

Table 3-3 - Production Winding Form Models and Drawings

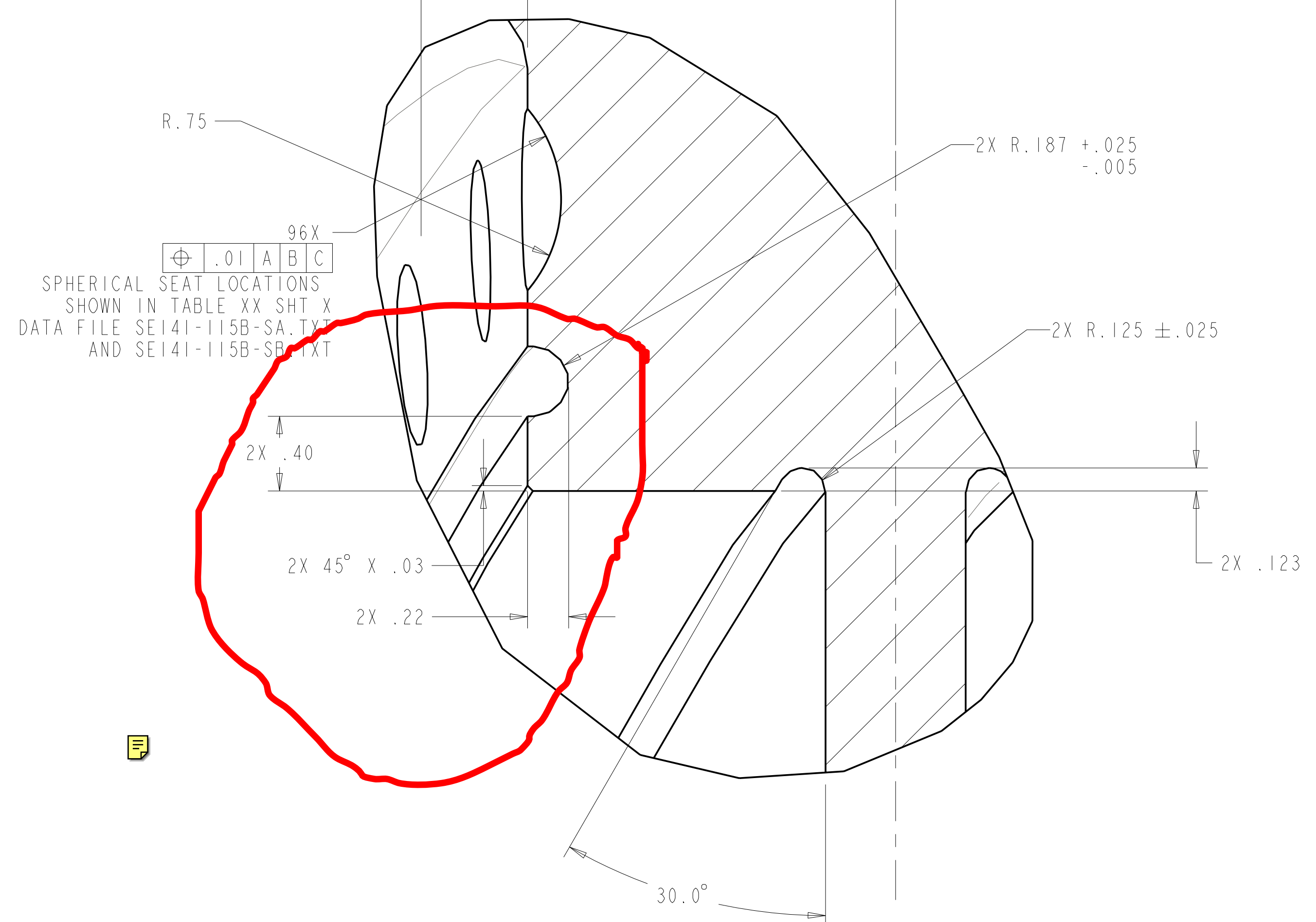
| Level | Next Assembly | Find # | Doc / Part # | Type | Rev | Title / Description |
|-------|---------------|--------|----------------|------|-----|--|
| 1 | SE140-101 | 2 | SE141-101 | ASM | - | Modular Coil Type-A Winding Form Assembly |
| 1 | SE140-102 | 2 | SE141-102 | ASM | - | Modular Coil Type-B Winding Form Assembly |
| 1 | SE140-103 | 2 | SE141-103 | ASM | - | Modular Coil Type-C Winding Form Assembly |
| 2 | SE141-101 | 1 | SE141-101_SKEL | PRT | - | Type-A Machining Features Layout |
| 2 | SE141-101 | 2 | SE141-114 | PRT | - | Type-A Winding Form, 316L SS |
| 2 | SE141-101 | 3 | SE141-031 | PRT | - | Type-A Poloidal Break Lower Insulator, G11CR |
| 2 | SE141-101 | 4 | SE141-033 | PRT | - | Type-A Poloidal Break Shim, 316L SS |
| 2 | SE141-101 | 5 | SE141-035 | PRT | - | Type-A Poloidal Break Upper Insulator, G11CR |
| 2 | SE141-102 | 1 | SE141-102_SKEL | PRT | - | Type-B Machining Features Layout |
| 2 | SE141-102 | 2 | SE141-115 | PRT | - | Type-B Winding Form, 316L SS |
| 2 | SE141-102 | 3 | SE141-051 | PRT | - | Type-B Poloidal Break Lower Insulator, G11CR |
| 2 | SE141-102 | 4 | SE141-053 | PRT | - | Type-B Poloidal Break Shim, 316L SS |
| 2 | SE141-102 | 5 | SE141-055 | PRT | - | Type-B Poloidal Break Upper Insulator, G11CR |
| 2 | SE141-103 | 1 | SE141-103_SKEL | PRT | - | Type-C Machining Features Layout |
| 2 | SE141-103 | 2 | SE141-116 | PRT | - | Type-C Winding Form, 316L SS |
| 2 | SE141-103 | 3 | SE141-071 | PRT | - | Type-C Poloidal Break Lower Insulator, G11CR |
| 2 | SE141-103 | 4 | SE141-073 | PRT | - | Type-C Poloidal Break Shim, 316L SS |
| 2 | SE141-103 | 5 | SE141-075 | PRT | - | Type-C Poloidal Break Upper Insulator, G11CR |

Type-A Winding Form Asm

no drawings

Type-B Winding Form Asm

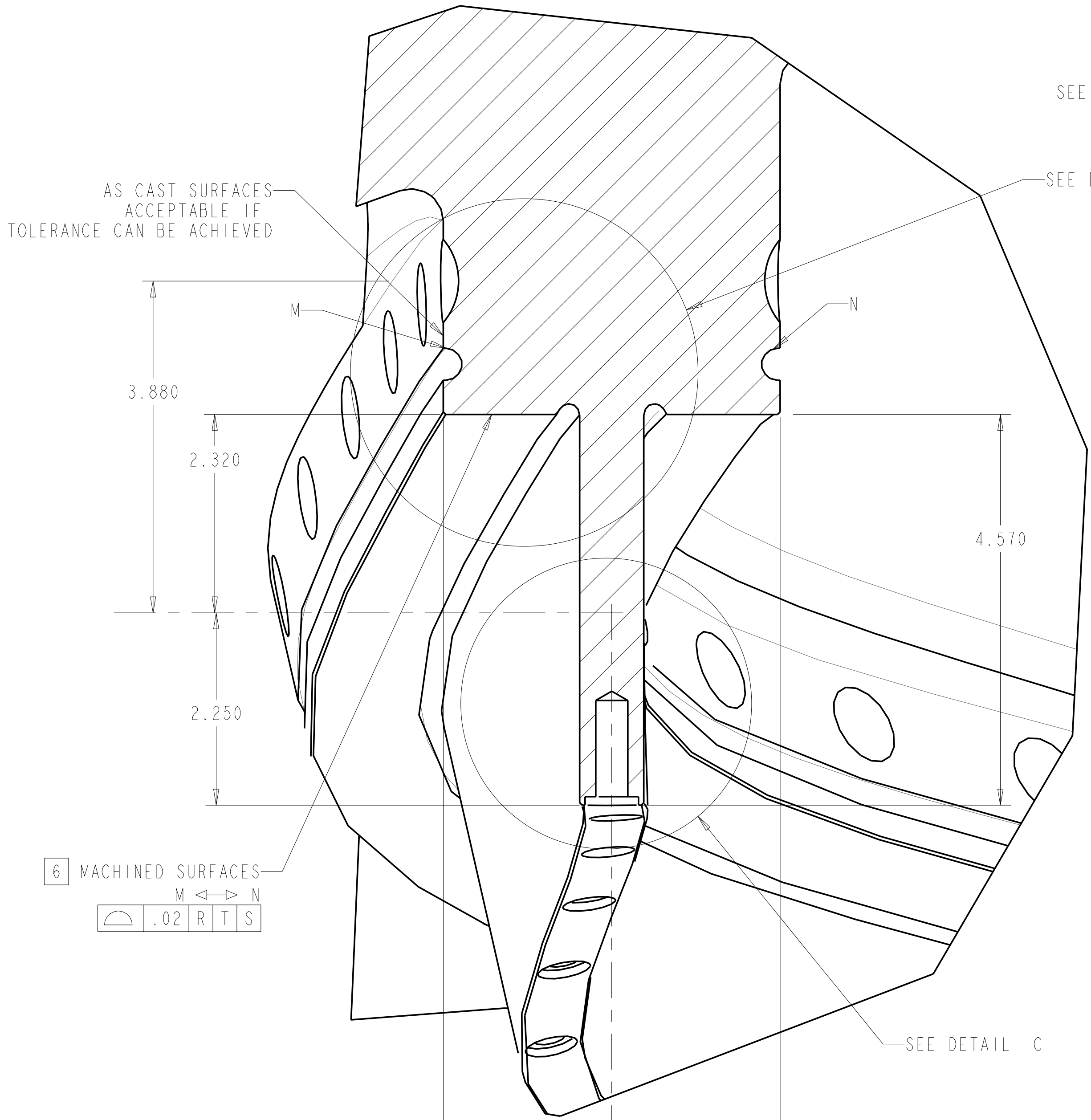
DATUM R = PLANE NORMAL TO WINDING CENTER
 DATUM S = PLANE PASSING THRU WINDING CENTER AND X VECTOR AT DATUM R
 DATUM T = PLANE PASSING THRU WINDING CENTER ORTHOGONAL TO DATUM S
 DETAIL A IS TYPICAL TO ALL POINTS ALONG WINDING CENTER



96X
 .01 A B C
 SPHERICAL SEAT LOCATIONS
 SHOWN IN TABLE XX SHT X
 DATA FILE SE141-115B-SA.TXT
 AND SE141-115B-SR.TXT

VPI GROOVE TO BE MACHINED
 BY BALL END MILL OR DISK CUTTER
 IF SAME TOLERANCE CAN BE ACHIEVED.

DETAIL B
 SCALE 2.000

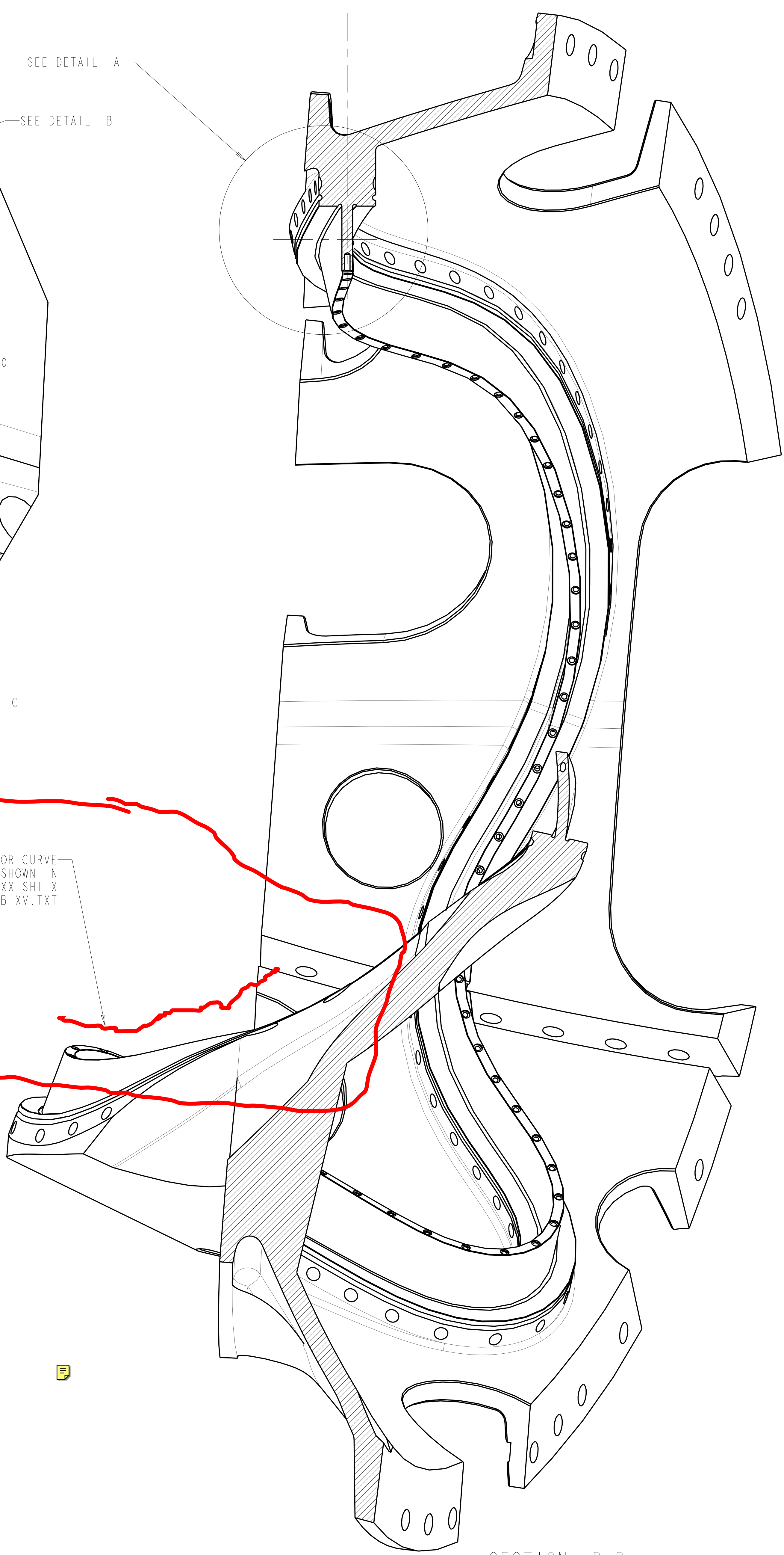


AS CAST SURFACES
 ACCEPTABLE IF
 TOLERANCE CAN BE ACHIEVED

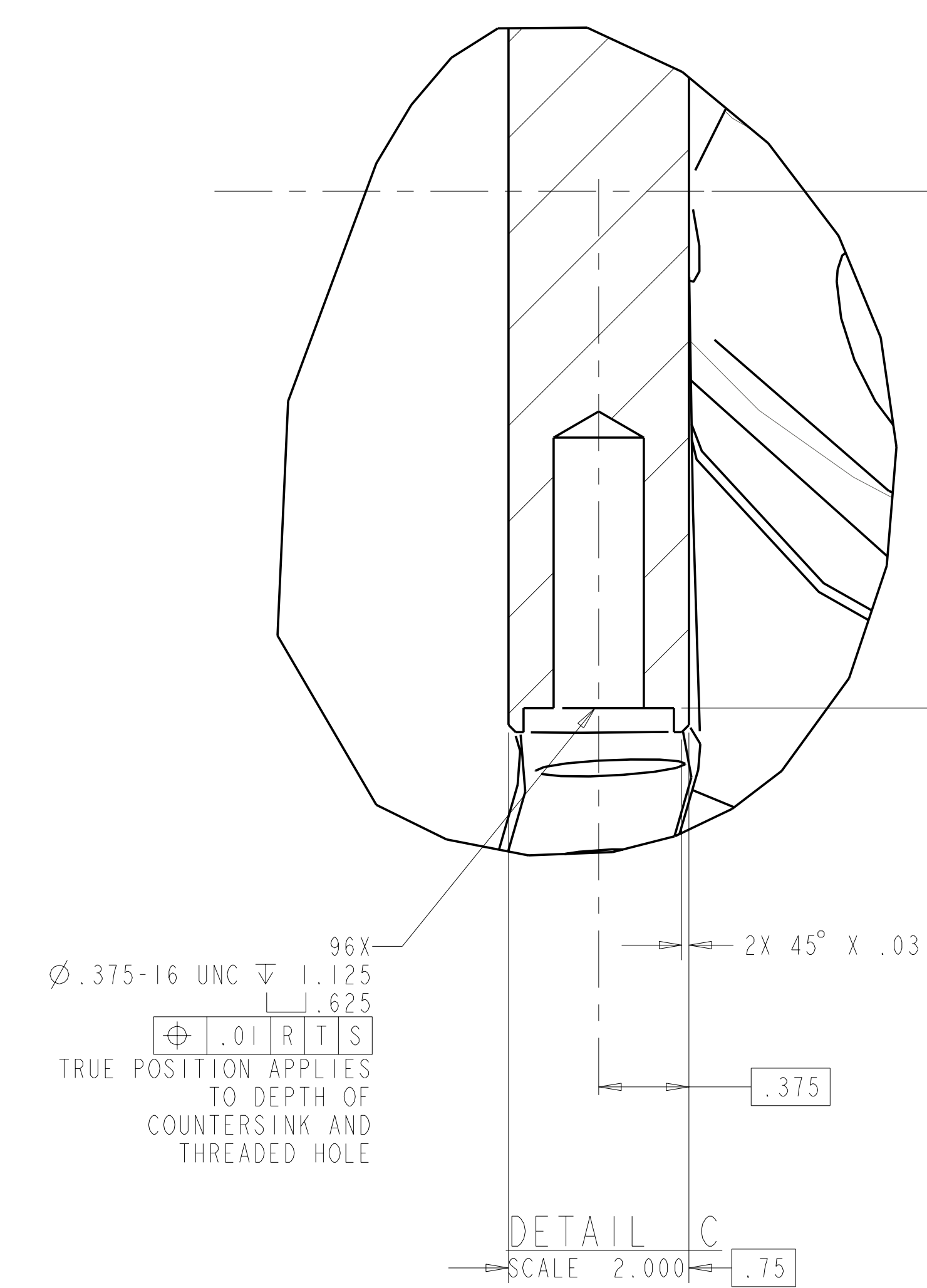
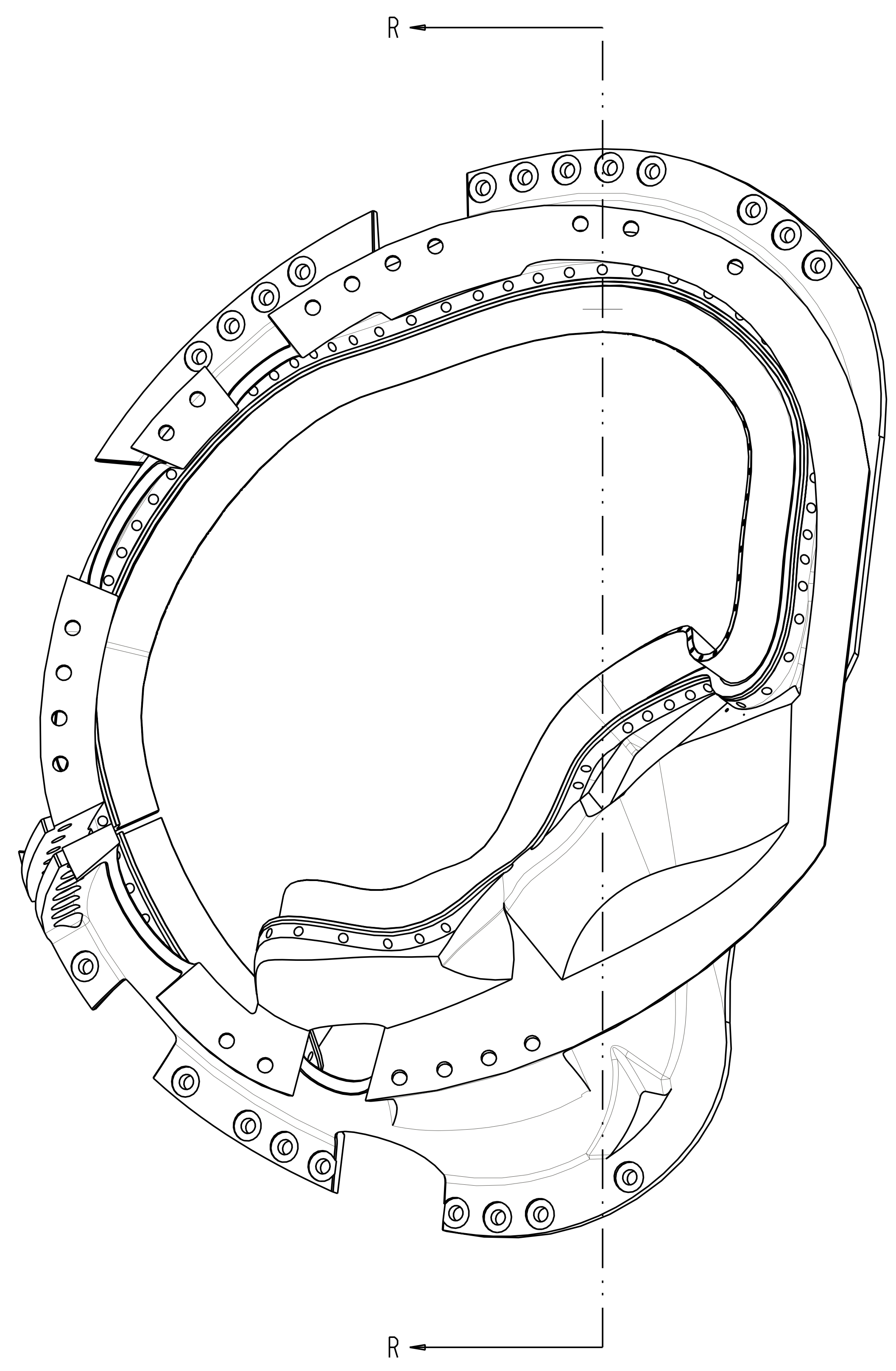
6 MACHINED SURFACES
 M ↔ N
 .02 R T S

DETAIL A
 SCALE 1.000

X-VECTOR CURVE
 SPLINE PASSING THRU POINT SHOWN IN
 TABLE XX SHT X
 DATA FILE SE141-115B-XV.TXT



SECTION R-R
 SCALE 0.250



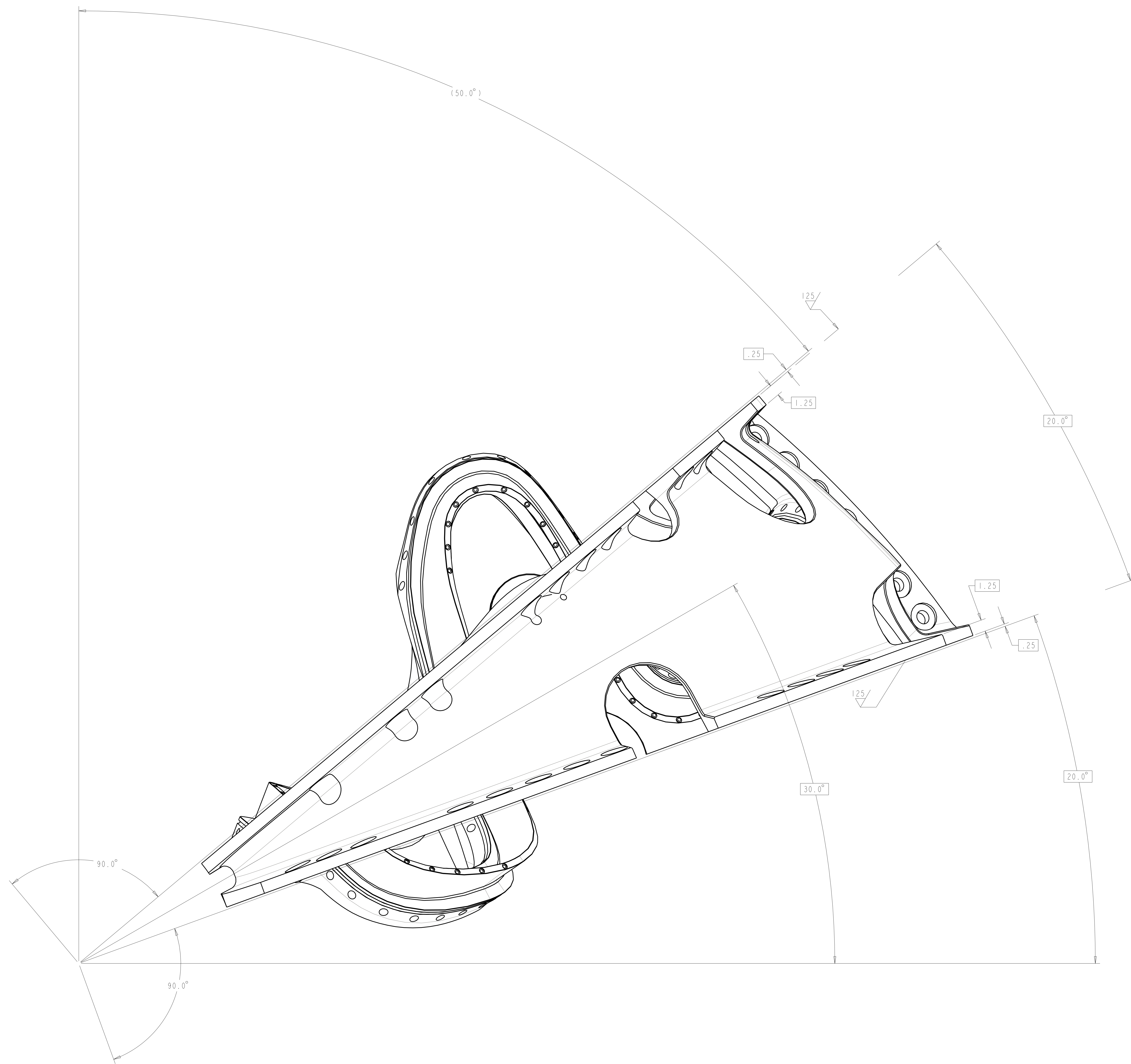
96X
 .375-16 UNC ±.125
 .625
 .01 R T S
 TRUE POSITION APPLIES
 TO DEPTH OF
 COUNTERSINK AND
 THREADED HOLE

