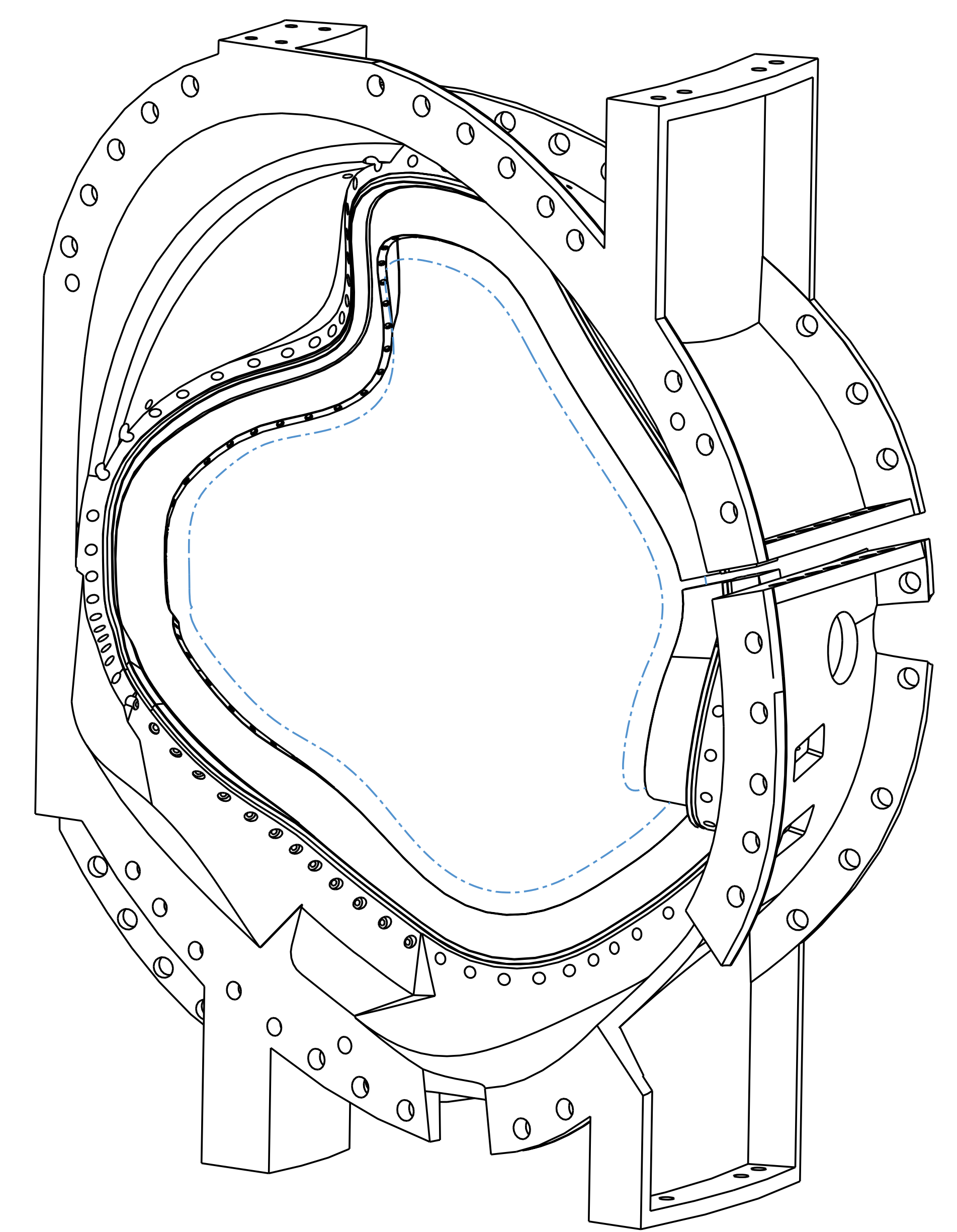
