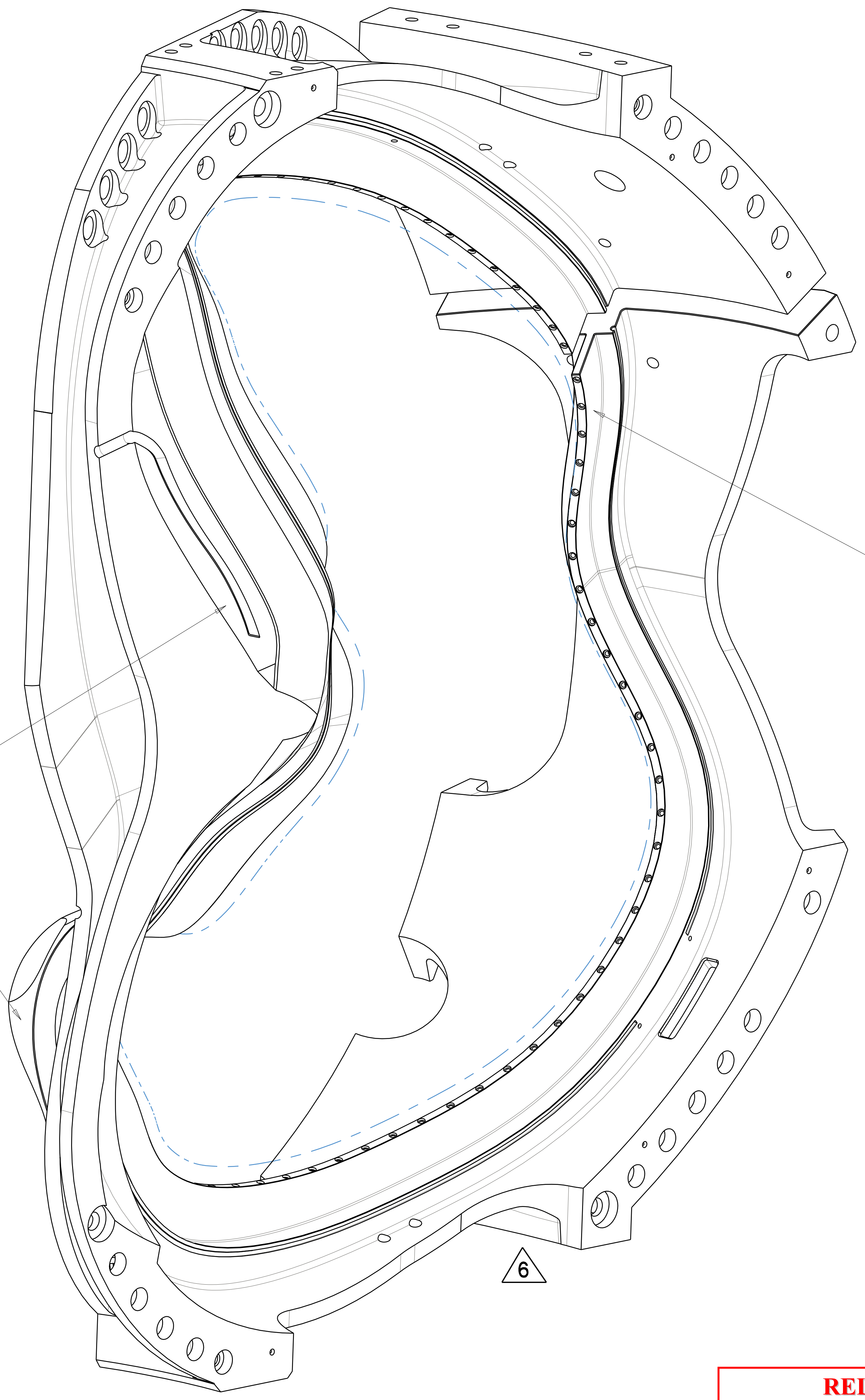
FOR NOTES AND PARTS LIST SEE SHEET 1



ISOMETRIC VIEW
 SCALE 0.20

AS CAST SURFACES
 .5 A C B

10 6
 WING SURFACES
 -.12 / -.25 A B C



ISOMETRIC VIEW
 SCALE 0.20

MACHINED SURFACES
 .02 R S T

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 PPPL Drafting:

UT-BATTELLE		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							
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VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
13	X-10	5700	3	10	I S	U	
RELEASE LEVEL Fabrication		SEI41-114			REV 6		

H
G
F
E
D
C
B
A

TABLE I WINDING CENTER SPLINE (FILE SEI41-114-WC.TXT)

Table with 4 columns: #, X, Y, Z. Contains 101 rows of winding center spline coordinates.

TABLE II X-VECTOR SPLINE (FILE SEI41-114-XV.TXT)

Table with 4 columns: #, X, Y, Z. Contains 101 rows of X-vector spline coordinates.

ALL POINT LOCATIONS ARE BASIC FOR NOTES AND PARTS LIST SEE SHEET 1

RELEASED FOR FABRICATION / INSTALLATION PPPL Drafting:

UT-BATTELLE Oak Ridge National Laboratory National Compact Stellarator Experiment PRODUCTION WINDING FORM TYPE-A