DETAIL C
 SCALE 2.000

| | | | | | | |
|---|------------|-----------|---------|--------------|-----------|------------|
| 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 | | | | | | |
| * * * | | | | | | |
| VERSION NO. WILDFIRE | PLANT * | BLDG * | FL * | SHT OF 25 | TYPE U | CLASS U |
| RELEASE LEVEL WIP | | | | SE141-115 | | REV * |

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|---|-------|-----------|----|-----|----|------|-------|
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| UT-BATTELLE | | | | | | | |
| NATIONAL COMPACT STELLARATOR EXPERIMENT MODULAR COIL TYPE-B WINDING FORM * | | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SHT | OF | TYPE | CLASS |
| 1 | X-10 | 5700 | 3 | 3 | 5 | S | U |
| RELEASE LEVEL | | SEI41-115 | | | | REV | |
| WIP | | | | | | 0 | |

SEI41-115

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52.15
49.90
47.72
45.00

17.00

25.67

29.25

33.19

44.25

48.74

53.20

57.57

61.84

52.79

52.76

79.74

83.22

86.49

89.54

99.24

51.07
49.66

39.84

36.98

33.90

30.59

19.50

.00

19.50

30.27

40.70

44.47

46.22

47.77

51.19

46.13
50.55

51.23

33.93

42.81

47.25

51.75

66.31

70.54

74.68

81.73

93.77

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UT-BATTELLE, LLC, Oak Ridge, Tennessee

UT-BATTELLE

NATIONAL COMPACT STELLARATOR EXPERIMENT
MODULAR COIL TYPE-B WINDING FORM

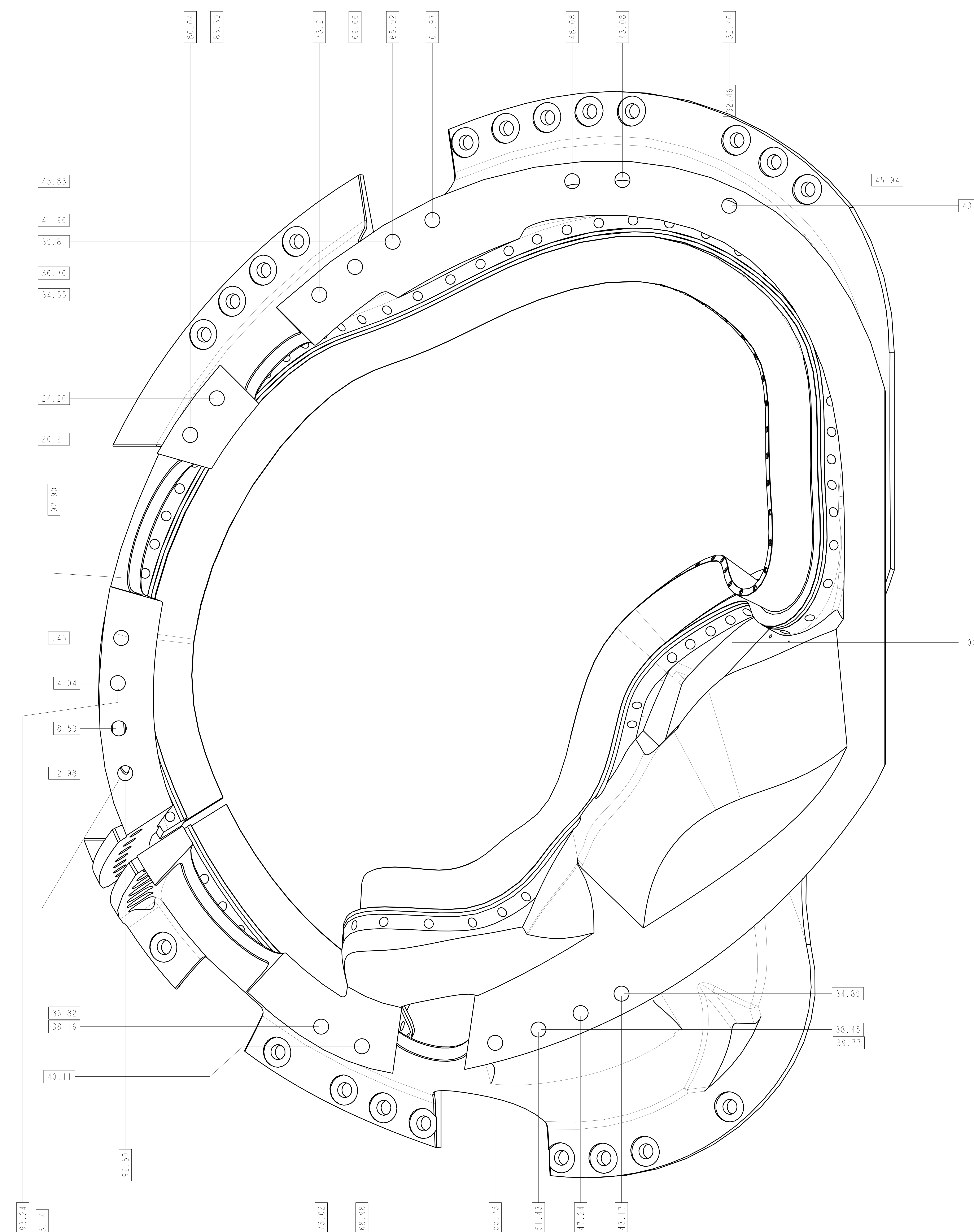
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|---------------|-------|------|----|-----|----|------|-------|
| VERSION NO. | PLANT | BLDG | FL | SHT | OF | TYPE | CLASS |
| 1 | X-10 | 5700 | 3 | 4 | 5 | S | U |
| RELEASE LEVEL | | | | | | | REV |
| WIP | | | | | | | 0 |

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 UT-BATTELLE, LLC, Oak Ridge, Tennessee

UT-BATTELLE

NATIONAL COMPACT STELLARATOR EXPERIMENT
 MODULAR COIL TYPE-B WINDING FORM

PROJECT NAME

| | | | | | | |
|-------------|-------|------|----|--------|------|-------|
| VERSION NO. | PLANT | BLDG | FL | SHT OF | TYPE | CLASS |
| 1 | X-10 | 5700 | 3 | 5 | S | U |

RELEASE LEVEL

WIP

SEI41-115

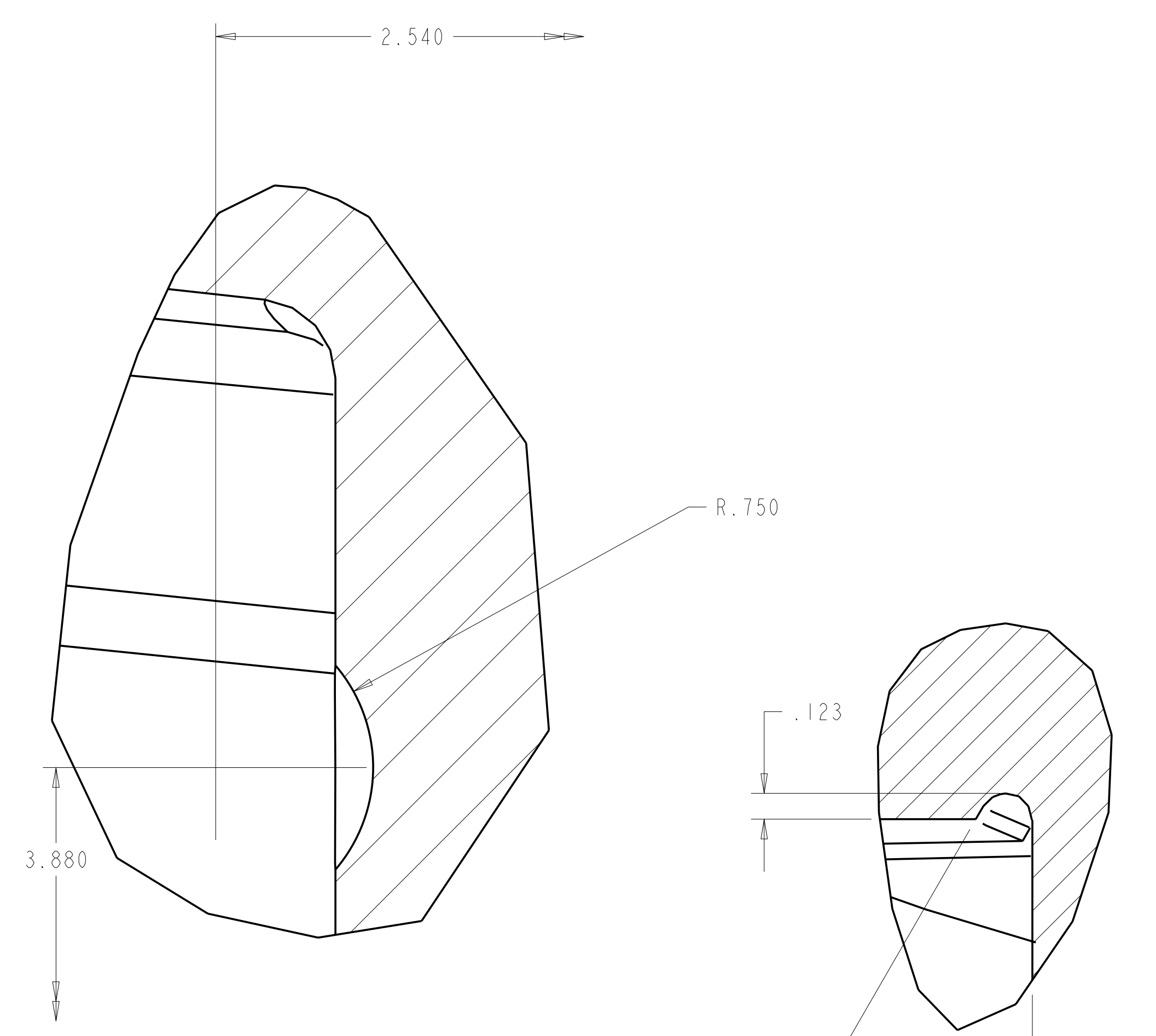
REV 0

H G F E D C B A

H G F E D C B A

Type-C Winding Form Asm

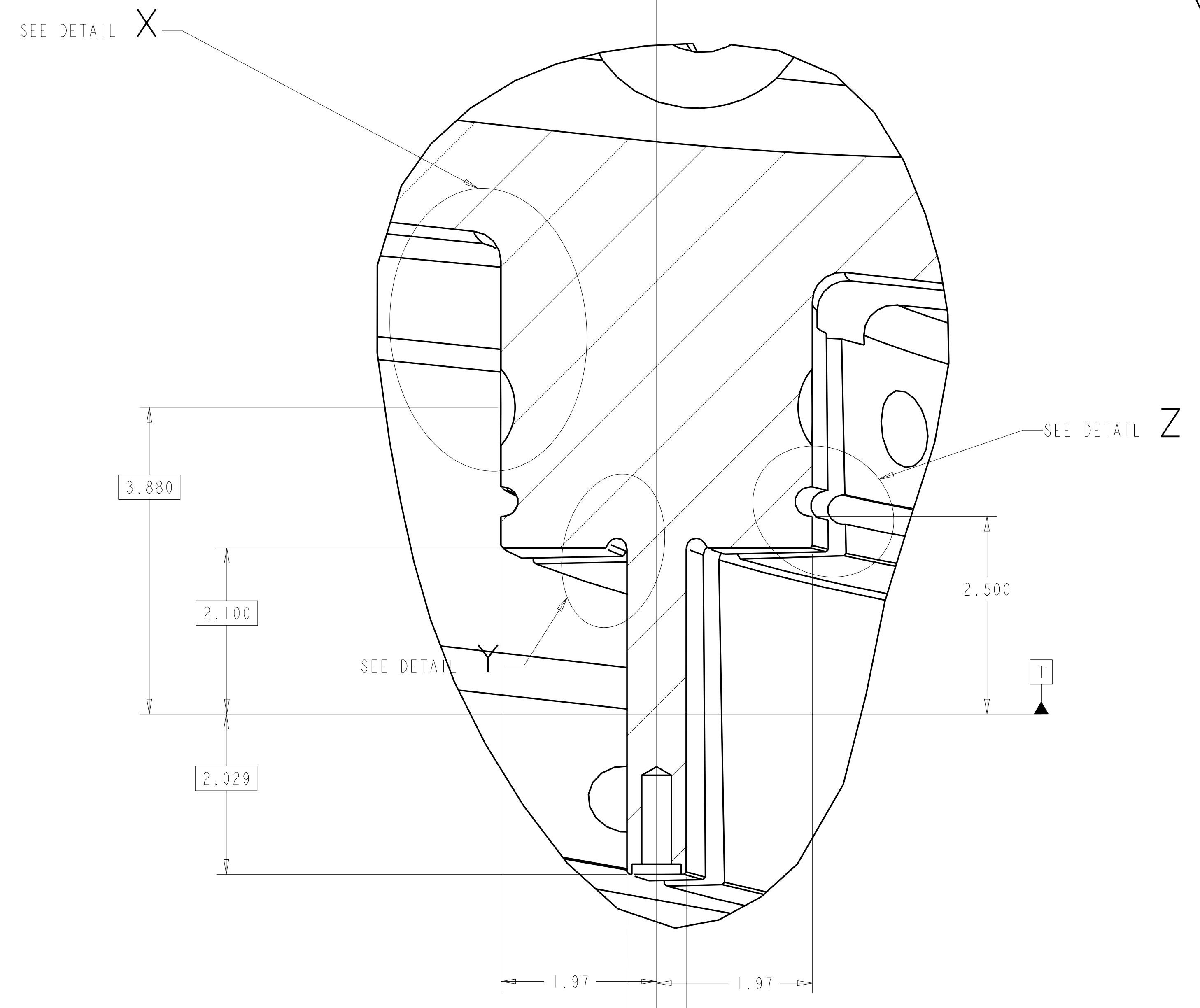
FOR GENERAL NOTES AND PARTS LIST, SEE SHIT 1



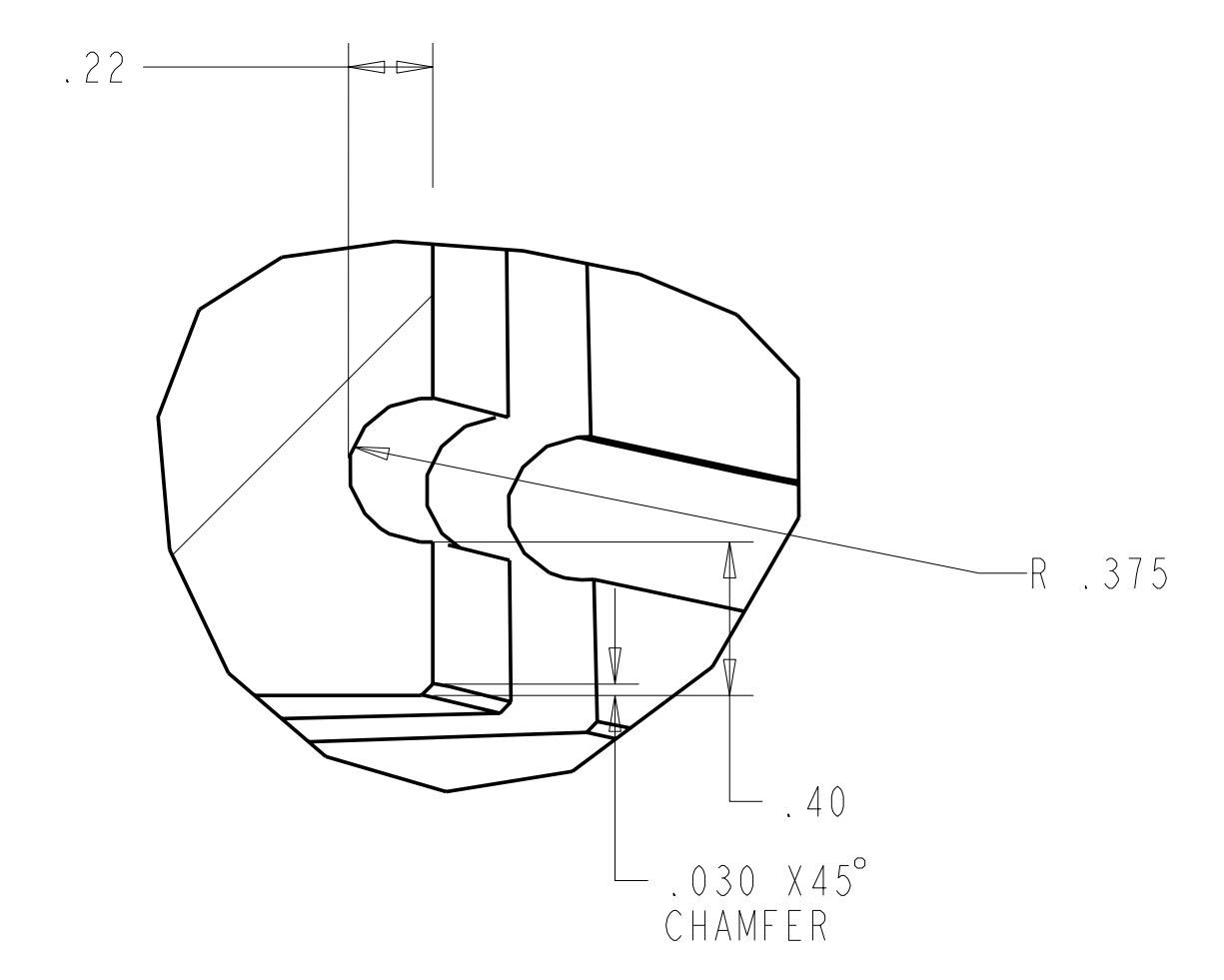
DETAIL X
SCALE 2.000

DETAIL Y
SCALE 2.000

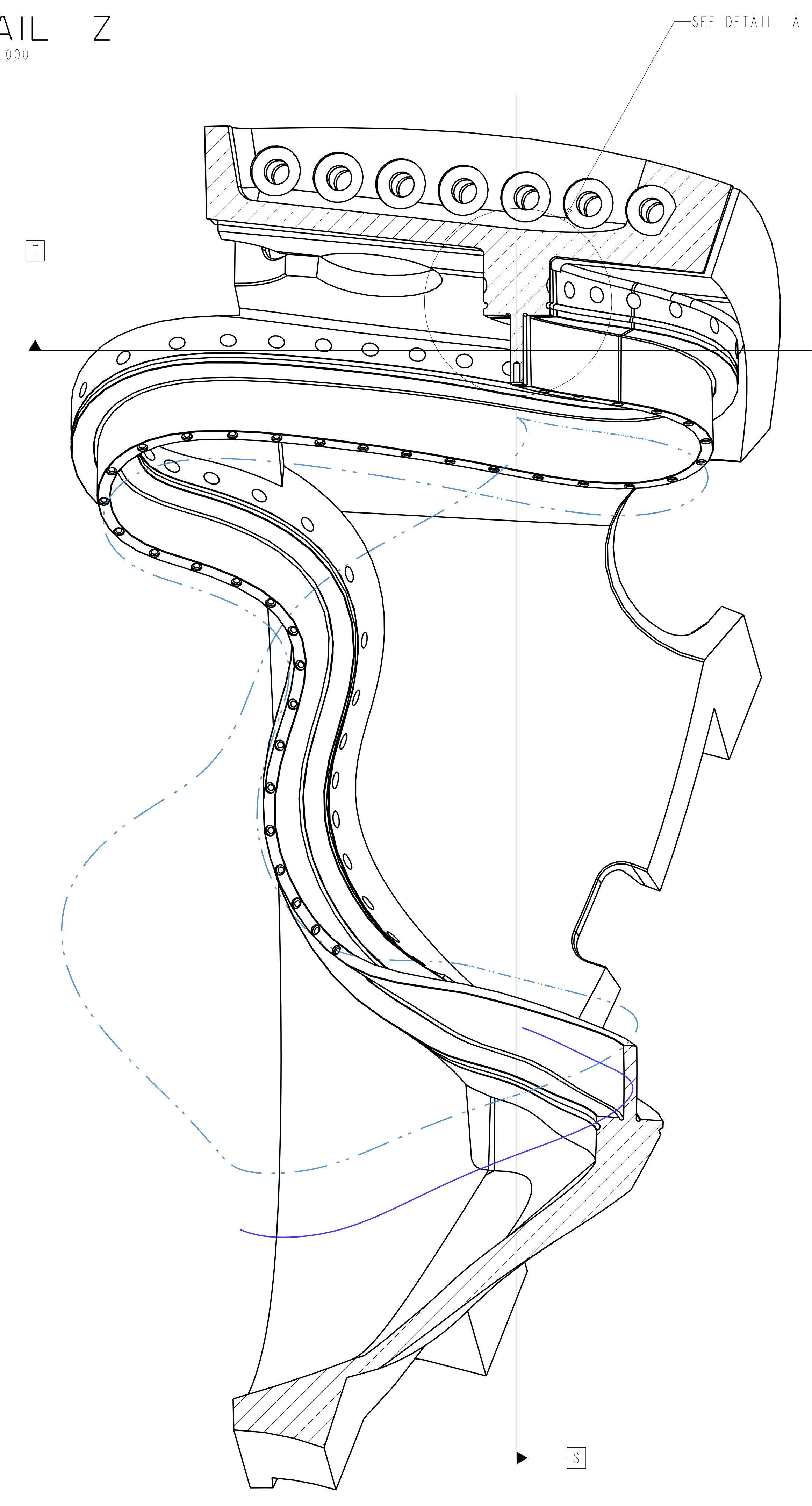
DATUM R = PLANE NORMAL TO WINDING CENTER
 DATUM S = PLANE PASSING THRU WINDING CENTER AND X VECTOR AT DATUM R
 DATUM T = PLANE PASSING THRU WINDING CENTER ORTHOGONAL TO DATUM S
 DETAIL A IS TYPICAL TO ALL POINTS ALONG WINDING CENTER.