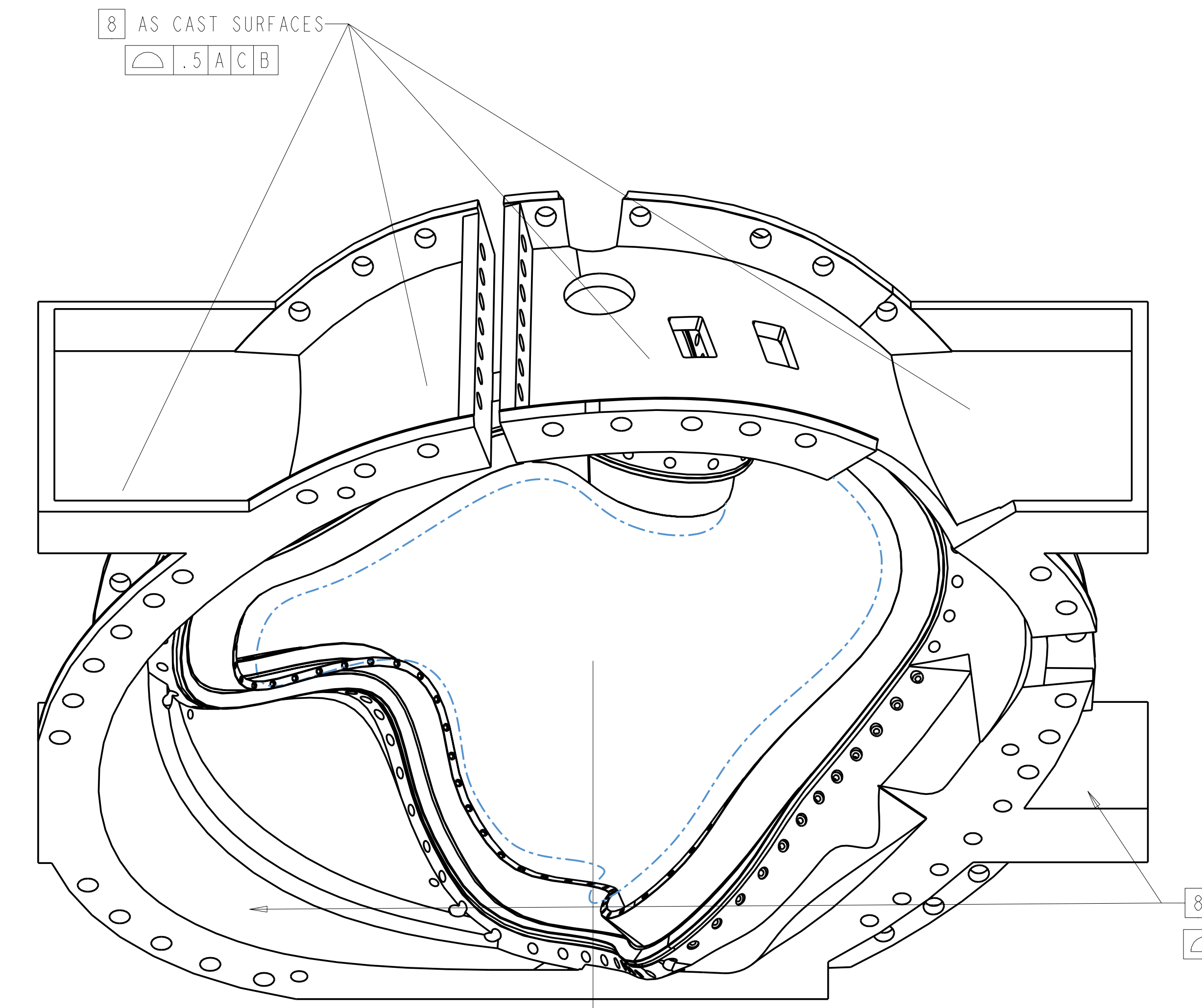