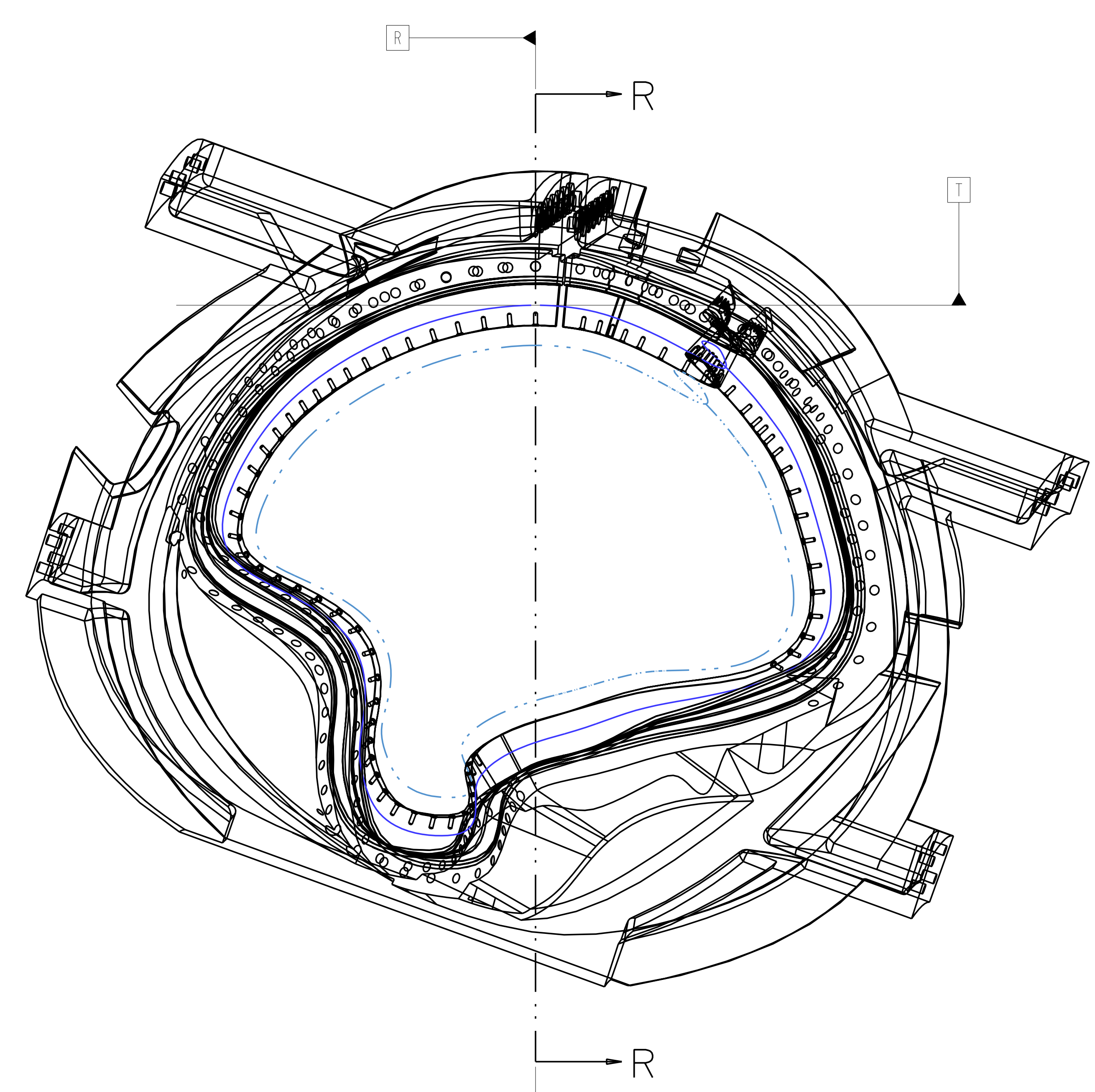
DETAIL A
SCALE 1.000



DETAIL Z
SCALE 2.000



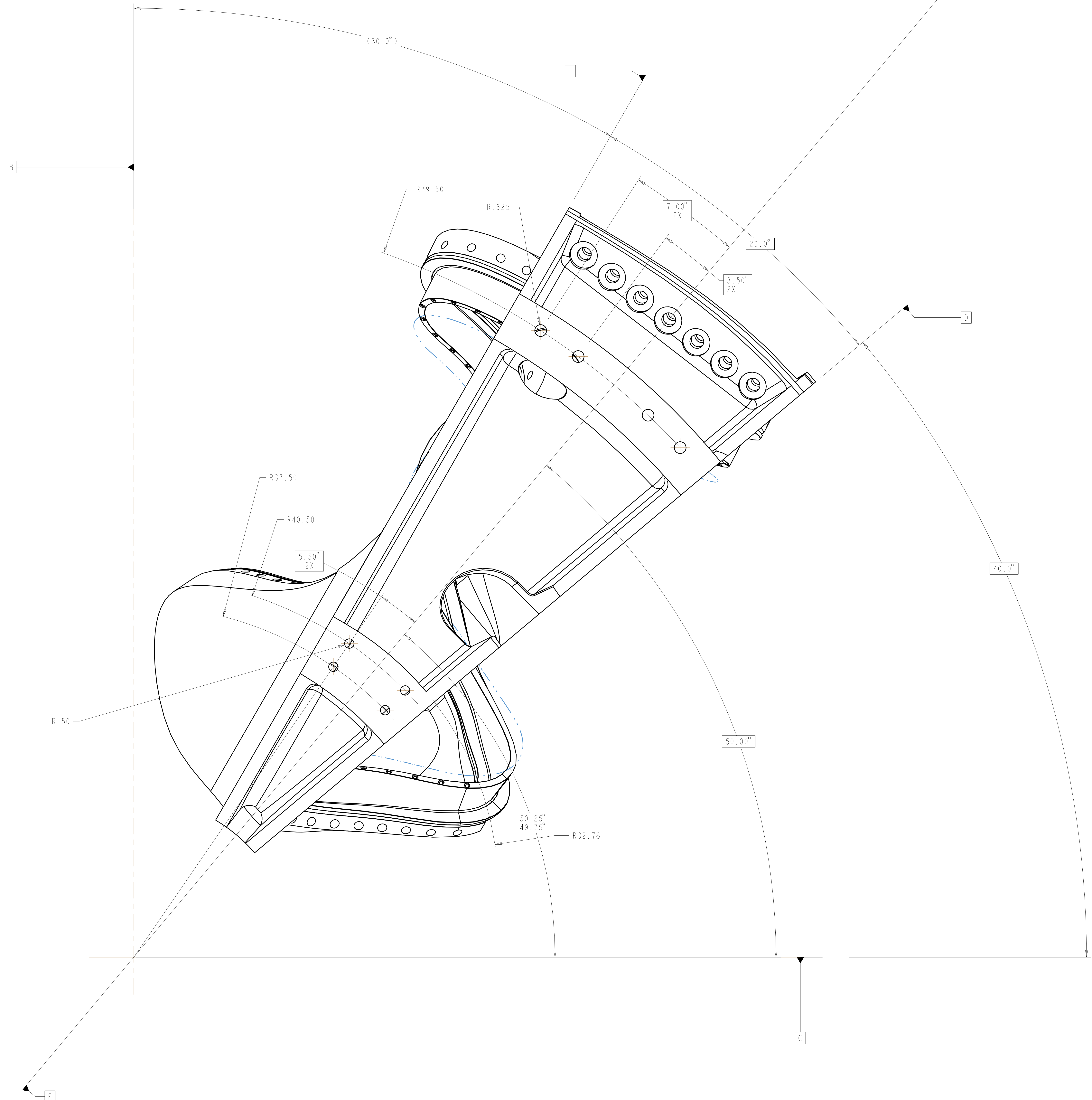
SECTION R-R
SCALE 0.250



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|---|-------|-----------|----|--------|------|-------|--|
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| UT-BATTELLE | | | | | | | |
| NATIONAL COMPACT STELLARATOR EXPERIMENT | | | | | | | |
| MODULAR COIL "C" | | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SHT OF | TYPE | CLASS | |
| 3 | X-10 | 5700 | 3 | 2 3 | S | U | |
| RELEASE LEVEL | | SEI41-116 | | | | | |
| WIP | | | | | | | |

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SEI41-116



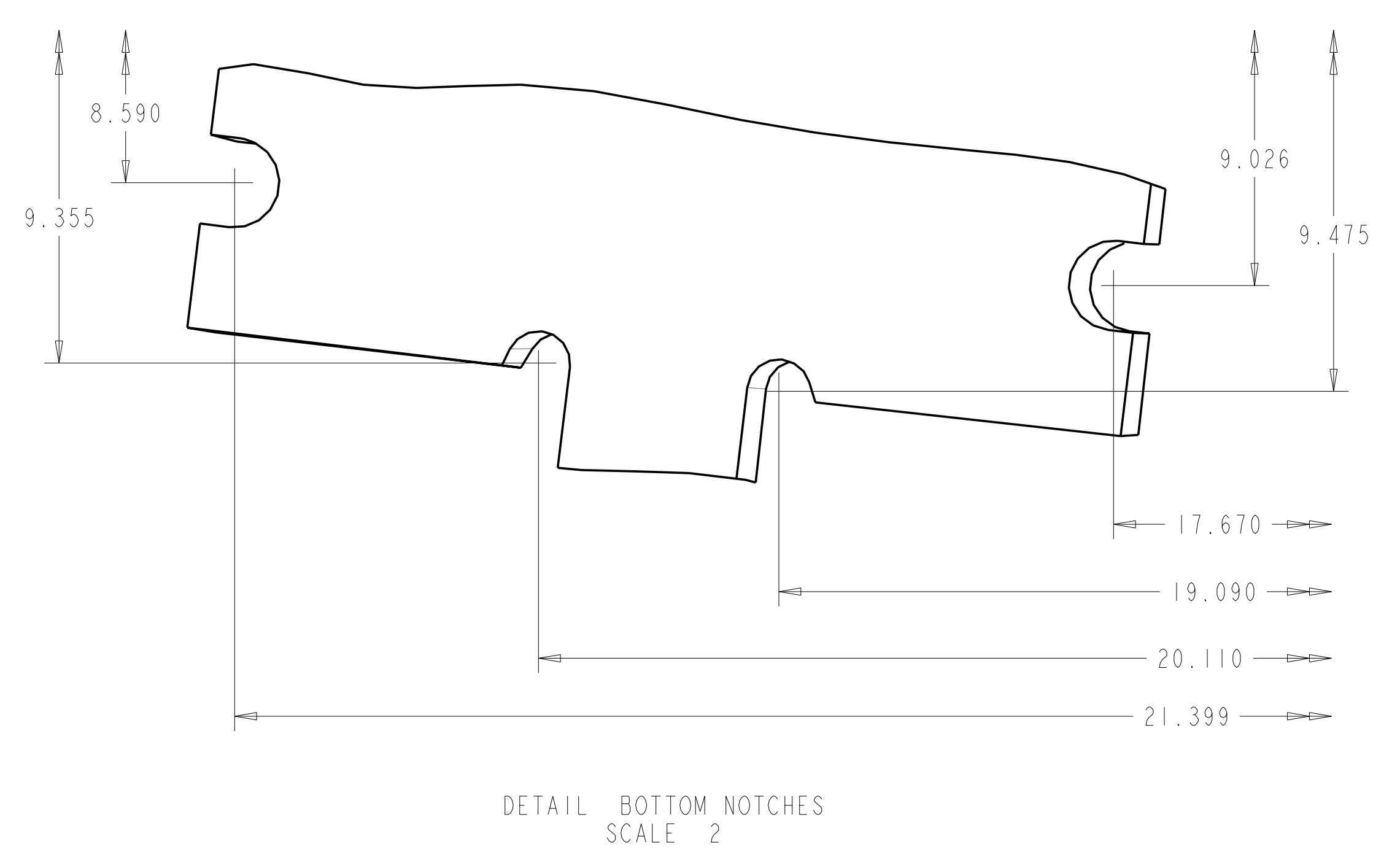
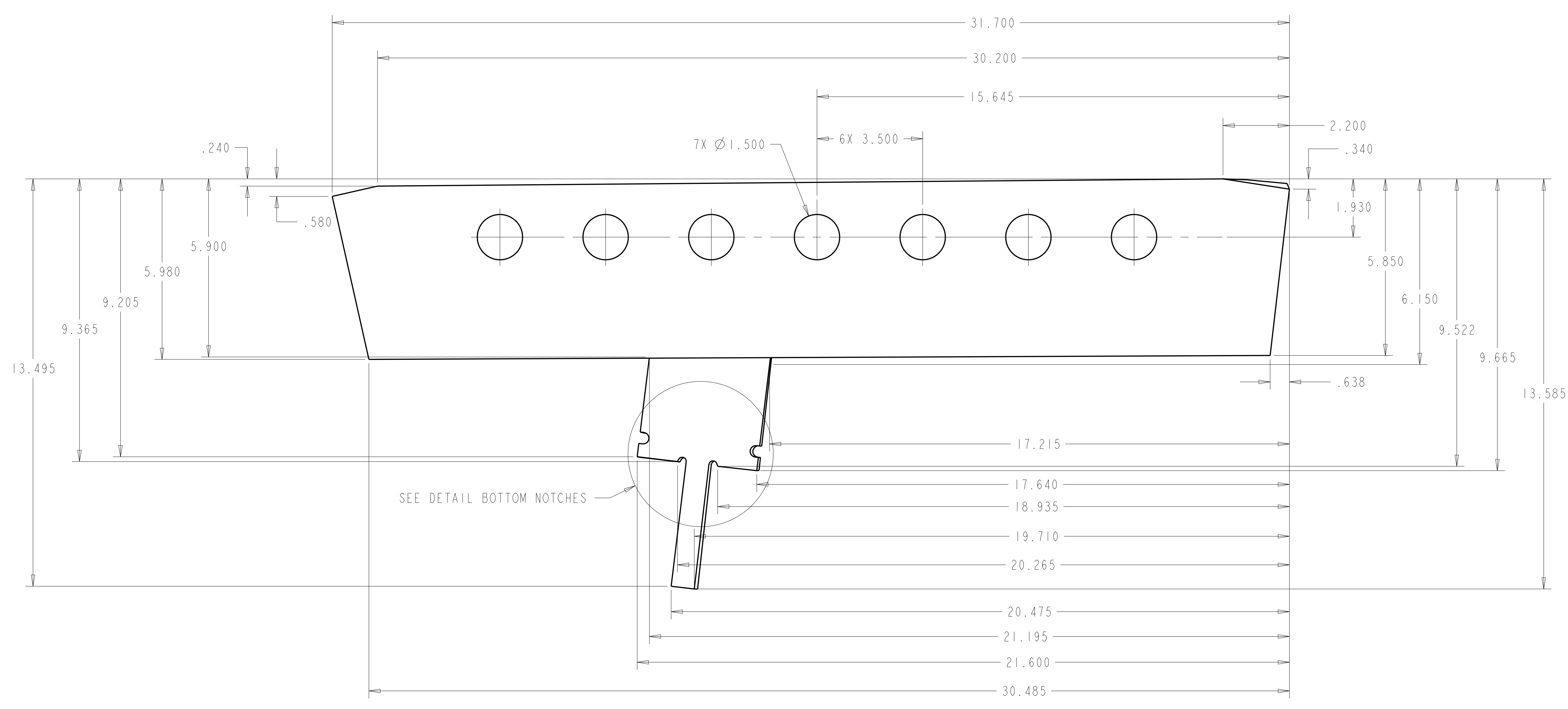
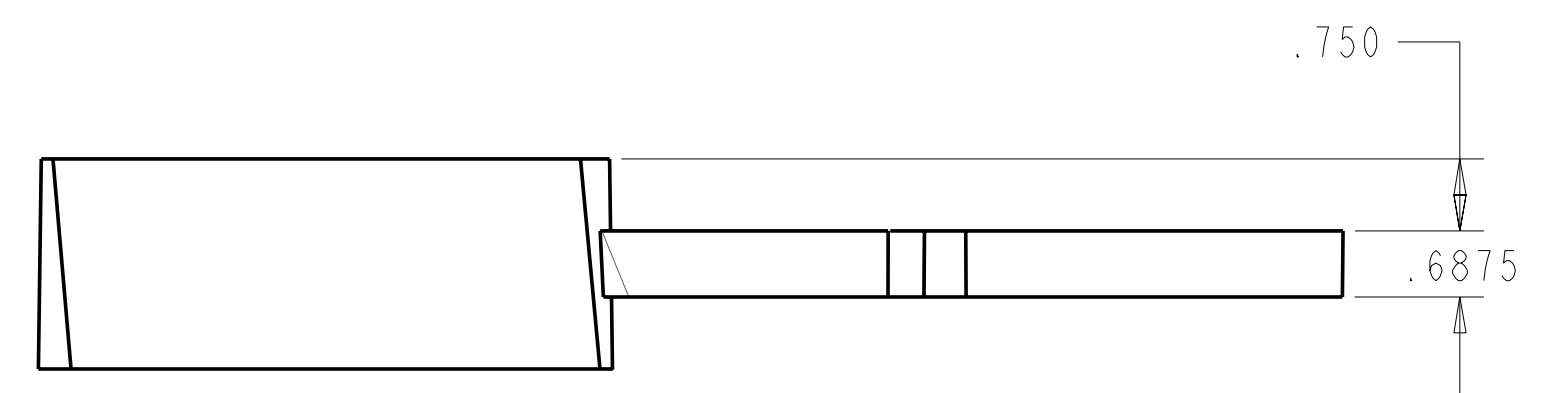
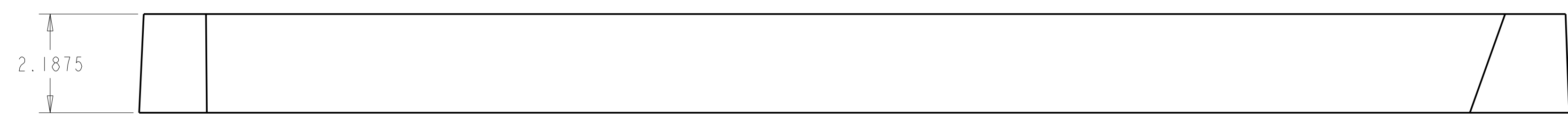
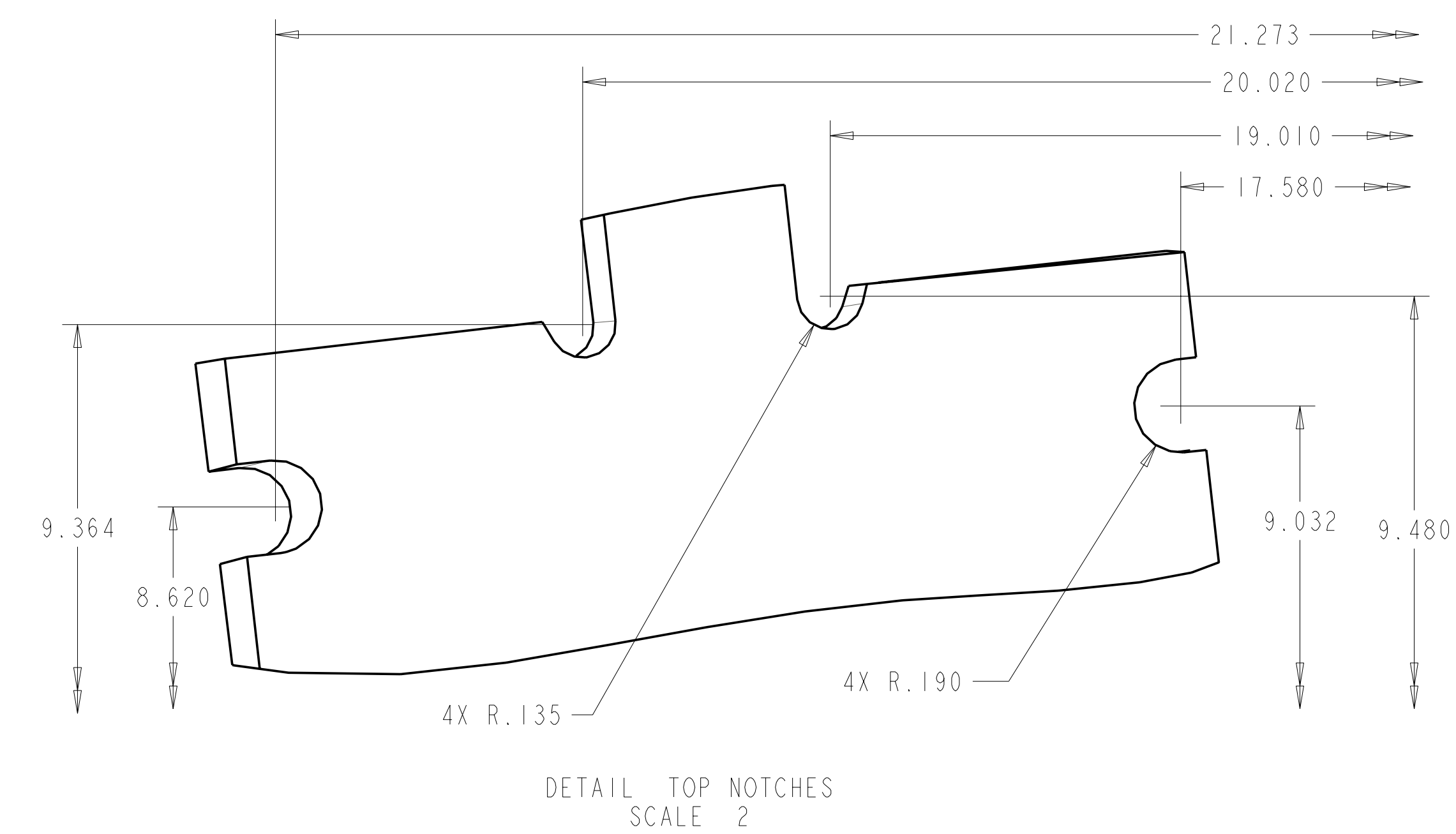
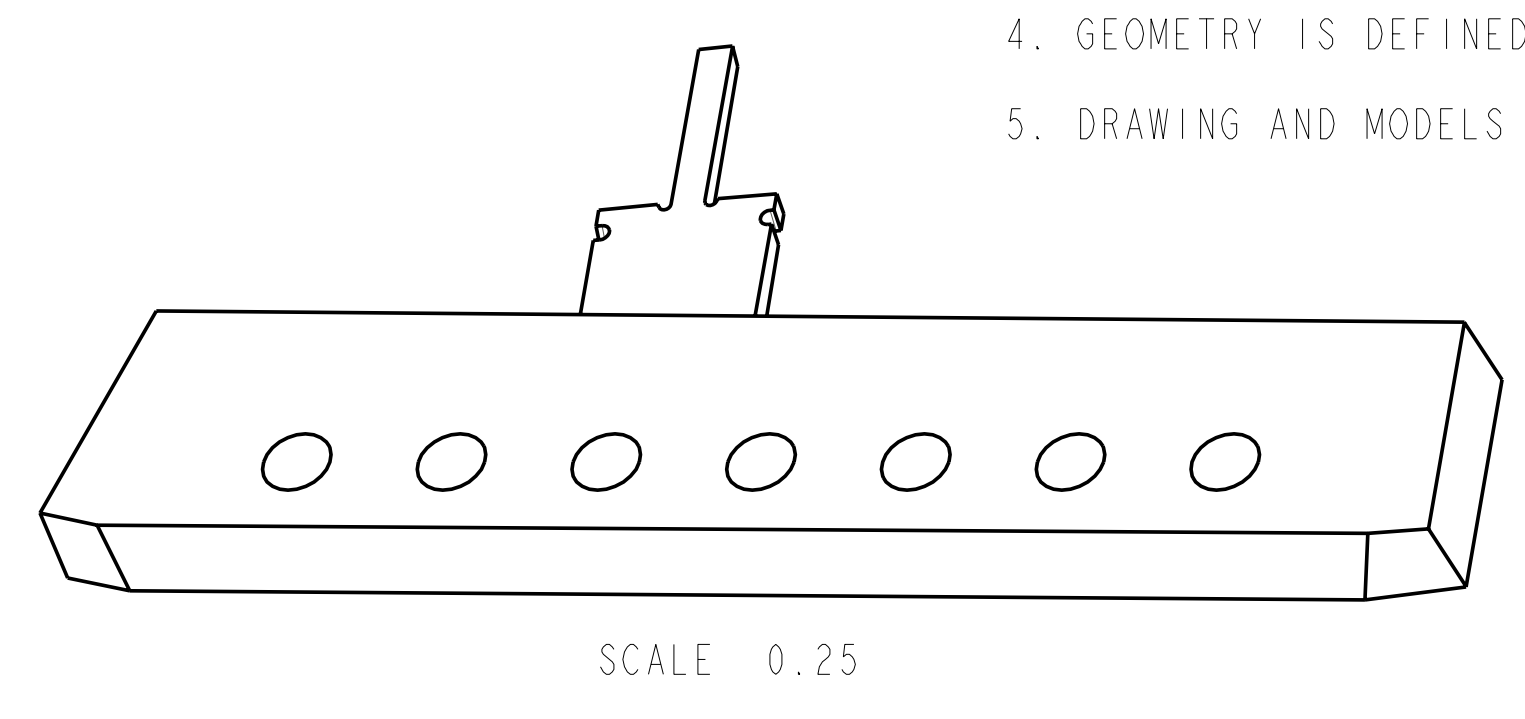
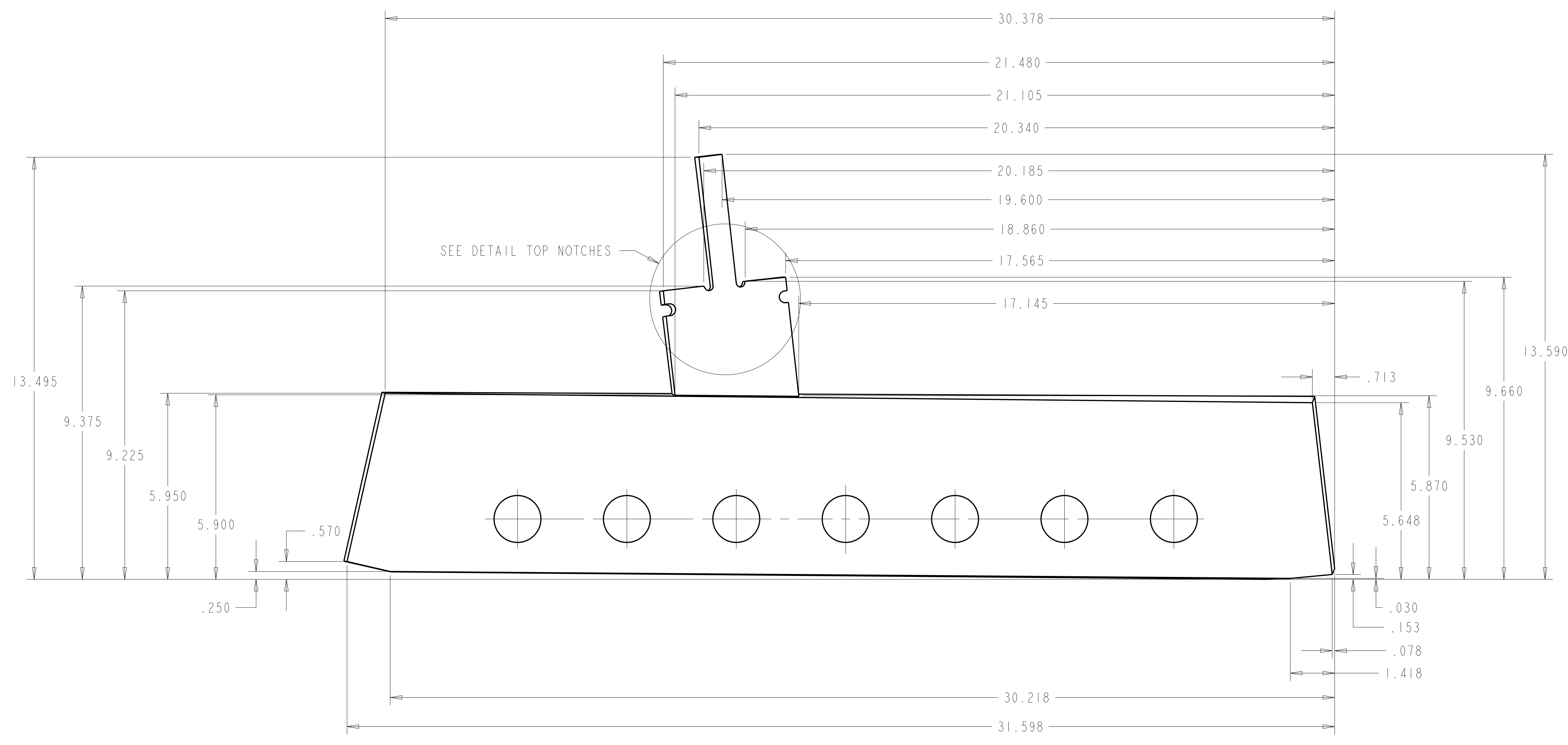
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| Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee PROJECT NAME | | | | | | | |
| UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT | | | | | | | |
| MODULAR COIL "C" | | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SHT OF | TYPE | CLASS | |
| 3 | X-10 | 5700 | 3 | 3 | S | U | |
| RELEASE LEVEL | | SEI41-116 | | | | REV | |
| WIP | | | | | | | |

SEI41-116

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Prototype Winding Form Asm

- NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M
 2. DIMENSIONS ARE IN INCHES
 3. DIMENSIONS APPLY AT ROOM TEMPERATURE. OPERATING TEMP 80 K
 4. GEOMETRY IS DEFINED IN PRO ENGINEER CAD MODELS/FILES
 5. DRAWING AND MODELS COMBINED DEFINE FINISHED MACHINED PART



| CAGE CODE | PART OR IDENTIFYING NO | NOMENCLATURE OR DESCRIPTION | MATERIAL | SPECIFICATION | FIND NO |
|------------|------------------------|-----------------------------|----------|---------------|---------|
| SEI41-073P | POLOIDIAL BREAK SHIM | 316L SS | -- | | |

← NEXT ASSEMBLY

| REV | DESCRIPTION | BY | DATE | CHK | DEPT | DATE | PE | REQ | DATE | ORNL | DOE | DATE |
|-----|-------------|----|------|-----|------|------|----|-----|------|------|-----|------|
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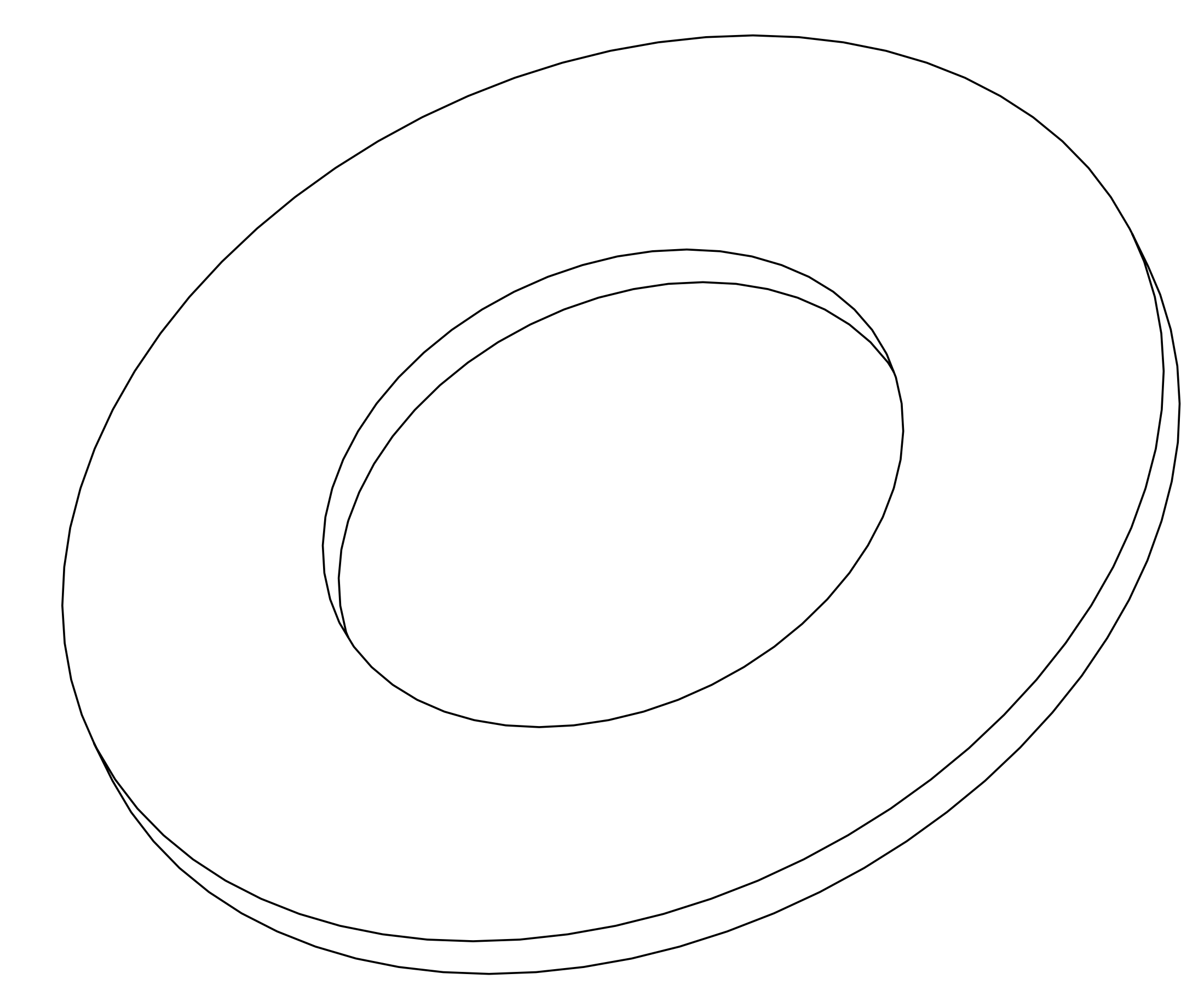
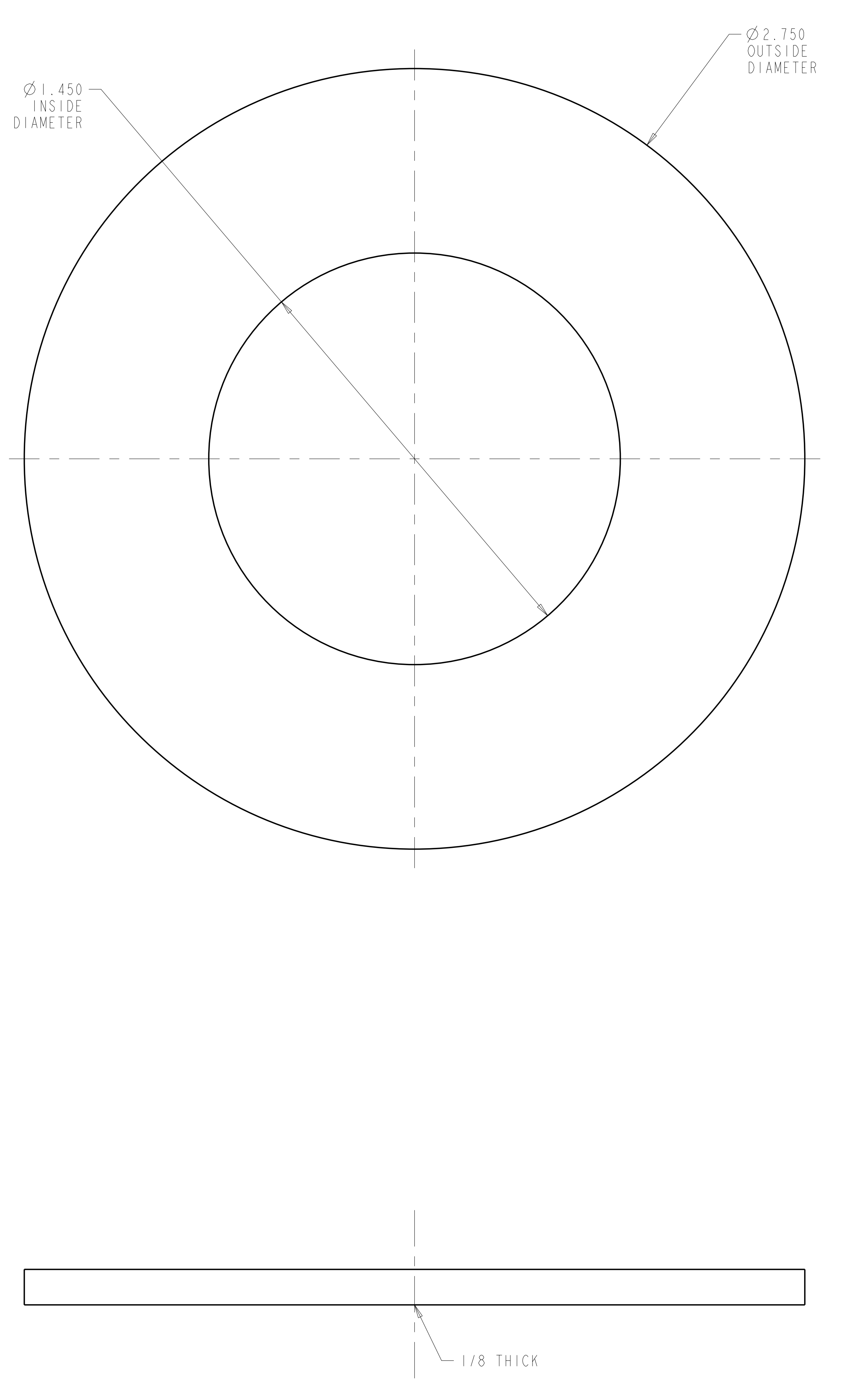
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|--|-------------------------|---|
| SCALE 0.5 | DES PAUL MILLER 4-27-04 | UT-BATTELLE Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee PROJECT NAME NATIONAL COMPACT STELLARATOR EXPERIMENT |
| TOLERANCES UNLESS OTHERWISE SPECIFIED | DRW PAUL MILLER 5-03-04 | |
| FRACTIONS | CHK : | NATIONAL COMPACT STELLARATOR EXPERIMENT POLOIDIAL BREAK SHIM VERSION NO. 3.3 PLANT X-10 BLDG 5700 FL 3 SHT OF 1 TYPE I CLASS U RELEASE LEVEL SEI41-073P |
| 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 : | |
| | DATE : | |
| | DRAWING APPROVALS : | |

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P THIS DRAWING PRODUCED ON PRO-ENGINEER

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- NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M
 2. DIMENSIONS ARE IN INCHES
 3. DIMENSIONS APPLY AT ROOM TEMPERATURE. OPERATING TEMP 80 K
 4. GEOMETRY IS DEFINED IN PRO ENGINEER CAD MODELS/FILES
 5. DRAWING AND MODELS COMBINED DEFINE FINISHED MACHINED PART



| | | | | |
|-----------|------------------------|-----------------------------|----------|---------------|
| SEI41-038 | INSULATING WASHER | G11 LAMINATE | -- | |
| CAGE CODE | PART OR IDENTIFYING NO | NOMENCLATURE OR DESCRIPTION | MATERIAL | SPECIFICATION |
| | NEXT ASSEMBLY | PARTS LIST | | |

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P THIS DRAWING PRODUCED ON PRO-ENGINEER

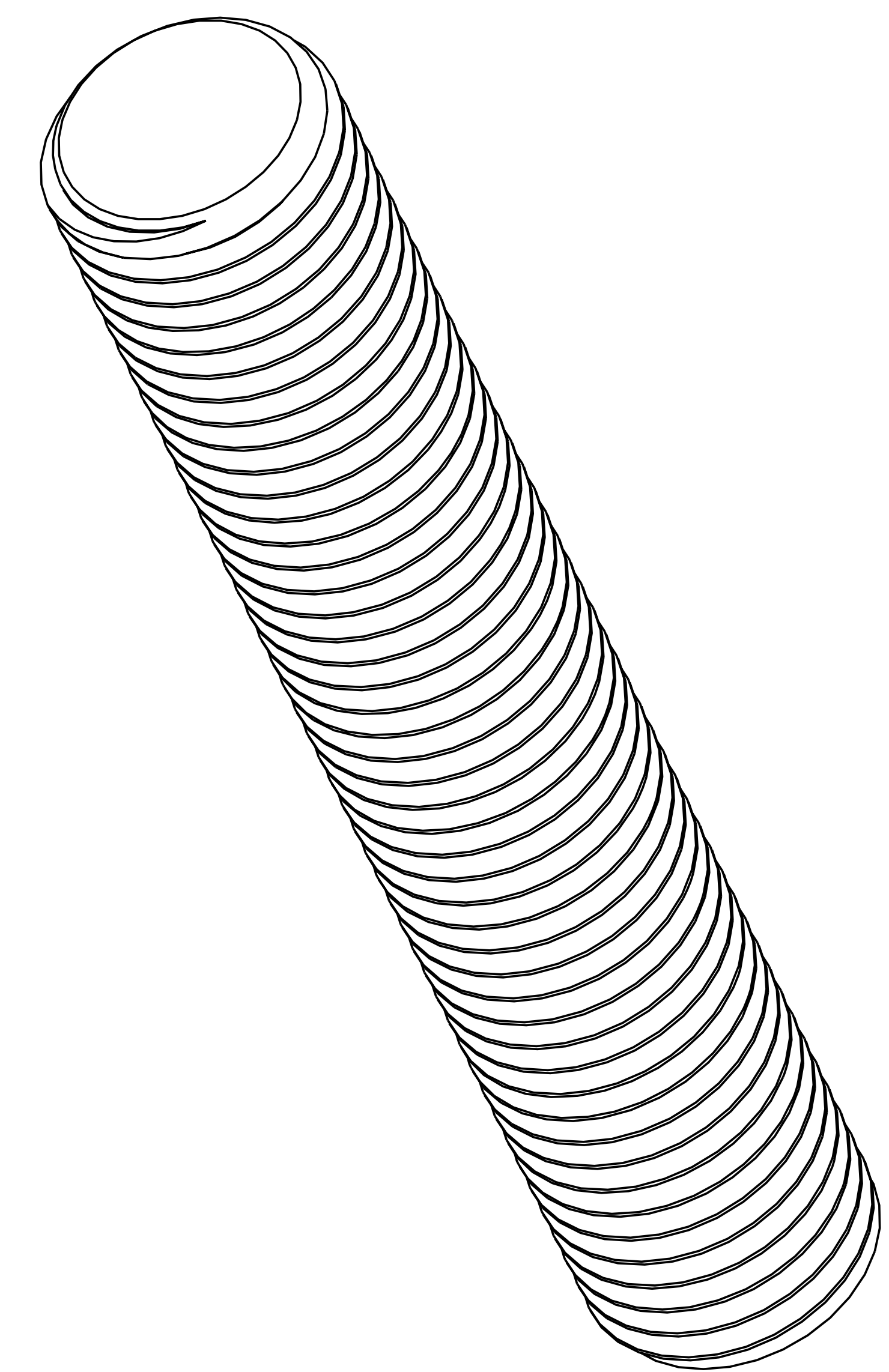
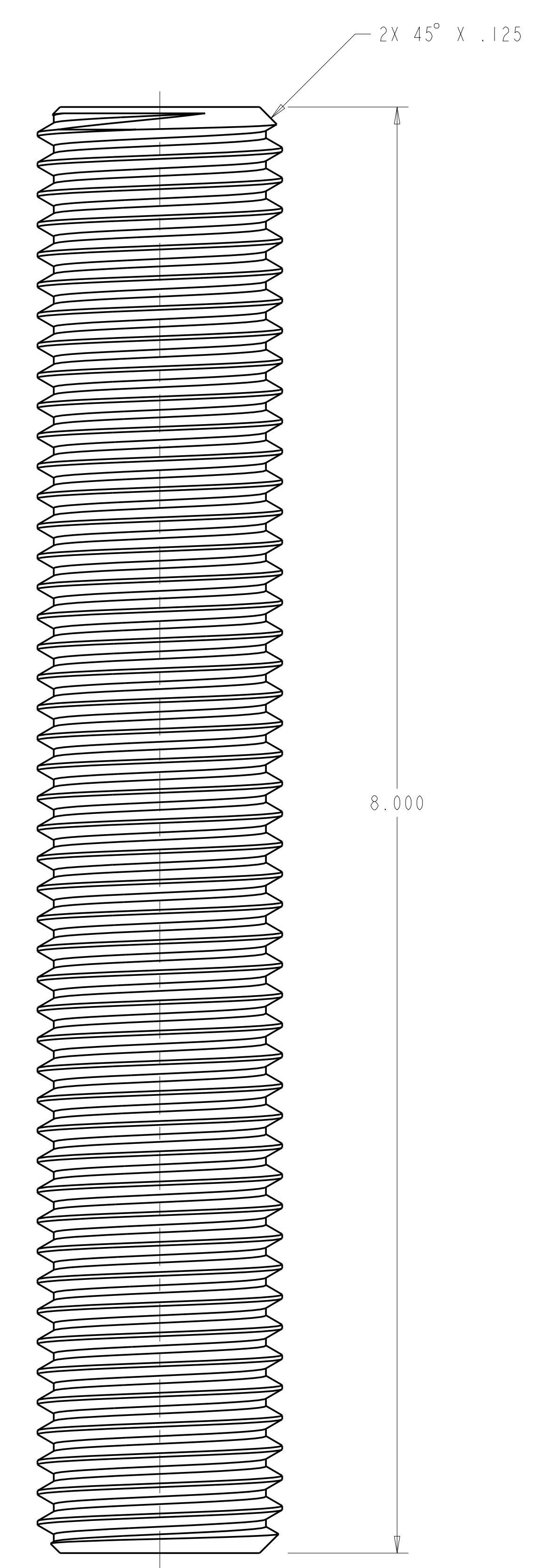
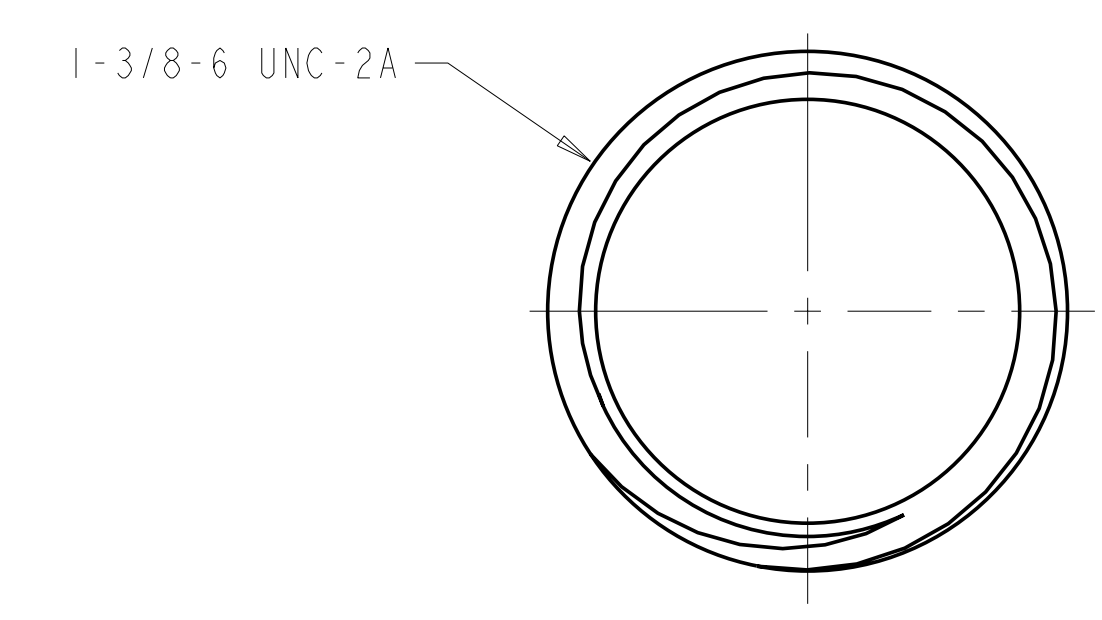
| REV | DESCRIPTION | BY | DATE | CHK | DEPT | DATE | PE | REQ | DATE | ORNL | DOE | DATE |
|-----|-------------|----|------|-----|------|------|----|-----|------|------|-----|------|
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|---------------------------------------|--------|------|-------------|---------|
| SCALE | 4 | DES | PAUL MILLER | 4-27-04 |
| TOLERANCES UNLESS OTHERWISE SPECIFIED | | DRW | PAUL MILLER | 5-05-04 |
| FRACTIONS | | CHK | | |
| XX DECIMALS | ±.01 | SECT | | |
| XXX DECIMALS | ±.005 | DEPT | | |
| ANGLES | ±0'15" | PE | | |
| FINISH | 06 MAX | CR | | |
| | | PJ | | |
| | | RD | | |
| | | PPPL | DRFT | |

| | | | |
|---|-------|---|----|
| 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 | |
| NATIONAL COMPACT STELLARATOR EXPERIMENT | | | |
| INSULATING WASHER | | | |
| VERSION NO. | PLANT | BLDG | FL |
| 3.3 | X-10 | 5700 | 3 |
| RELEASE LEVEL | | | |
| WIP | | | |
| SEI41-038 | | | |

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- NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M
 2. DIMENSIONS ARE IN INCHES
 3. DIMENSIONS APPLY AT ROOM TEMPERATURE. OPERATING TEMP 80 K
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 5. DRAWING AND MODELS COMBINED DEFINE FINISHED MACHINED PART



| | | | | | |
|-----------|------------------------|-----------------------------|----------|---------------|---------|
| next assy | SEI41-036 | STUD, 1-3/8-6 UNC-2A | 316L SS | -- | |
| CAGE CODE | PART OR IDENTIFYING NO | NOMENCLATURE OR DESCRIPTION | MATERIAL | SPECIFICATION | FIND NO |
| ← | NEXT ASSEMBLY | PARTS LIST | | | |

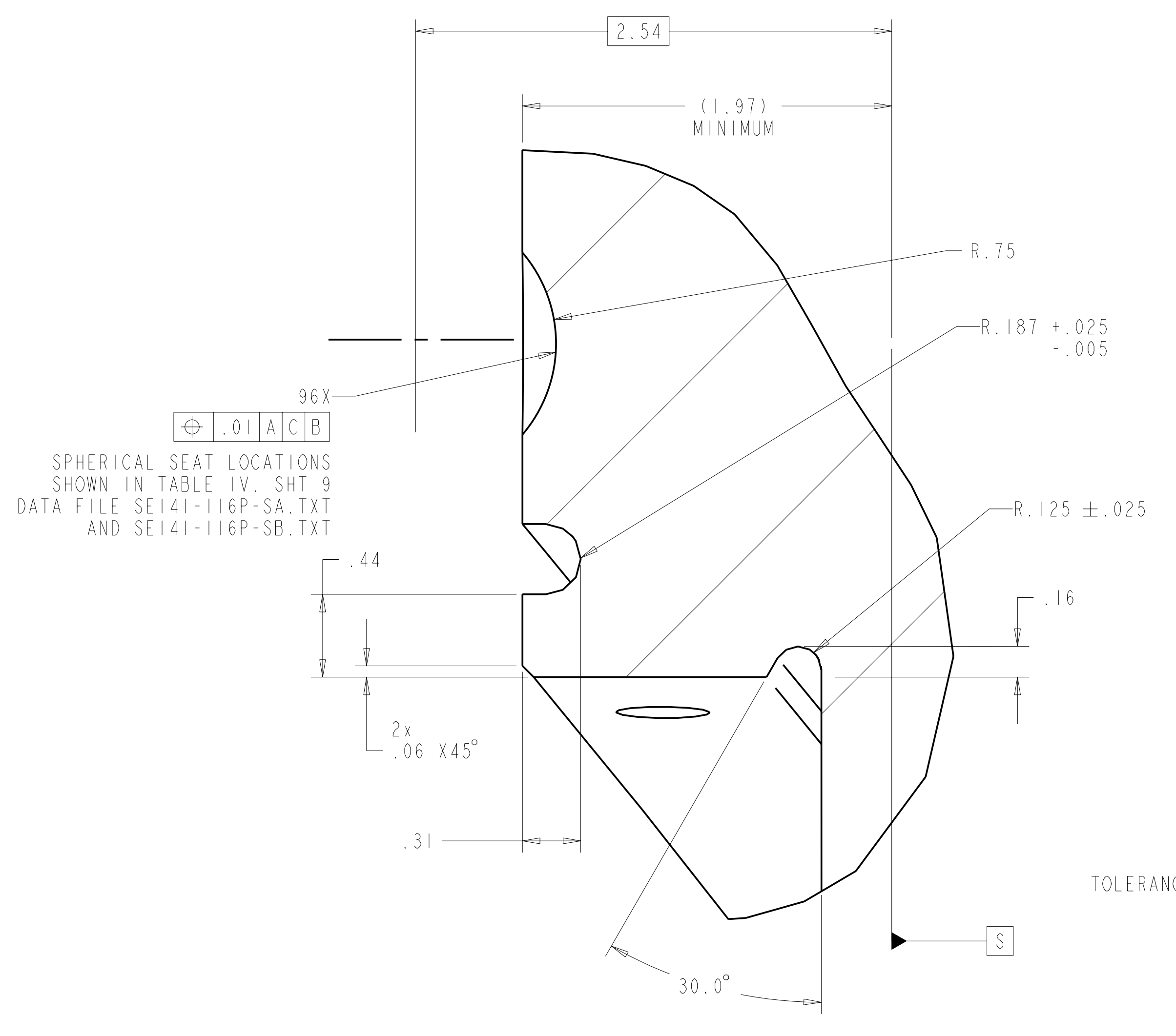
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|--|-------------|----|------|-----|------|------|----|-----|------|---|-----|------|-------------------|--|--|--|--|--|--|--|--|--|-------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <p>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> | | | | | | | | | | <p>P THIS DRAWING PRODUCED ON PRO-ENGINEER</p> | | | | | | | | | | <p>SCALE 2</p> <p>TOLERANCES UNLESS OTHERWISE SPECIFIED</p> <p>FRACTIONS ± .01</p> <p>XX DECIMALS ± .01</p> <p>XXX DECIMALS ± .005</p> <p>ANGLES ± 0'15"</p> <p>BREAK SHARP EDGES 06 MAX</p> <p>FINISH .125 UNLESS OTHERWISE SPECIFIED</p> | | | | | | | | | | <p>DES: PAUL MILLER 4-27-04</p> <p>DRW: PAUL MILLER 5-05-04</p> <p>CHK: : :</p> <p>SECT: : :</p> <p>DEPT: : :</p> <p>PE: : :</p> <p>CR: : :</p> <p>PJ: : :</p> <p>RED: : :</p> <p>PPPL DRFT: : :</p> <p>PPPL: : :</p> <p>DATE: : :</p> | | | | | | | | | | <p>Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC. Oak Ridge, Tennessee</p> <p>UT-BATTELLE</p> <p>NATIONAL COMPACT STELLARATOR EXPERIMENT</p> <p>STUD, 1-3/8-6 UNC-2A</p> | | | | | | | | | | <p>VERSION NO. 3.3</p> <p>PLANT X-10</p> <p>BLDG 5700</p> <p>FL 3</p> <p>SHT OF 1</p> <p>TYPE I</p> <p>CLASS S</p> <p>REV U</p> <p>RELEASE LEVEL</p> <p>SEI41-036</p> <p>REV -</p> | | | | | | | | | |
| REV | DESCRIPTION | BY | DATE | CHK | DEPT | DATE | PE | REQ | DATE | ORNL | DOE | DATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REVISION OR ISSUE PURPOSE | | | | | | | | | | | | | REVISION APPROVAL | | | | | | | | | | DRAWING APPROVALS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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SEI41-036

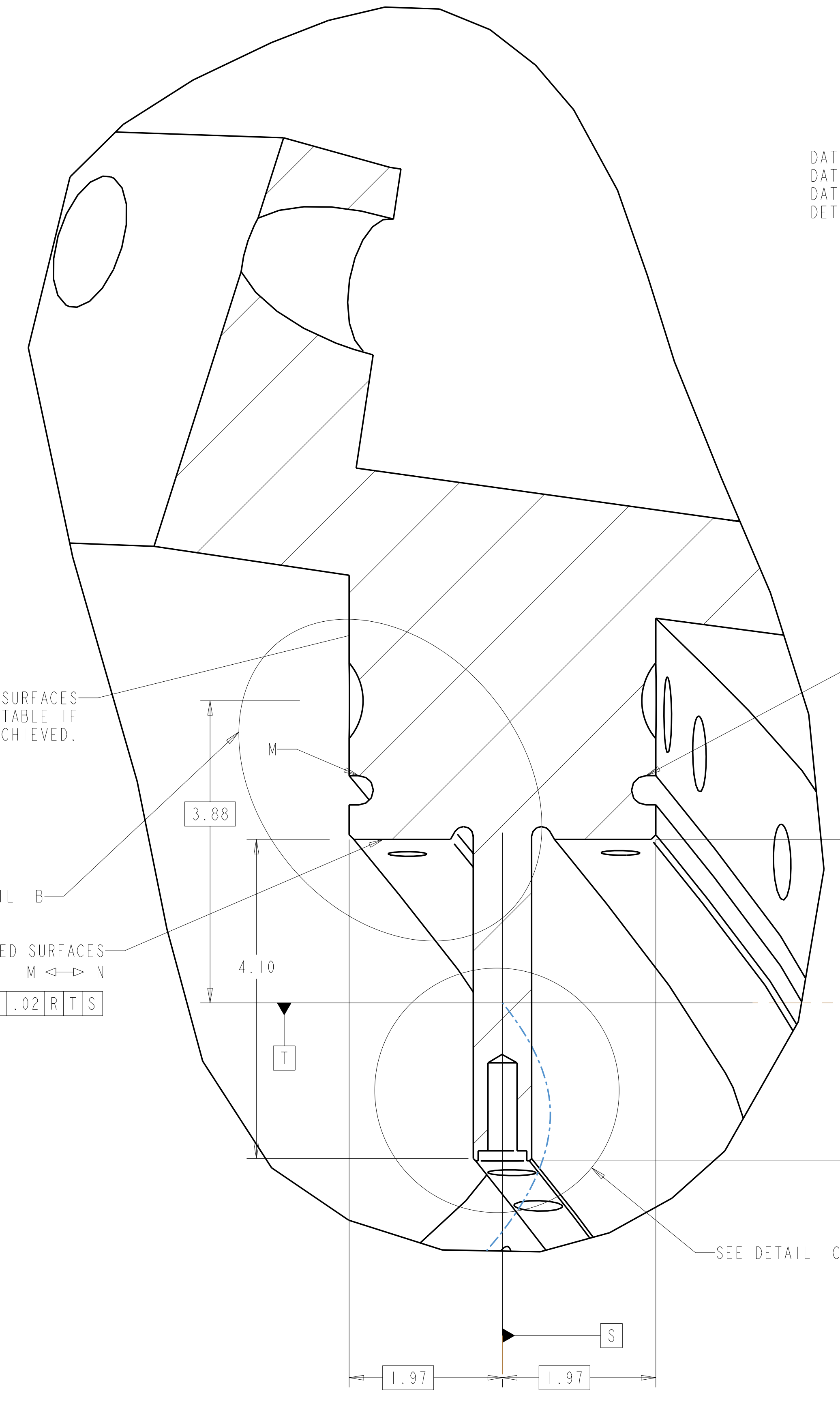
FOR GEN. NOTES AND PARTS LIST SEE SHT. 1



96X
 Spherical seat locations
 shown in Table IV, SHT 9
 data file SE141-116P-SA.TXT
 and SE141-116P-SB.TXT

DETAIL B
 SCALE 2.000

VPI GROOVE TO BE MACHINED BY
 BALL AND MILL OR DISC CUTTER IF
 SAME TOLERANCE CAN BE ACHIEVED.



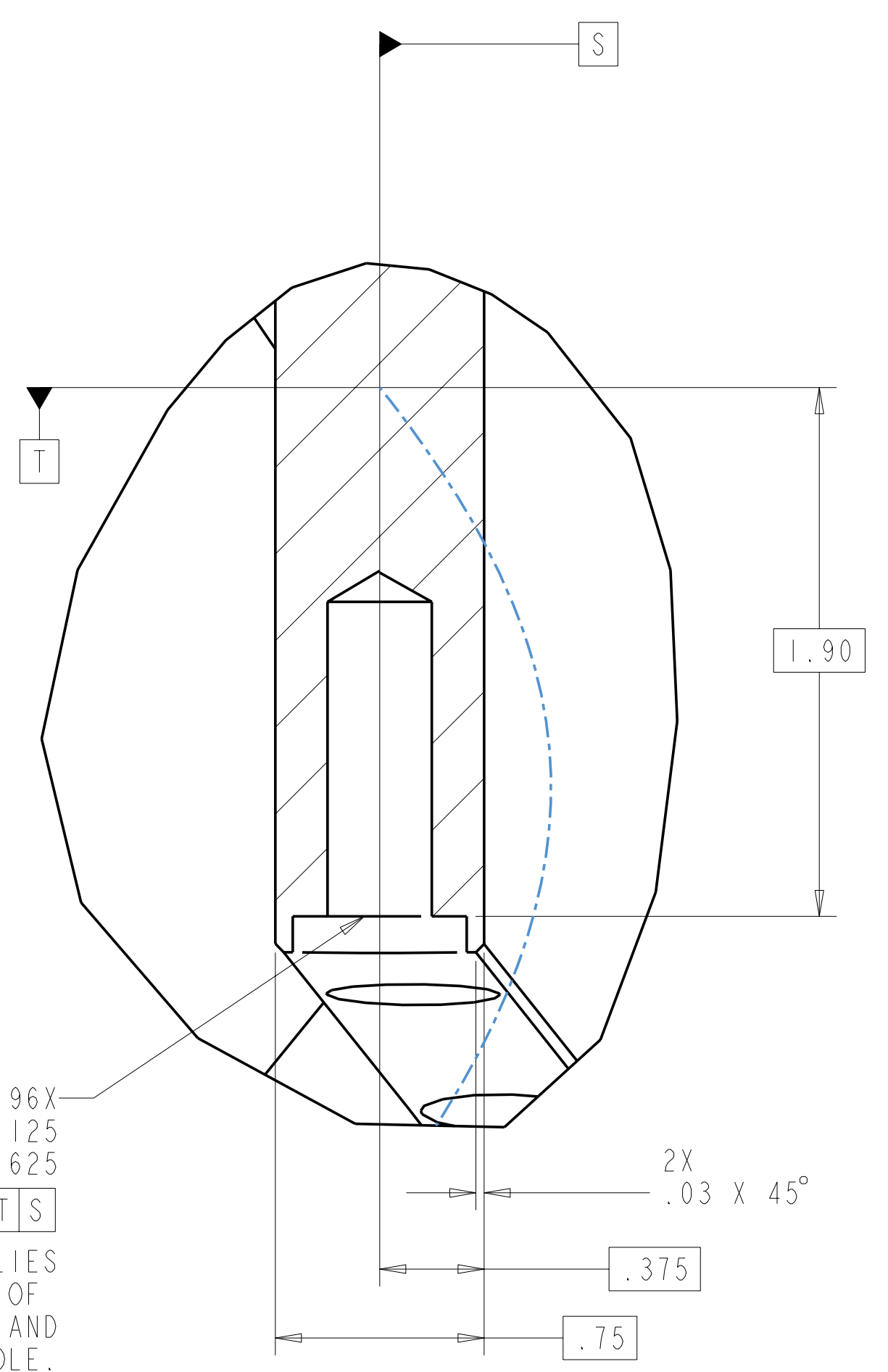
AS CAST SURFACES
 ACCEPTABLE IF
 TOLERANCE CAN BE ACHIEVED.

SEE DETAIL B

6 MACHINED SURFACES
 M ↔ N

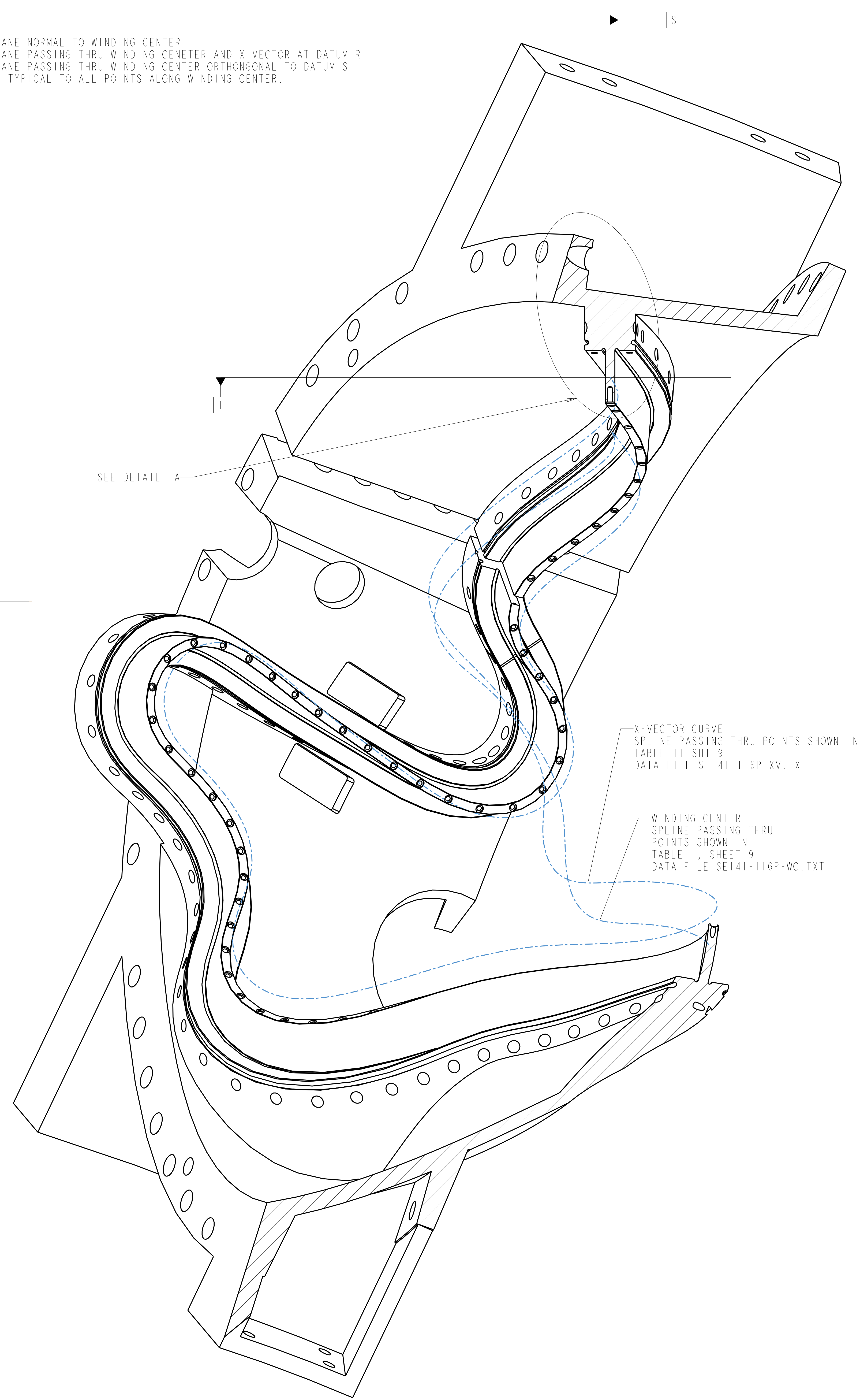
DATUM R = PLANE NORMAL TO WINDING CENTER
 DATUM S = PLANE PASSING THRU WINDING CENTER AND X VECTOR AT DATUM R
 DATUM T = PLANE PASSING THRU WINDING CENTER ORTHOGONAL TO DATUM S
 DETAIL A IS TYPICAL TO ALL POINTS ALONG WINDING CENTER.

DETAIL A
 SCALE 1.000

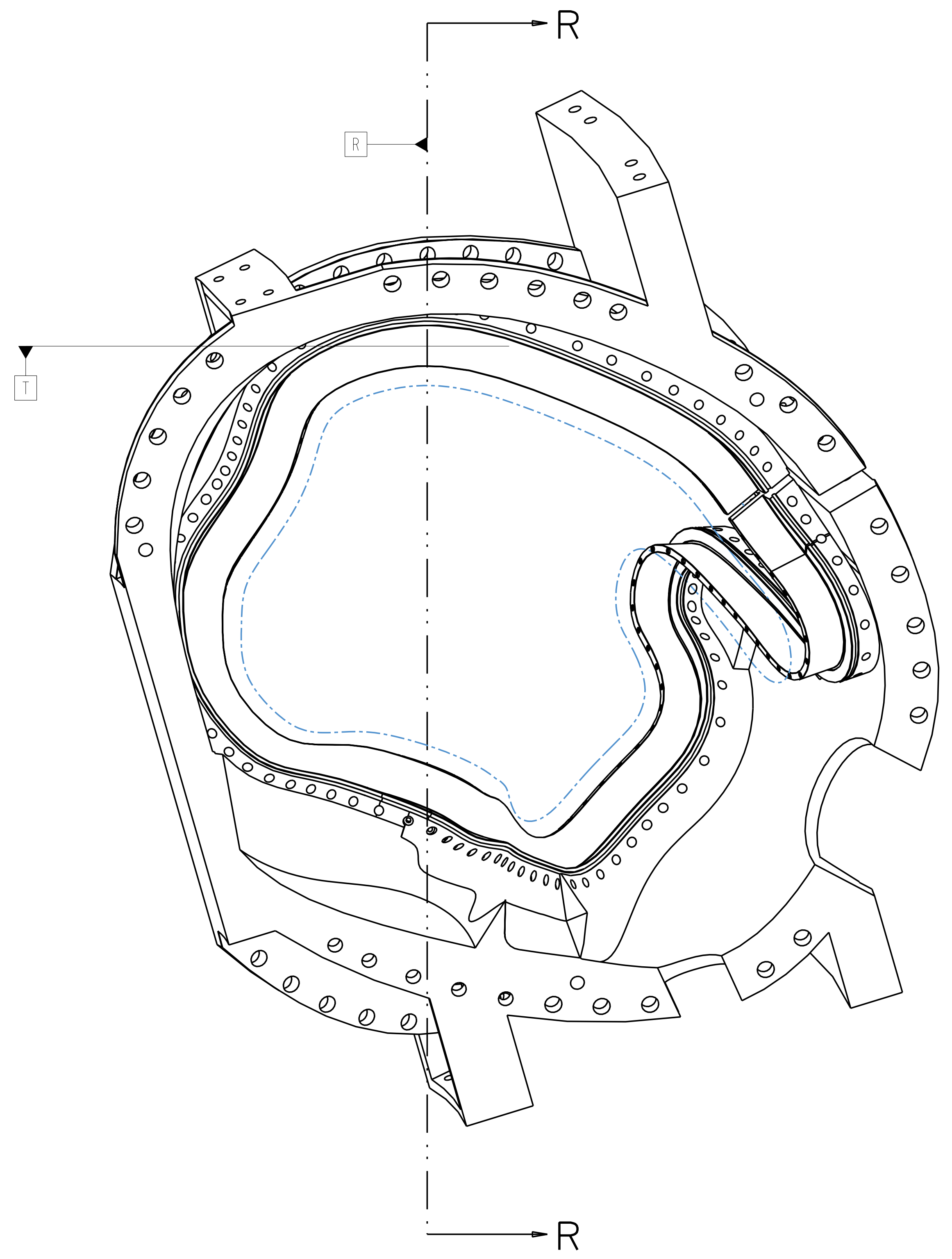


96X
 Ø.375 -16 UNC ±.125
 ±.01 R T S
 TRUE POSITION APPLIES
 TO DEPTH OF
 COUNTERSINK AND
 THREADED HOLE.

DETAIL C
 SCALE 2.000



SECTION R-R
 SCALE 0.250

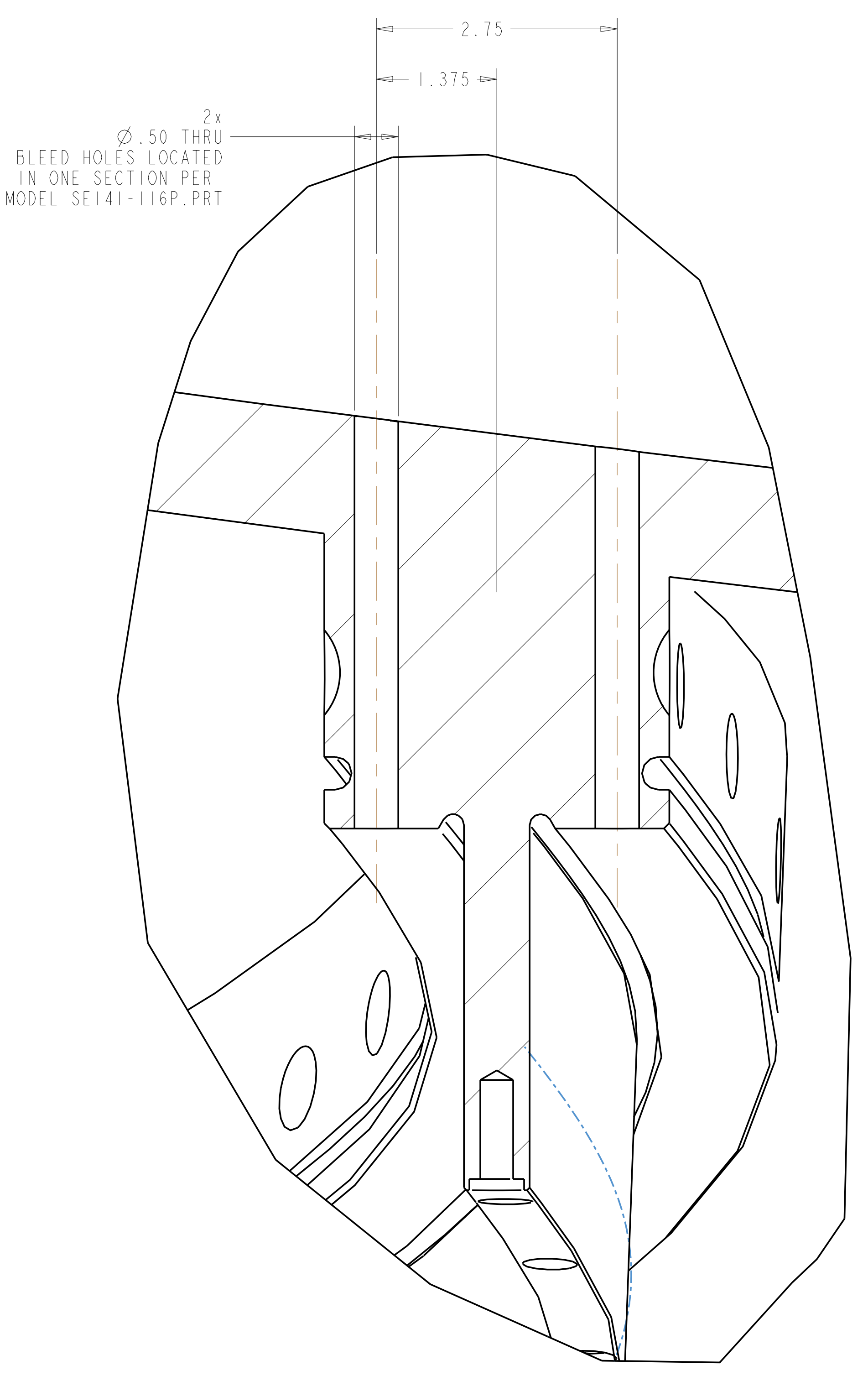
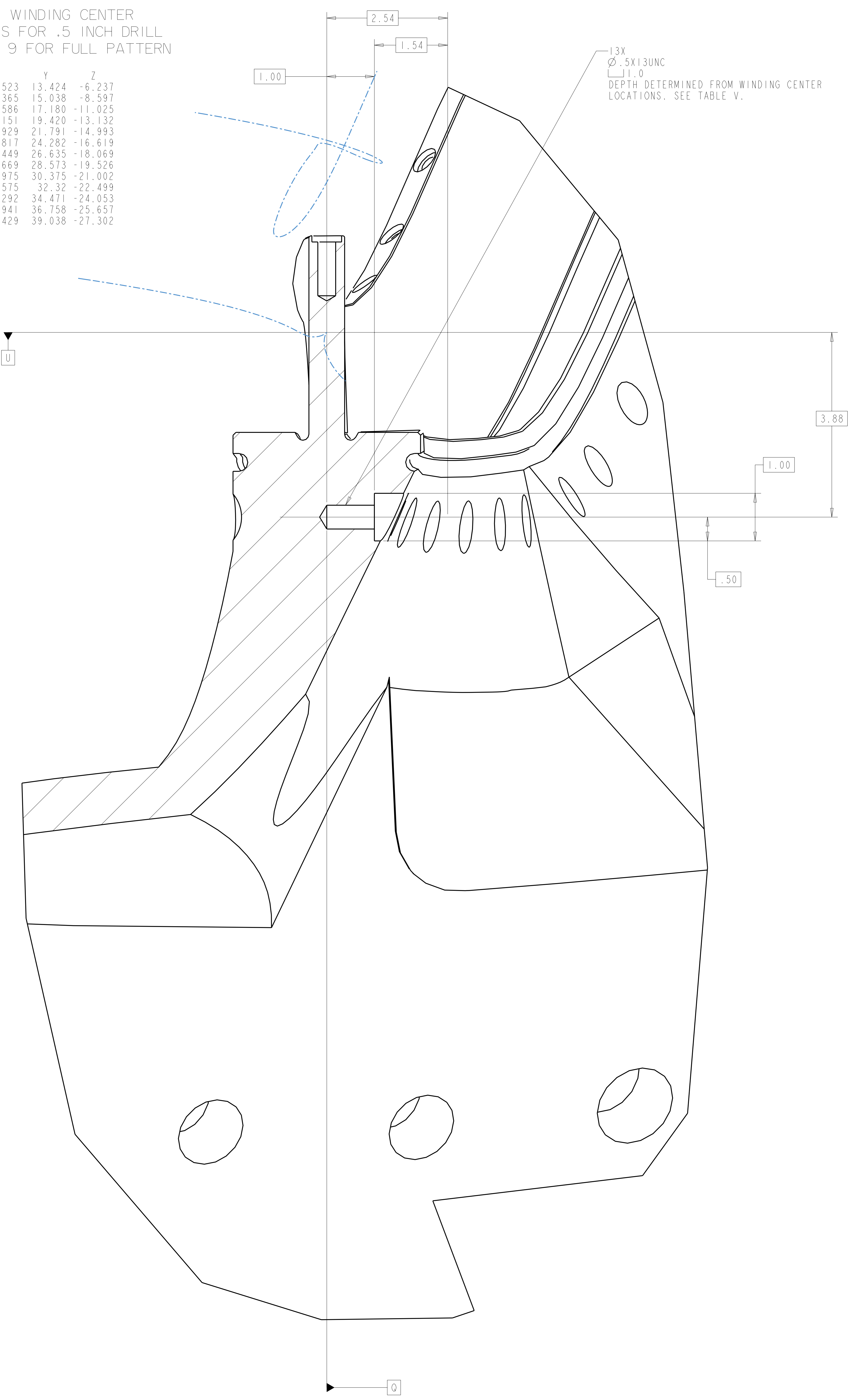
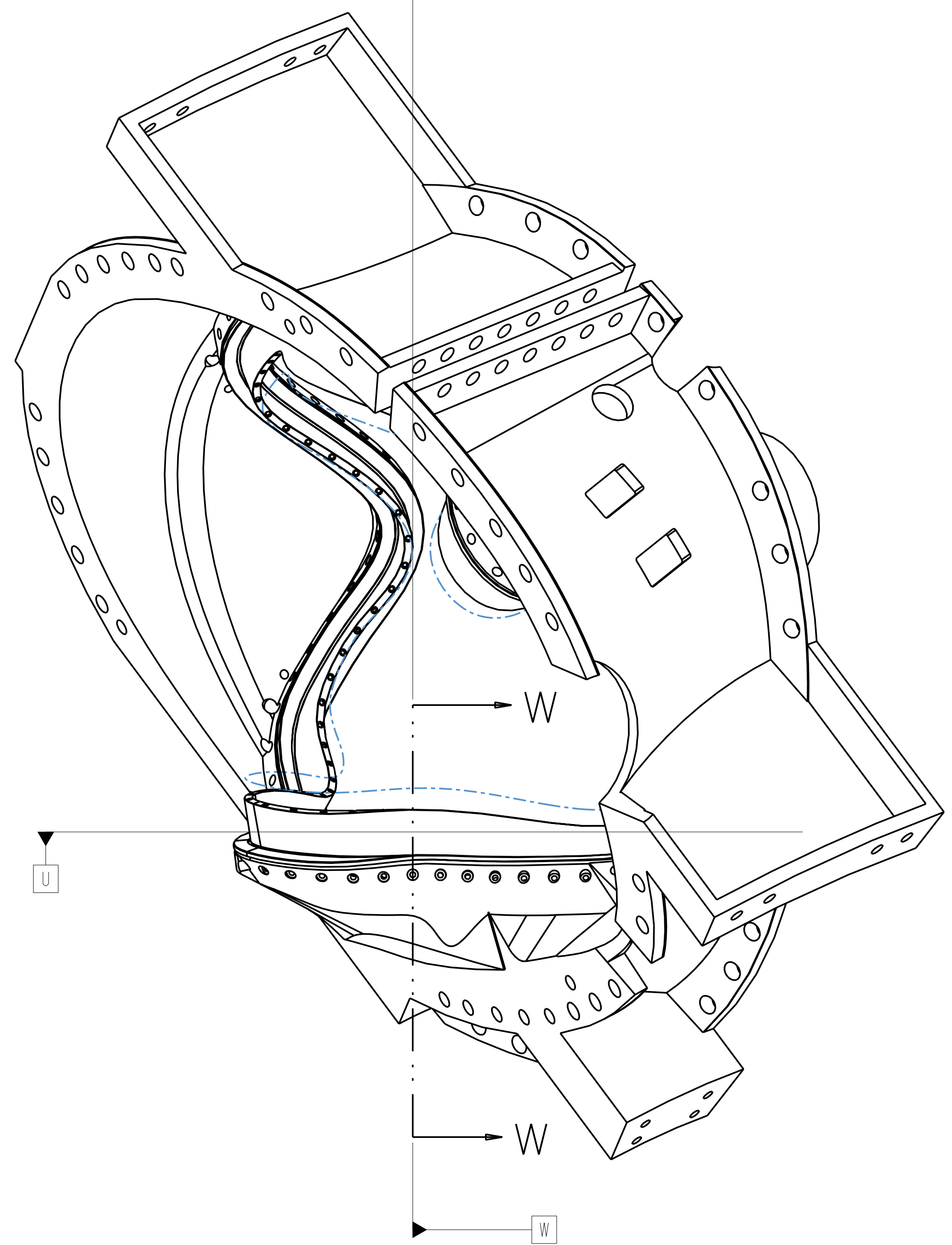


| | | | | | | | |
|---|-------|-------------|----|------------|------|-------|---|
| Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee | | | | | | | |
| NATIONAL COMPACT STELLARATOR EXPERIMENT | | | | | | | |
| PROTOTYPE TYPE "C" WINDING FORM | | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SHT OF | TYPE | CLASS | |
| 42 | X-10 | 5700 | 3 | 29 | S | U | |
| RELEASE LEVEL | | Fabrication | | SE141-116P | | REV | 0 |

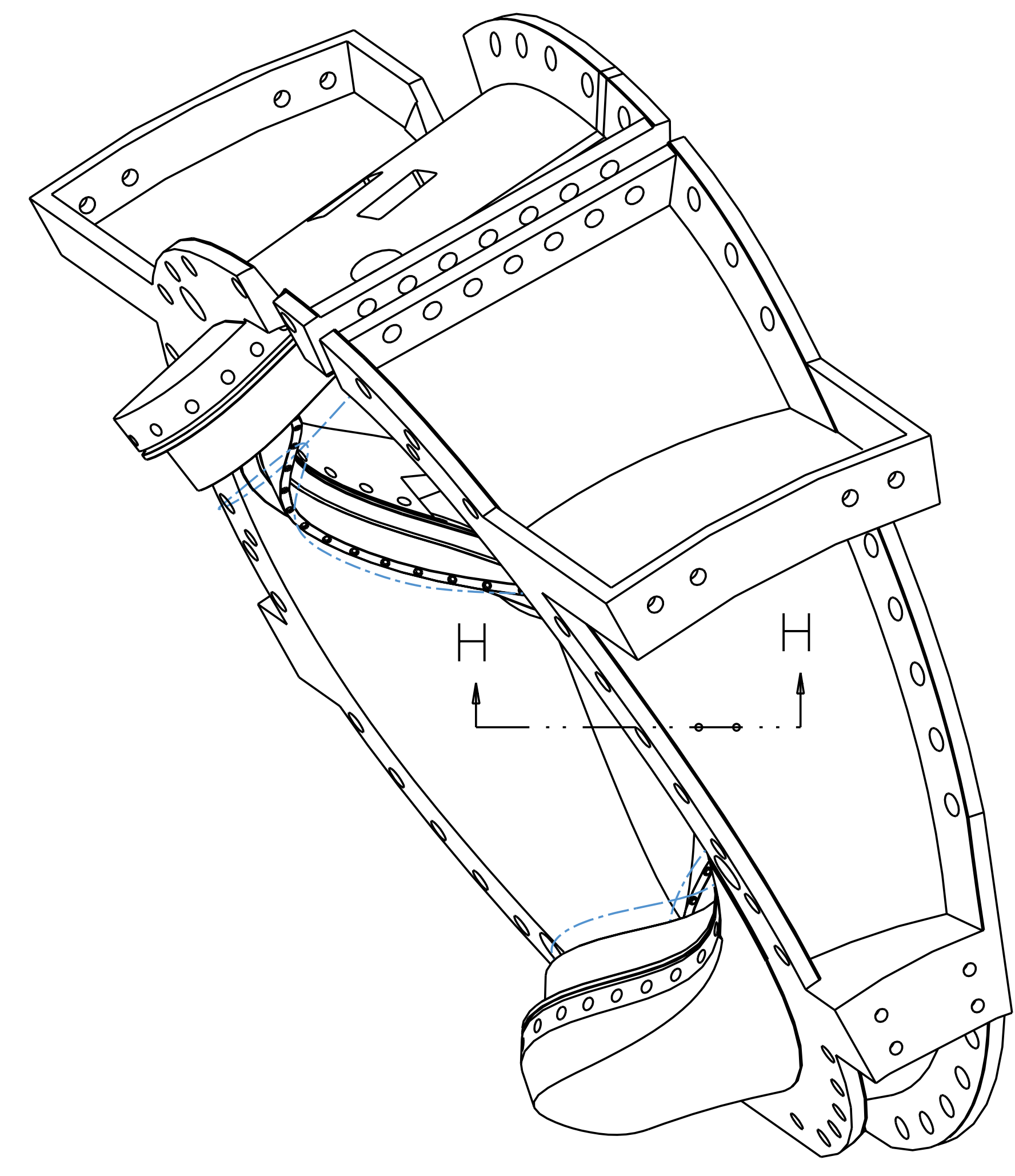
SE141-116P

TABLE V WINDING CENTER LOCATIONS FOR .5 INCH DRILL SEE SHEET 9 FOR FULL PATTERN

| No. | X | Y | Z |
|-----|--------|--------|---------|
| 50 | 37.523 | 13.424 | -6.237 |
| 51 | 39.365 | 15.038 | -8.597 |
| 52 | 39.586 | 17.180 | -11.025 |
| 53 | 39.151 | 19.420 | -13.132 |
| 54 | 38.929 | 21.791 | -14.993 |
| 55 | 38.817 | 24.282 | -16.619 |
| 56 | 38.449 | 26.635 | -18.069 |
| 57 | 37.669 | 28.573 | -19.526 |
| 58 | 36.975 | 30.375 | -21.002 |
| 59 | 36.575 | 32.32 | -22.499 |
| 60 | 36.292 | 34.471 | -24.053 |
| 61 | 35.941 | 36.758 | -25.657 |
| 62 | 35.429 | 39.038 | -27.302 |



SECTION H-H
SCALE 1.000



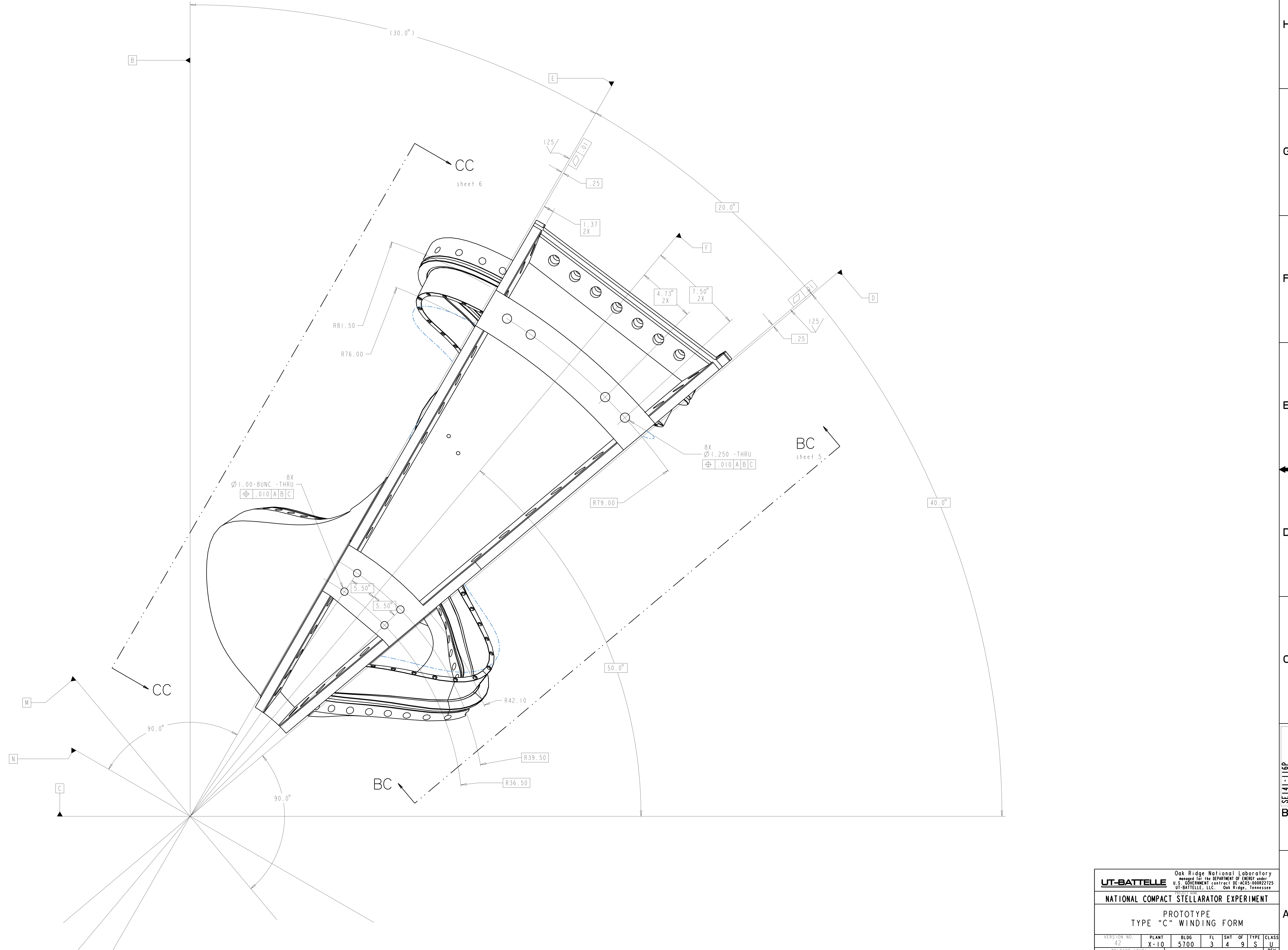
SECTION W-W
SCALE 1.000

| | | | | | | |
|---|-------|-------------|----|------------|------|-------|
| Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee | | | | | | |
| UT-BATTELLE | | | | | | |
| NATIONAL COMPACT STELLARATOR EXPERIMENT | | | | | | |
| PROJECT NAME PROTOTYPE TYPE "C" WINDING FORM | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SHT OF | TYPE | CLASS |
| 42 | X-10 | 5700 | 3 | 39 | S | U |
| RELEASE LEVEL | | Fabrication | | SE141-116P | | REV 0 |

UT-BATTELLE

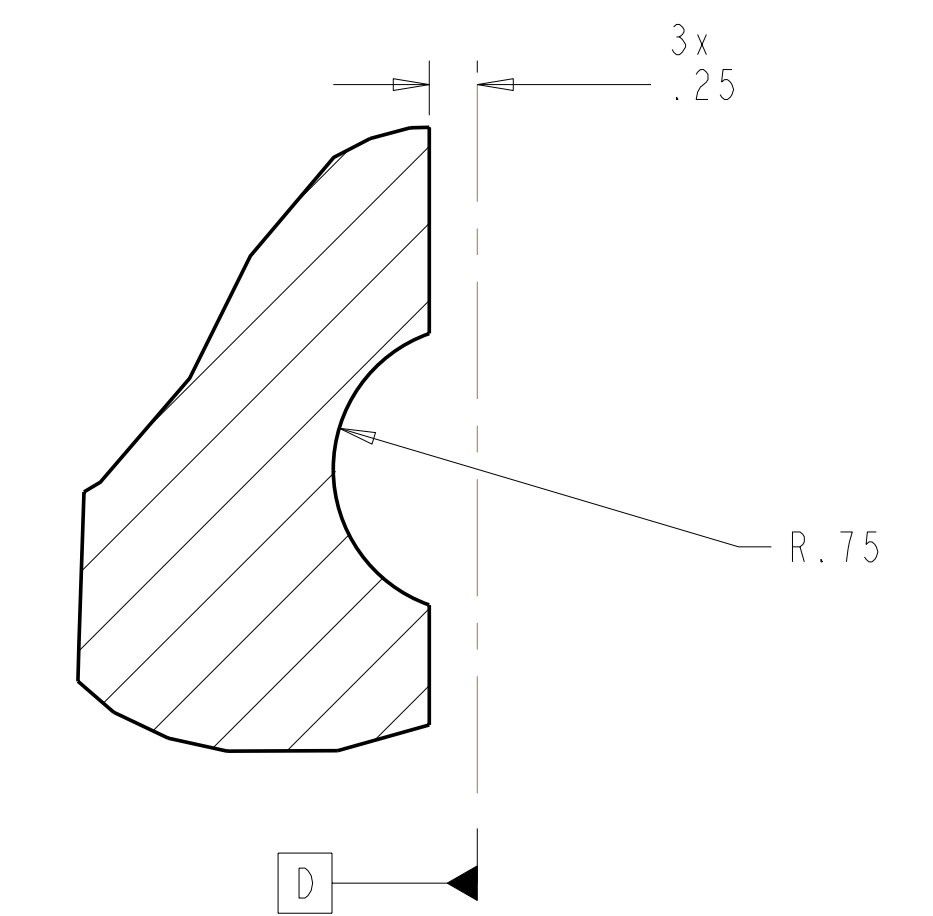
A

FOR GEN. NOTES AND PARTS LIST SEE SHT. 1

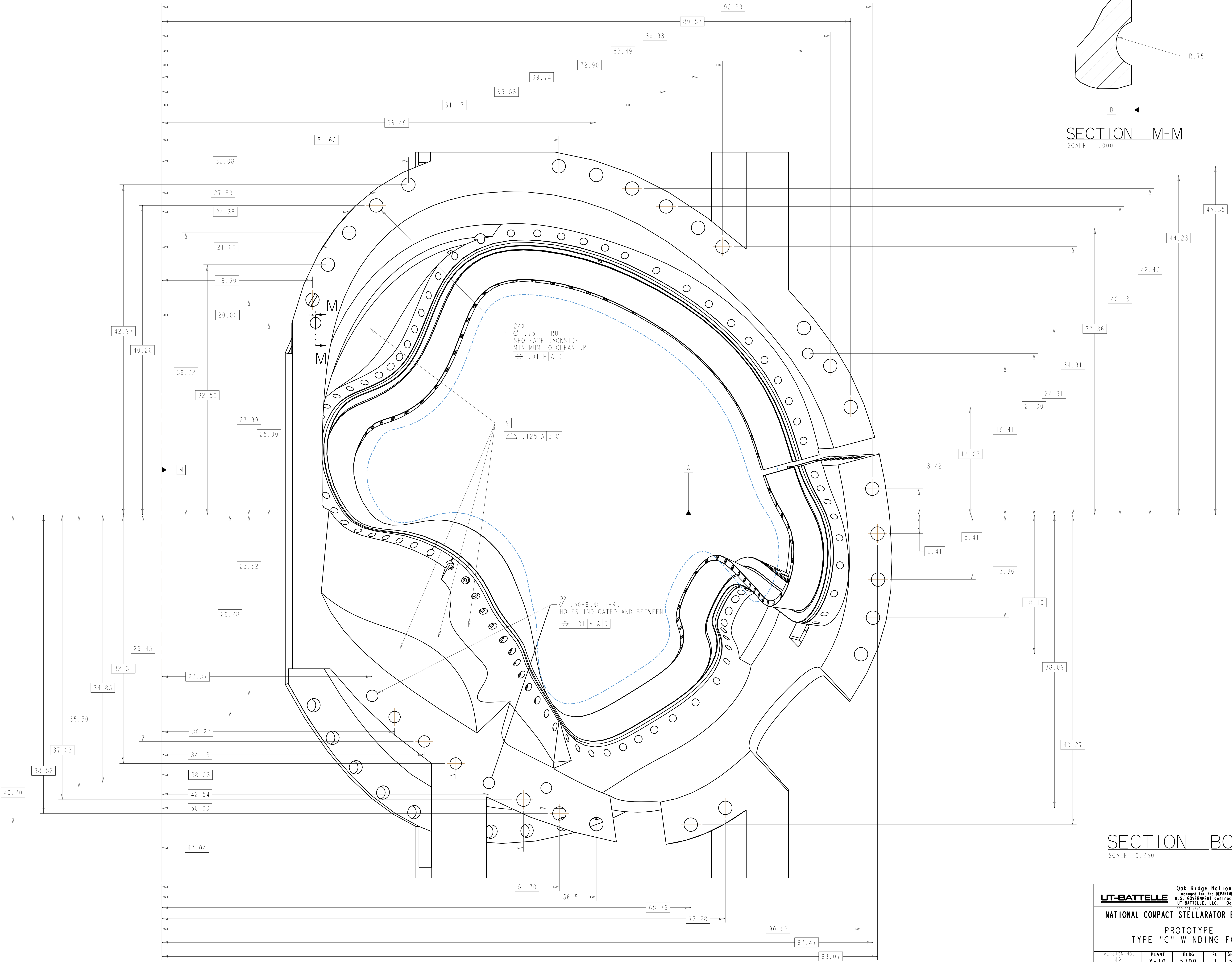


| | | | | | | |
|---|-------|------------|----|--------|------|-------|
| Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee PROJECT NAME | | | | | | |
| UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT | | | | | | |
| PROTOTYPE TYPE "C" WINDING FORM | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SHT OF | TYPE | CLASS |
| 42 | X-10 | 5700 | 3 | 49 | S | U |
| RELEASE LEVEL | | SEI41-116P | | | REV | |
| Fabrication | | | | | 0 | |

SEI41-116P



SECTION M-M
SCALE 1.000

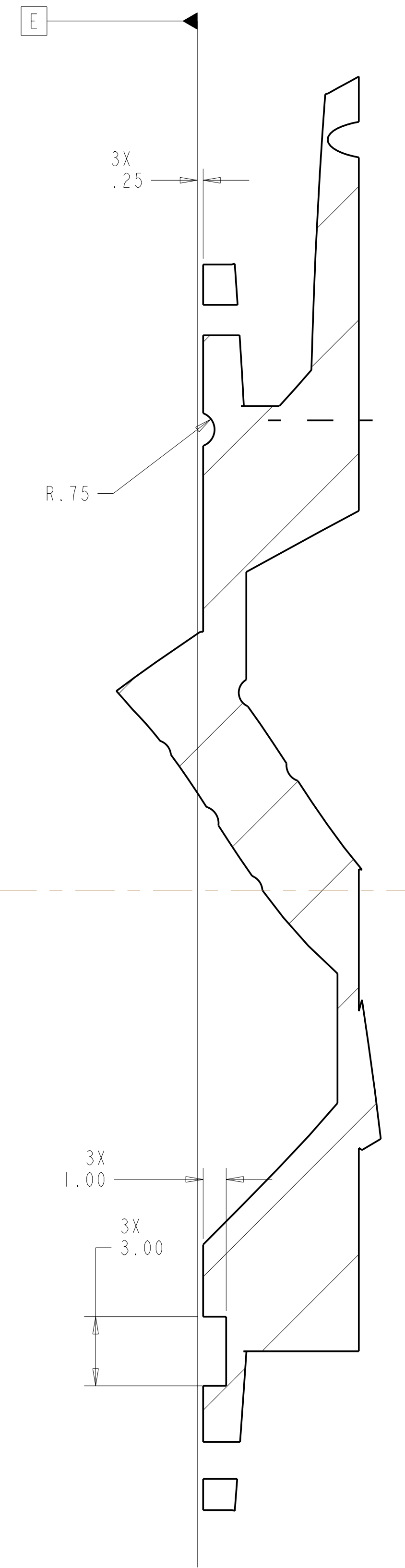
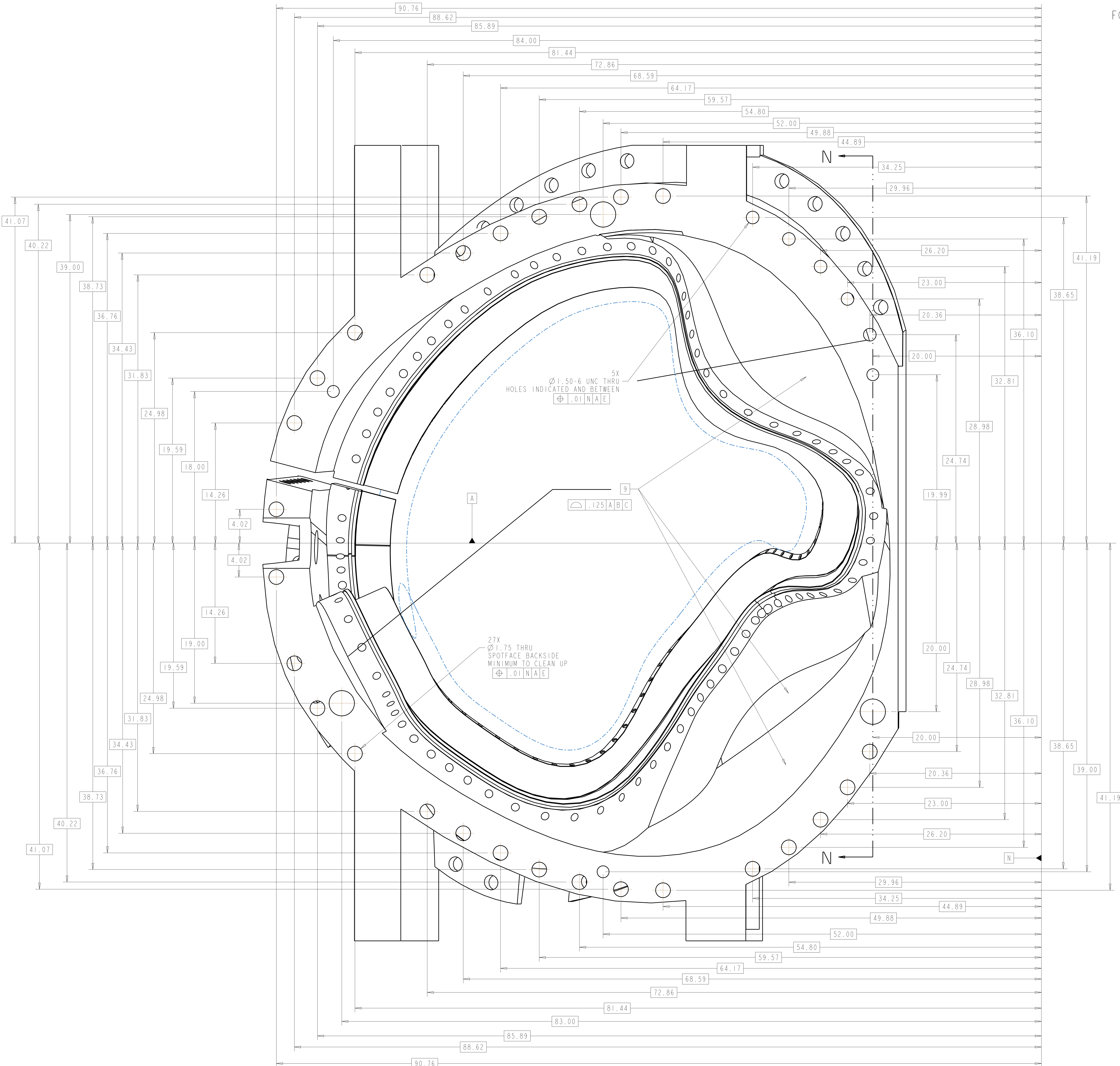


| | | | | | | |
|---|-------|-------------|----|------------|------|-------|
| Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee | | | | | | |
| UT-BATTELLE | | | | | | |
| NATIONAL COMPACT STELLARATOR EXPERIMENT | | | | | | |
| PROJECT NAME PROTOTYPE TYPE "C" WINDING FORM | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SHT OF | TYPE | CLASS |
| 42 | X-10 | 5700 | 3 | 59 | S | U |
| RELEASE LEVEL | | Fabrication | | SEI41-116P | | REV 0 |

SEI41-116P

A

FOR GEN. NOTES AND PARTS LIST SEE SH. 1

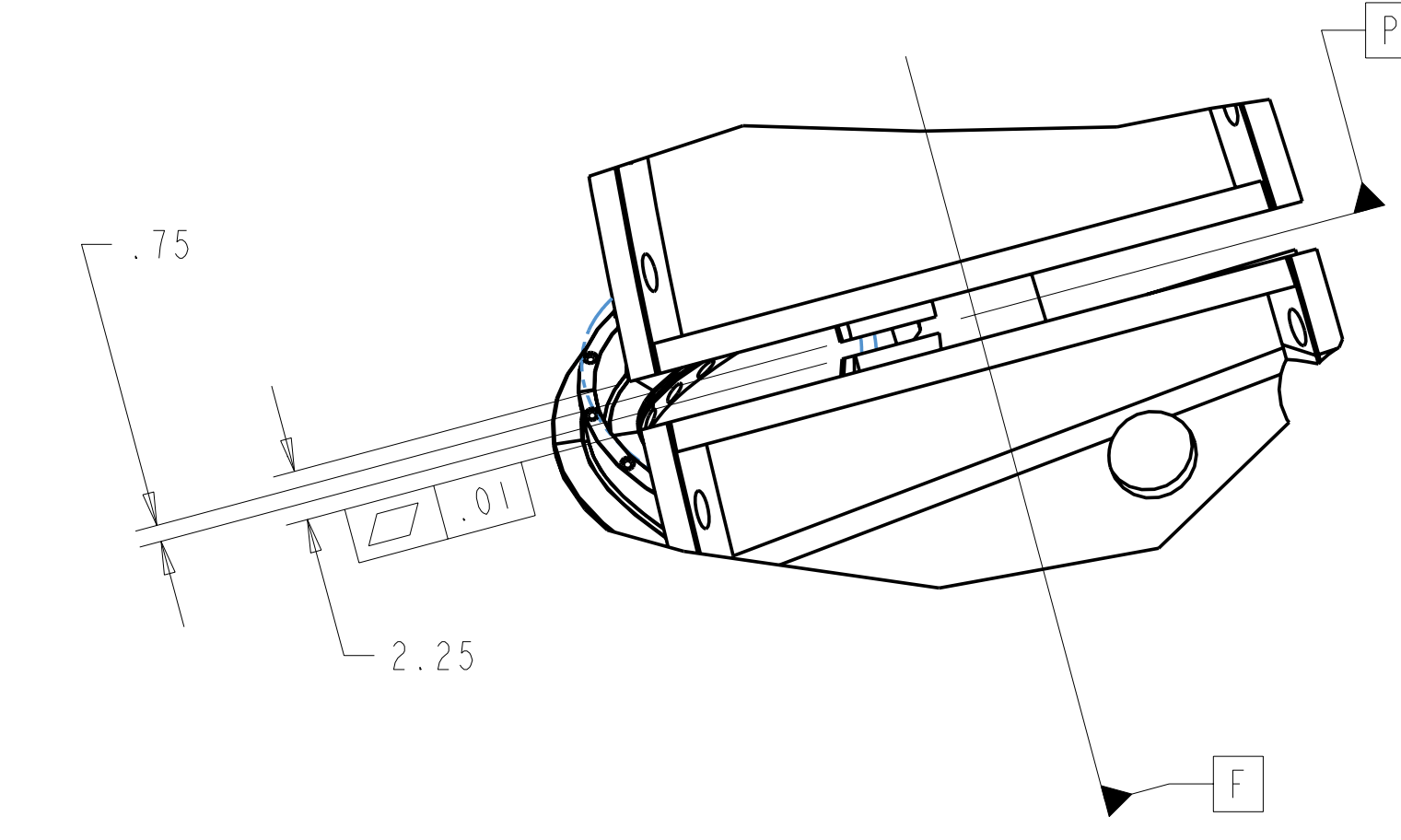
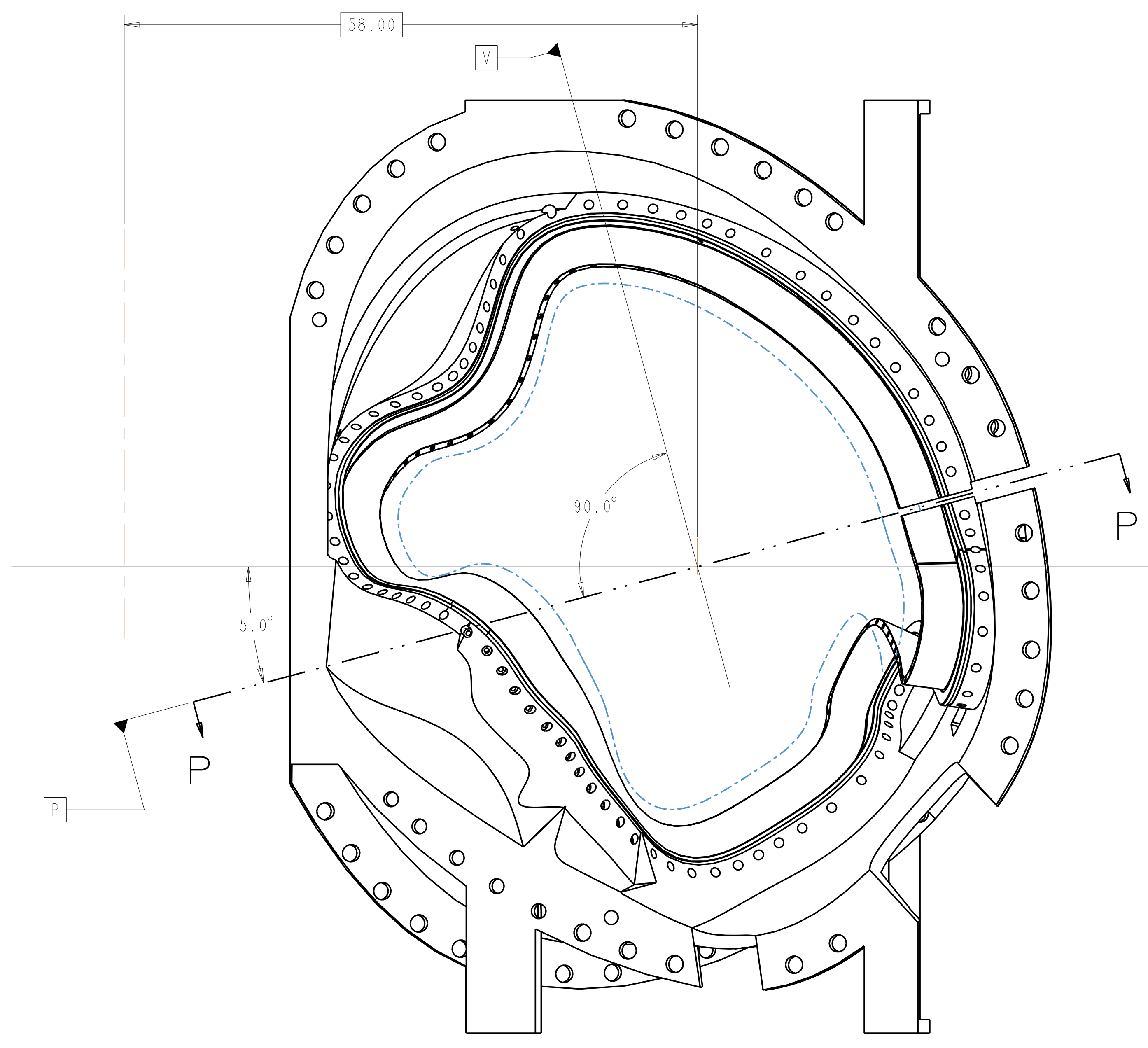
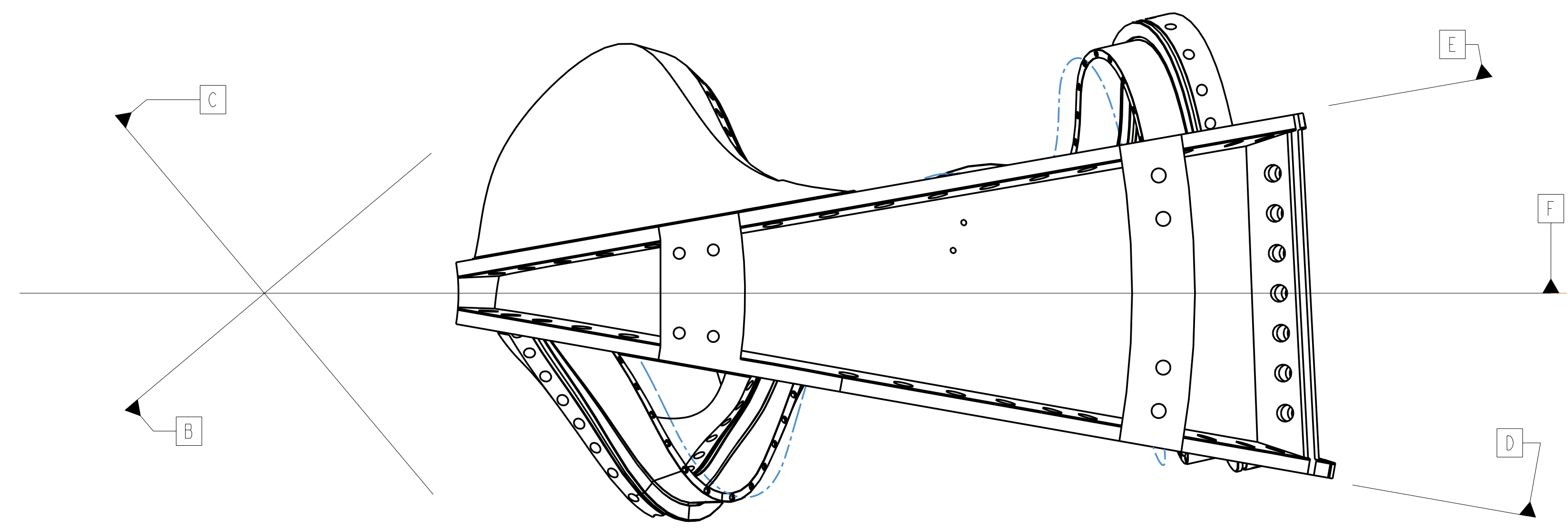


SECTION CC-CC

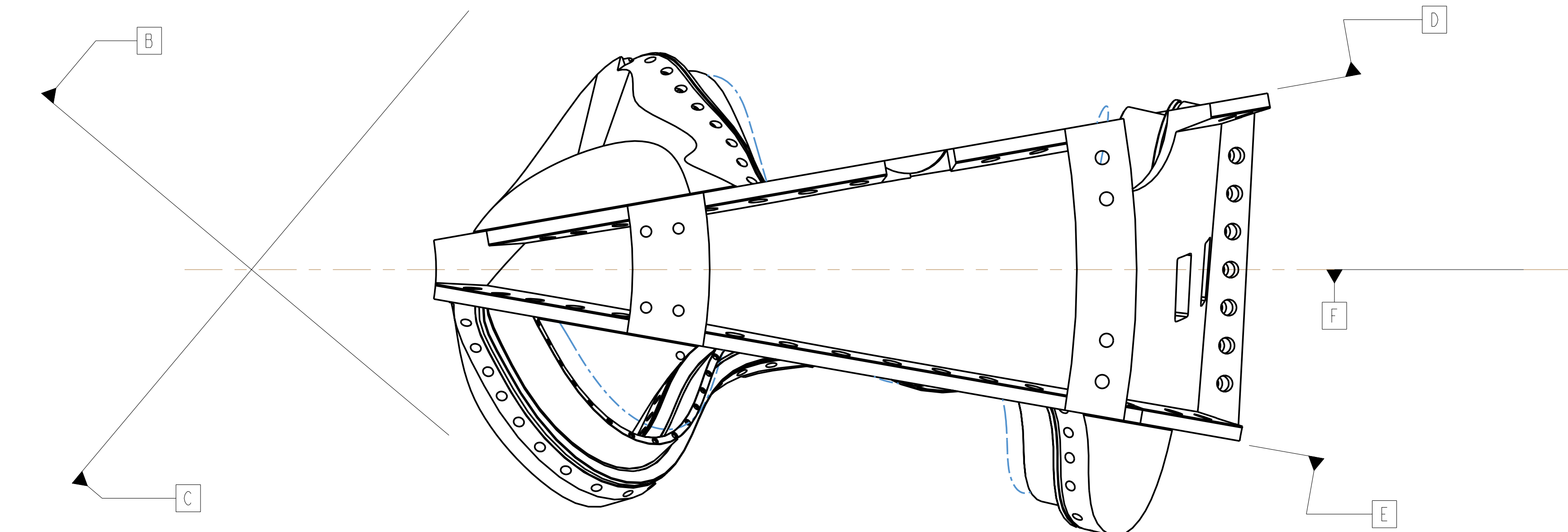
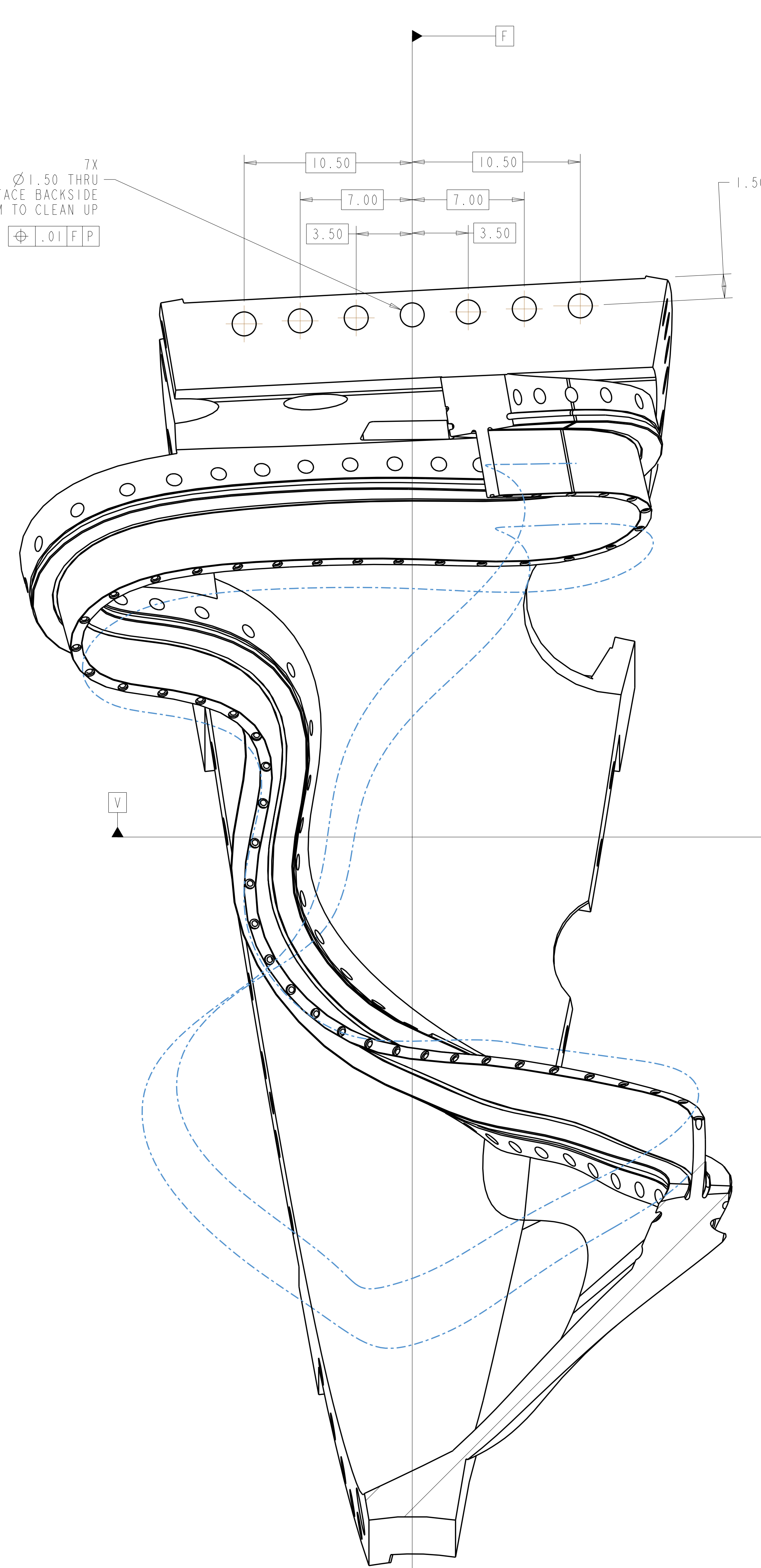
| | | | | | | | |
|---|-------|------------|----|--------|------|-------|---|
| Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee PROJECT NAME | | | | | | | |
| UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT | | | | | | | |
| PROTOTYPE TYPE "C" WINDING FORM | | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SH. OF | TYPE | CLASS | |
| 42 | X-10 | 5700 | 3 | 6 | 9 | S | U |
| RELEASE LEVEL | | SEI41-116P | | | | | |
| Fabrication | | REV 0 | | | | | |

SEI41-116P

FOR GEN. NOTES AND PARTS LIST SEE SHIT. 1



7X
 Ø1.50 THRU
 SPOTFACE BACKSIDE
 MINIMUM TO CLEAN UP
 .01 F P

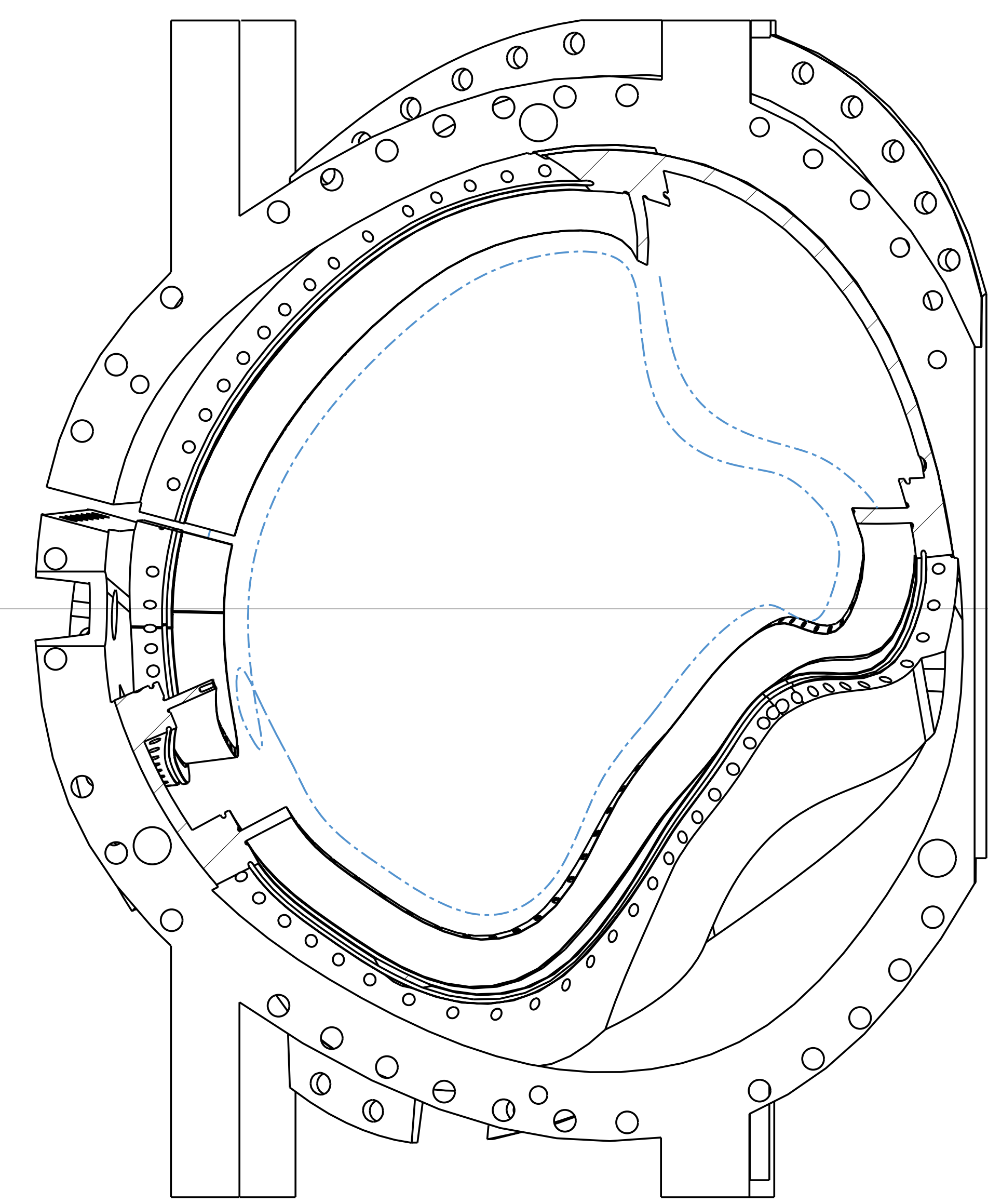
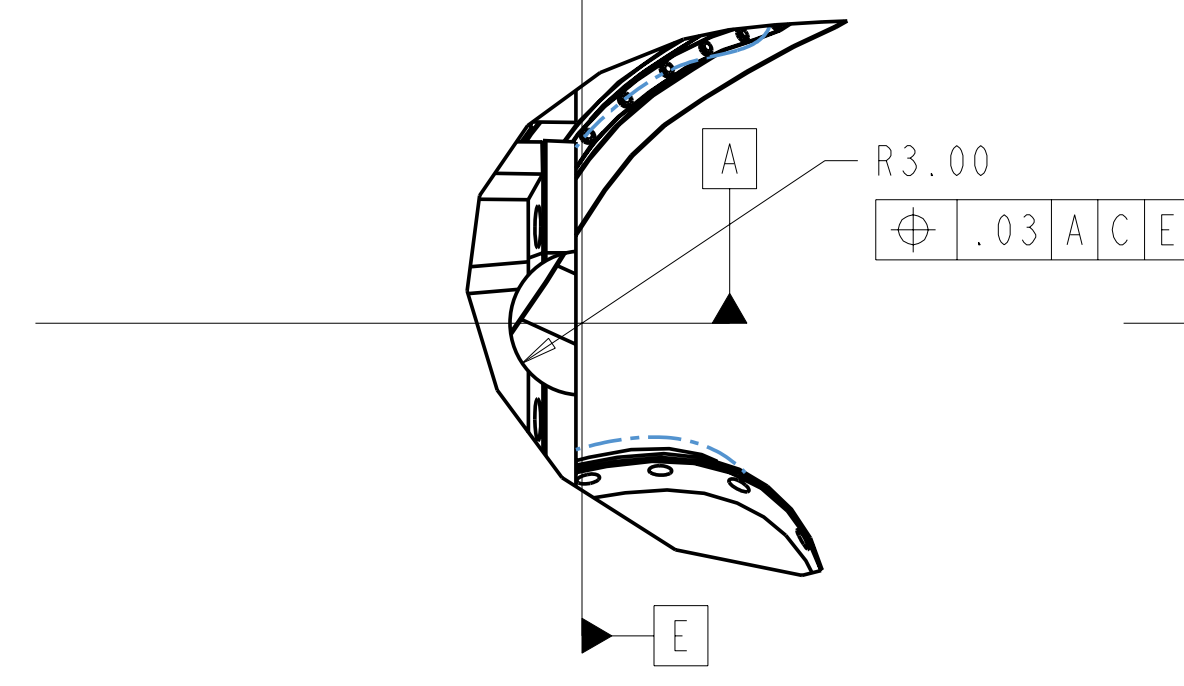
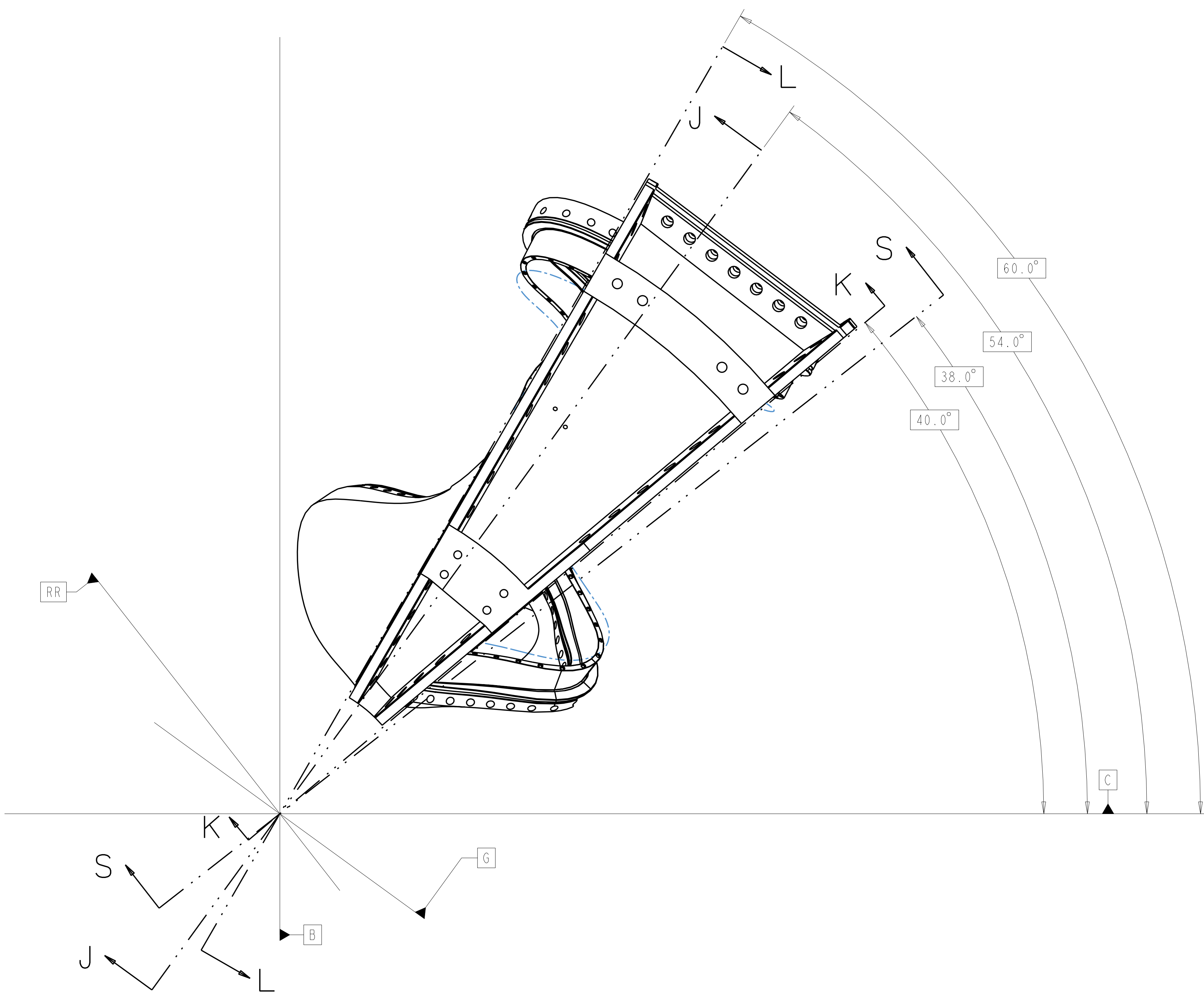


SECTION P-P
 SCALE 0.250

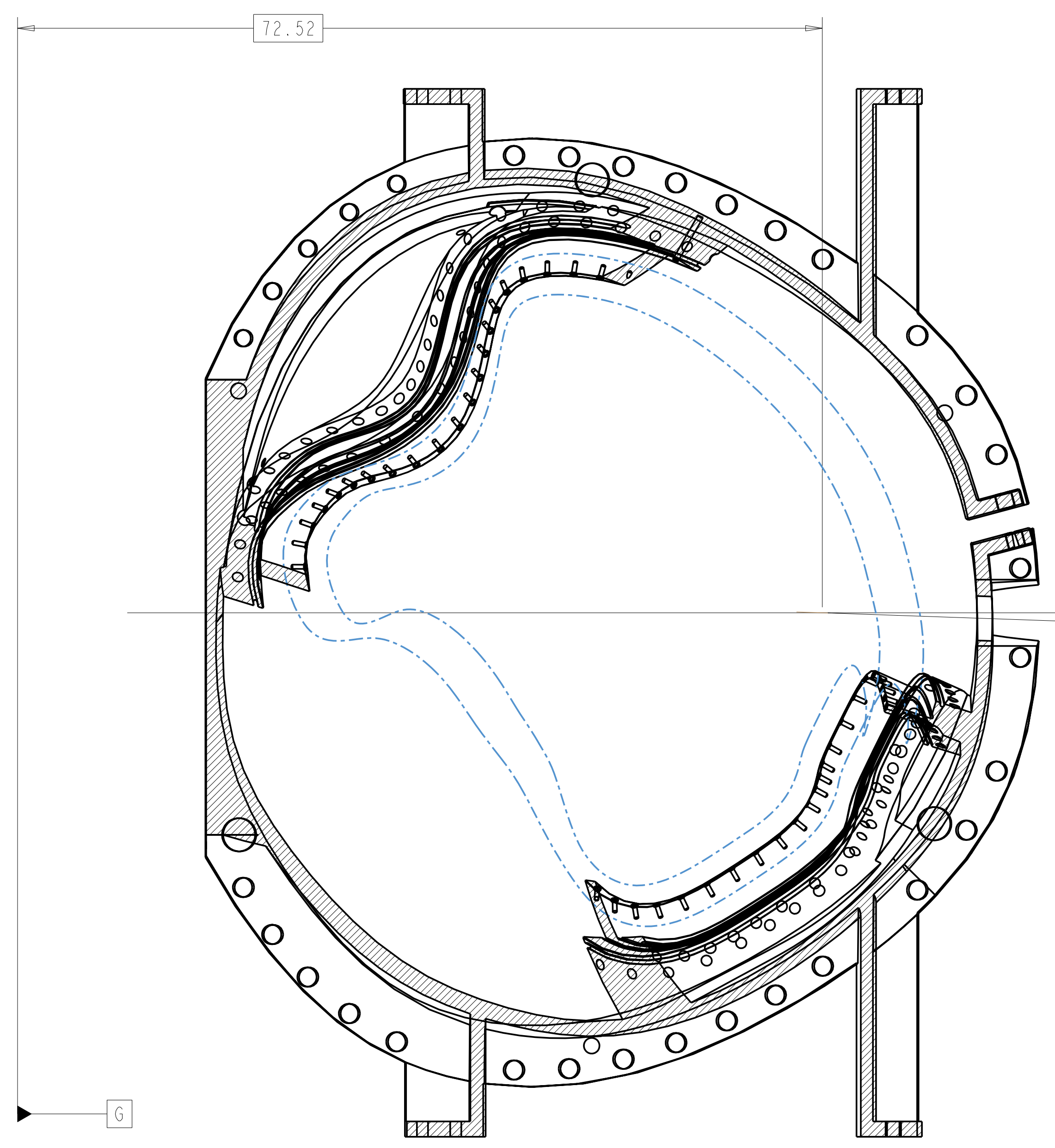
| | | | | | | | |
|---|-------|-------------|----|------------|------|-------|---|
| Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee | | | | | | | |
| UT-BATTELLE | | | | | | | |
| NATIONAL COMPACT STELLARATOR EXPERIMENT | | | | | | | |
| PROTOTYPE TYPE "C" WINDING FORM | | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SHT OF | TYPE | CLASS | |
| 42 | X-10 | 5700 | 3 | 7 | 9 | S | U |
| RELEASE LEVEL | | Fabrication | | SEI41-116P | | REV 0 | |

SEI41-116P

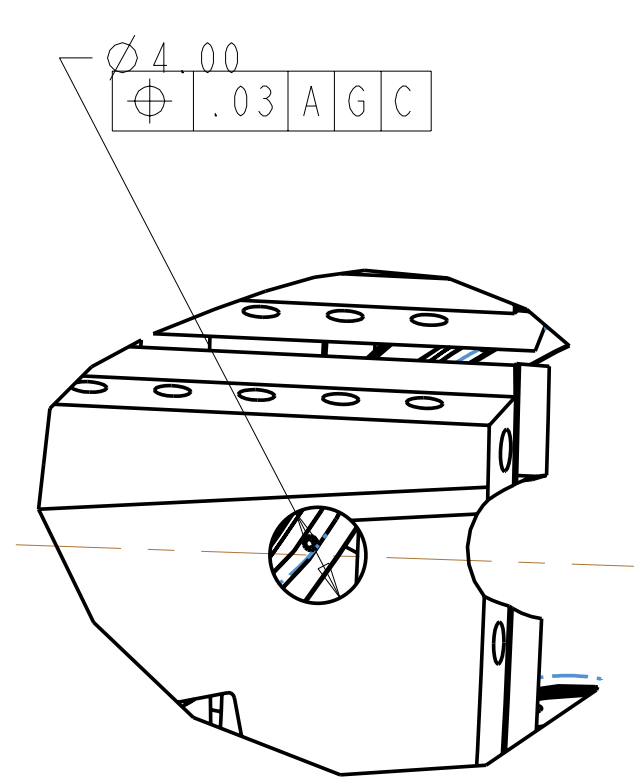
FOR GEN. NOTES AND PARTS LIST SEE SHT. 1



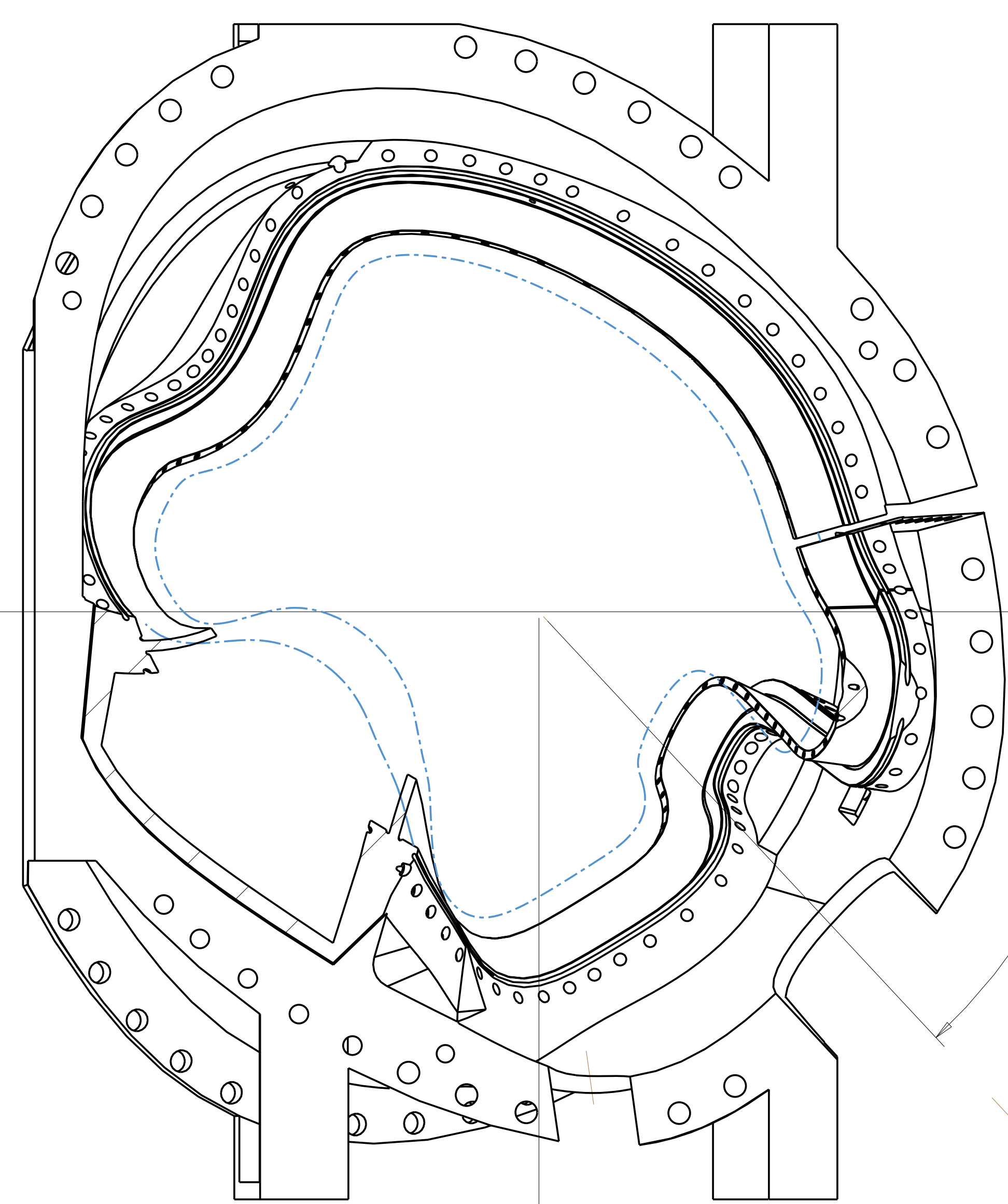
SECTION L-L



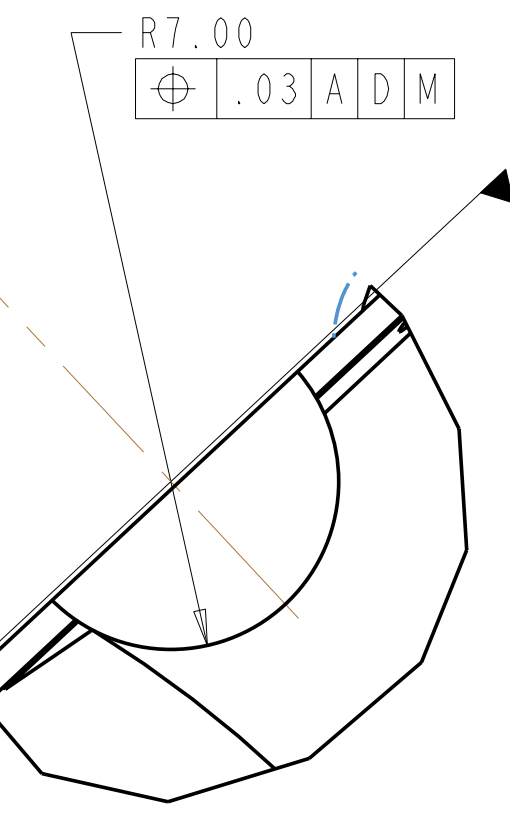
SECTION J-J



2.0°



SECTION K-K



47.0°

| | | | | | | |
|---|-------|-------------|----|--------|------------|-------|
| 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 | | | | | | |
| PROTOTYPE TYPE "C" WINDING FORM | | | | | | |
| VERSION NO. | PLANT | BLDG | FL | SHT OF | TYPE | CLASS |
| 42 | X-10 | 5700 | 3 | 8 9 | S | U |
| RELEASE LEVEL | | Fabrication | | | SEI41-116P | REV 0 |

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F
E
D
C
B
A

TABLE I WINDING CENTER SPLINE
(FILE SE141-116P-WC.TXT)

| No. | X | Y | Z |
|-----|--------|--------|---------|
| 1 | 60.145 | 56.794 | 0.000 |
| 2 | 58.276 | 57.786 | 1.503 |
| 3 | 56.596 | 58.526 | 3.327 |
| 4 | 55.416 | 58.692 | 5.615 |
| 5 | 54.871 | 58.162 | 8.086 |
| 6 | 54.722 | 57.153 | 10.470 |
| 7 | 54.637 | 55.902 | 12.743 |
| 8 | 54.360 | 54.558 | 14.945 |
| 9 | 53.748 | 53.221 | 17.082 |
| 10 | 52.767 | 51.957 | 19.123 |
| 11 | 51.421 | 50.828 | 21.031 |
| 12 | 49.744 | 49.886 | 22.771 |
| 13 | 47.797 | 49.153 | 24.321 |
| 14 | 45.661 | 48.609 | 25.690 |
| 15 | 43.406 | 48.198 | 26.909 |
| 16 | 41.088 | 47.830 | 28.018 |
| 17 | 38.744 | 47.399 | 29.046 |
| 18 | 36.404 | 46.795 | 29.991 |
| 19 | 34.109 | 45.921 | 30.830 |
| 20 | 31.918 | 44.720 | 31.524 |
| 21 | 29.878 | 43.203 | 32.041 |
| 22 | 27.960 | 41.481 | 32.335 |
| 23 | 26.012 | 39.770 | 32.290 |
| 24 | 23.895 | 38.421 | 31.681 |
| 25 | 21.752 | 37.807 | 30.385 |
| 26 | 19.849 | 37.887 | 28.631 |
| 27 | 18.194 | 38.324 | 26.681 |
| 28 | 16.873 | 38.852 | 24.645 |
| 29 | 15.192 | 39.316 | 22.584 |
| 30 | 13.689 | 39.615 | 20.469 |
| 31 | 12.134 | 39.566 | 18.396 |
| 32 | 10.613 | 38.827 | 16.444 |
| 33 | 9.437 | 37.164 | 14.867 |
| 34 | 8.851 | 34.871 | 13.829 |
| 35 | 8.791 | 32.366 | 13.165 |
| 36 | 9.101 | 29.862 | 12.562 |
| 37 | 9.681 | 27.475 | 11.732 |
| 38 | 10.467 | 25.270 | 10.612 |
| 39 | 11.320 | 23.189 | 9.316 |
| 40 | 12.144 | 21.365 | 7.674 |
| 41 | 13.054 | 20.132 | 5.590 |
| 42 | 14.179 | 19.494 | 3.345 |
| 43 | 15.620 | 19.190 | 1.211 |
| 44 | 17.452 | 18.936 | -0.604 |
| 45 | 19.685 | 18.670 | -2.883 |
| 46 | 22.201 | 18.487 | -4.862 |
| 47 | 24.788 | 18.307 | -6.511 |
| 48 | 27.365 | 18.030 | -7.861 |
| 49 | 29.931 | 17.652 | -8.930 |
| 50 | 32.494 | 17.273 | -9.730 |
| 51 | 35.028 | 17.114 | -10.230 |
| 52 | 37.378 | 17.455 | -10.430 |
| 53 | 39.999 | 18.562 | -10.230 |
| 54 | 42.391 | 20.227 | -9.511 |
| 55 | 44.948 | 22.059 | -8.290 |
| 56 | 47.254 | 23.967 | -6.511 |
| 57 | 49.274 | 25.943 | -4.212 |
| 58 | 50.971 | 27.920 | -1.389 |
| 59 | 52.333 | 29.820 | 1.590 |
| 60 | 53.333 | 31.625 | 4.600 |
| 61 | 53.903 | 33.362 | 7.600 |
| 62 | 54.146 | 35.089 | 10.480 |
| 63 | 54.090 | 36.854 | 13.226 |
| 64 | 53.865 | 38.690 | 15.830 |
| 65 | 53.479 | 40.647 | 18.290 |
| 66 | 52.937 | 42.808 | 20.610 |
| 67 | 52.279 | 45.207 | 22.780 |
| 68 | 51.558 | 47.768 | 24.810 |
| 69 | 50.737 | 50.319 | 26.710 |
| 70 | 49.876 | 52.819 | 28.490 |
| 71 | 48.935 | 55.247 | 30.160 |
| 72 | 47.974 | 57.592 | 31.730 |
| 73 | 47.076 | 59.846 | 33.210 |
| 74 | 46.211 | 62.009 | 34.610 |
| 75 | 45.376 | 64.081 | 35.930 |
| 76 | 44.561 | 66.061 | 37.180 |
| 77 | 43.766 | 67.948 | 38.360 |
| 78 | 42.991 | 69.742 | 39.480 |
| 79 | 42.236 | 71.443 | 40.540 |
| 80 | 41.501 | 73.052 | 41.550 |
| 81 | 40.786 | 74.569 | 42.510 |
| 82 | 40.091 | 76.004 | 43.430 |
| 83 | 39.416 | 77.357 | 44.310 |
| 84 | 38.761 | 78.638 | 45.150 |
| 85 | 38.126 | 79.847 | 45.950 |
| 86 | 37.511 | 81.004 | 46.710 |
| 87 | 36.916 | 82.119 | 47.430 |
| 88 | 36.341 | 83.192 | 48.110 |
| 89 | 35.786 | 84.223 | 48.750 |
| 90 | 35.251 | 85.212 | 49.350 |
| 91 | 34.736 | 86.159 | 49.910 |
| 92 | 34.241 | 87.064 | 50.430 |
| 93 | 33.766 | 87.927 | 50.910 |
| 94 | 33.311 | 88.748 | 51.350 |
| 95 | 32.876 | 89.527 | 51.750 |
| 96 | 32.461 | 90.264 | 52.110 |
| 97 | 32.066 | 90.959 | 52.430 |
| 98 | 31.691 | 91.612 | 52.710 |
| 99 | 31.336 | 92.223 | 52.950 |
| 100 | 31.001 | 92.792 | 53.150 |
| 101 | 30.686 | 93.319 | 53.310 |

TABLE II X-VECTOR SPLINE
(FILE SE141-116P-XV.TXT)

| No. | X | Y | Z |
|-----|--------|--------|---------|
| 1 | 58.052 | 53.430 | 0.000 |
| 2 | 56.230 | 54.406 | 1.241 |
| 3 | 54.571 | 55.150 | 2.816 |
| 4 | 53.390 | 55.329 | 4.888 |
| 5 | 52.867 | 54.797 | 7.168 |
| 6 | 52.749 | 53.802 | 9.360 |
| 7 | 52.644 | 52.605 | 11.450 |
| 8 | 52.303 | 51.347 | 13.477 |
| 9 | 51.620 | 50.117 | 15.434 |
| 10 | 50.582 | 48.979 | 17.286 |
| 11 | 49.208 | 47.988 | 19.000 |
| 12 | 47.546 | 47.183 | 20.548 |
| 13 | 45.665 | 46.566 | 21.923 |
| 14 | 43.638 | 46.104 | 23.144 |
| 15 | 41.522 | 45.737 | 24.243 |
| 16 | 39.362 | 45.377 | 25.253 |
| 17 | 37.186 | 44.926 | 26.189 |
| 18 | 35.025 | 44.274 | 27.037 |
| 19 | 32.934 | 43.319 | 27.758 |
| 20 | 30.975 | 42.026 | 28.303 |
| 21 | 29.136 | 40.501 | 28.619 |
| 22 | 27.278 | 38.970 | 28.596 |
| 23 | 25.247 | 37.904 | 27.936 |
| 24 | 23.332 | 37.806 | 26.507 |
| 25 | 21.742 | 38.267 | 24.757 |
| 26 | 20.322 | 38.864 | 22.902 |
| 27 | 18.955 | 39.416 | 20.993 |
| 28 | 17.580 | 39.835 | 19.056 |
| 29 | 16.161 | 40.022 | 17.117 |
| 30 | 14.706 | 39.785 | 15.214 |
| 31 | 13.357 | 38.819 | 13.486 |
| 32 | 12.429 | 37.021 | 12.211 |
| 33 | 12.113 | 34.747 | 11.511 |
| 34 | 12.293 | 32.373 | 11.144 |
| 35 | 12.782 | 30.060 | 10.681 |
| 36 | 13.440 | 27.941 | 9.749 |
| 37 | 14.118 | 26.018 | 8.463 |
| 38 | 14.685 | 24.325 | 6.854 |
| 39 | 15.233 | 23.393 | 4.718 |
| 40 | 16.258 | 23.052 | 2.571 |
| 41 | 17.825 | 22.789 | 0.764 |
| 42 | 19.822 | 22.615 | -0.514 |
| 43 | 22.144 | 22.026 | -0.973 |
| 44 | 24.518 | 21.651 | -0.806 |
| 45 | 26.854 | 21.205 | -0.407 |
| 46 | 29.172 | 20.671 | -0.005 |
| 47 | 31.497 | 20.091 | 0.261 |
| 48 | 33.850 | 19.570 | 0.289 |
| 49 | 36.219 | 19.295 | -0.034 |
| 50 | 38.478 | 19.477 | -0.825 |
| 51 | 40.280 | 20.286 | -2.176 |
| 52 | 41.259 | 21.626 | -3.899 |
| 53 | 41.357 | 23.244 | -5.670 |
| 54 | 40.743 | 24.958 | -7.238 |
| 55 | 39.677 | 26.699 | -8.519 |
| 56 | 38.487 | 28.468 | -9.648 |
| 57 | 37.290 | 30.238 | -10.716 |
| 58 | 36.171 | 31.978 | -11.720 |
| 59 | 35.202 | 33.659 | -12.660 |
| 60 | 34.128 | 35.192 | -13.540 |
| 61 | 33.015 | 36.626 | -14.350 |
| 62 | 31.934 | 38.039 | -15.170 |
| 63 | 30.919 | 39.505 | -15.970 |
| 64 | 30.020 | 41.095 | -16.740 |
| 65 | 29.386 | 42.917 | -17.480 |
| 66 | 29.008 | 45.005 | -18.190 |
| 67 | 28.900 | 47.333 | -18.870 |
| 68 | 29.158 | 49.714 | -19.520 |
| 69 | 29.937 | 51.836 | -20.150 |
| 70 | 31.222 | 53.508 | -20.760 |
| 71 | 32.804 | 54.817 | -21.350 |
| 72 | 34.456 | 56.011 | -21.920 |
| 73 | 35.820 | 57.395 | -22.470 |
| 74 | 36.077 | 59.117 | -23.000 |
| 75 | 35.181 | 60.815 | -23.510 |
| 76 | 33.770 | 62.378 | -24.000 |
| 77 | 32.154 | 63.865 | -24.470 |
| 78 | 30.624 | 65.372 | -24.920 |
| 79 | 29.829 | 66.871 | -25.350 |
| 80 | 30.132 | 67.939 | -25.760 |
| 81 | 31.415 | 68.301 | -26.150 |
| 82 | 33.393 | 67.975 | -26.520 |
| 83 | 35.622 | 67.171 | -26.870 |
| 84 | 37.773 | 66.151 | -27.200 |
| 85 | 39.604 | 65.051 | -27.510 |
| 86 | 41.755 | 63.898 | -27.800 |
| 87 | 43.673 | 62.689 | -28.070 |
| 88 | 45.576 | 61.412 | -28.320 |
| 89 | 47.455 | 60.064 | -28.550 |
| 90 | 49.301 | 58.659 | -28.760 |
| 91 | 51.121 | 57.220 | -28.950 |
| 92 | 52.949 | 55.764 | -29.120 |
| 93 | 54.831 | 54.315 | -29.270 |
| 94 | 56.801 | 52.930 | -29.400 |
| 95 | 58.812 | 51.718 | -29.510 |
| 96 | 60.858 | 50.858 | -29.600 |
| 97 | 61.888 | 50.555 | -29.670 |
| 98 | 62.103 | 50.818 | -29.720 |
| 99 | 61.294 | 51.503 | -29.750 |
| 100 | 59.824 | 52.420 | -29.760 |
| 101 | 58.052 | 53.430 | -29.750 |

TABLE III SPHERICAL SEAT CENTERS - SIDE A
(FILE SE141-116P-SA.TXT)

| No. | X | Y | Z |
|-----|--------|--------|---------|
| 1 | 60.845 | 60.913 | -2.011 |
| 2 | 58.845 | 62.107 | -0.087 |
| 3 | 56.689 | 63.125 | 2.886 |
| 4 | 52.867 | 64.797 | 7.168 |
| 5 | 54.522 | 62.373 | 10.062 |
| 6 | 54.393 | 61.003 | 13.102 |
| 7 | 54.263 | 59.545 | 15.665 |
| 8 | 53.876 | 58.118 | 17.976 |
| 9 | 53.128 | 56.779 | 20.114 |
| 10 | 52.011 | 55.568 | 22.091 |
| 11 | 50.564 | 54.548 | 23.864 |
| 12 | 48.357 | 53.571 | 25.799 |
| 13 | 45.779 | 52.888 | 27.474 |
| 14 | 45.779 | 52.888 | 27.474 |
| 15 | 45.779 | 52.888 | 27.474 |
| 16 | 41.582 | 52.184 | 29.594 |
| 17 | 36.784 | 51.213 | 31.830 |
| 18 | 33.859 | 50.226 | 32.727 |
| 19 | 30.921 | 48.758 | 33.695 |
| 20 | 28.196 | 46.840 | 34.447 |
| 21 | 25.814 | 44.704 | 34.924 |
| 22 | 23.690 | 42.727 | 35.023 |
| 23 | 21.546 | 41.196 | 34.566 |
| 24 | 19.306 | 40.410 | 33.343 |
| 25 | 17.187 | 40.370 | 31.505 |
| 26 | 15.299 | 40.731 | 29.393 |
| 27 | 13.554 | 41.202 | 27.158 |
| 28 | 11.875 | 41.602 | 24.891 |
| 29 | 10.187 | 41.822 | 22.602 |
| 30 | 8.296 | 41.597 | 20.143 |
| 31 | 6.263 | 40.297 | 17.477 |
| 32 | 4.129 | 37.581 | 15.151 |
| 33 | 4.147 | 34.237 | 13.604 |
| 34 | 4.274 | 30.971 | 12.533 |
| 35 | 4.811 | 28.000 | 11.531 |
| 36 | 5.623 | 25.276 | 10.363 |
| 37 | 6.529 | 22.854 | 9.218 |
| 38 | 7.418 | 20.616 | 7.963 |
| 39 | 8.562 | 18.492 | 5.826 |
| 40 | 10.088 | 17.099 | 2.909 |
| 41 | 11.957 | 16.468 | -0.041 |
| 42 | 14.246 | 16.185 | -2.690 |
| 43 | 17.295 | 15.963 | -4.883 |
| 44 | 20.989 | 15.929 | -6.181 |
| 45 | 24.341 | 16.081 | -6.575 |
| 46 | 27.129 | 16.261 | -6.650 |
| 47 | 9.590 | 16.423 | -6.732 |
| 48 | 31.811 | 16.607 | -6.984 |
| 49 | 33.763 | 16.940 | -7.388 |
| 50 | 34.917 | 17.462 | -7.870 |
| 51 | 35.212 | 17.937 | -8.195 |
| 52 | 35.226 | 18.736 | -8.932 |
| 53 | 34.86 | 20.190 | -10.525 |
| 54 | 34.414 | 21.963 | -12.671 |
| 55 | 4.110 | 23.759 | -14.782 |
| 56 | 33.722 | 25.494 | -16.600 |
| 57 | 32.965 | 27.221 | -18.165 |
| 58 | 32.219 | 28.942 | -19.938 |
| 59 | 31.789 | 30.680 | -22.037 |
| 60 | 31.601 | 32.532 | -24.252 |
| 61 | 31.432 | 34.535 | -26.390 |
| 62 | 31.016 | 36.787 | -28.427 |
| 63 | 30.363 | 39.455 | -30.325 |
| 64 | 29.815 | 42.739 | -31.890 |
| 65 | 29.615 | 46.521 | -32.738 |
| 66 | 29.936 | 50.526 | -32.604 |
| 67 | | | |