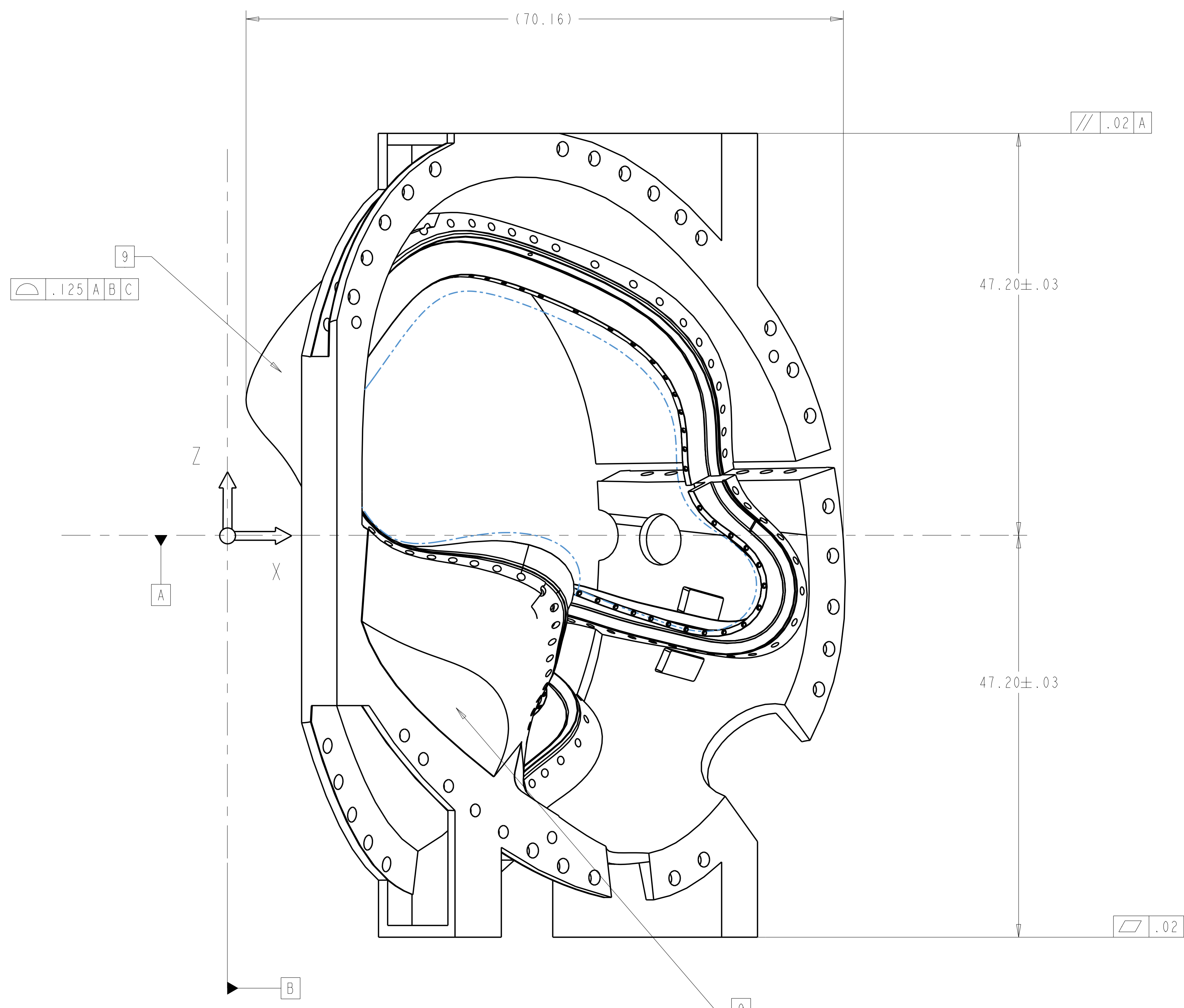
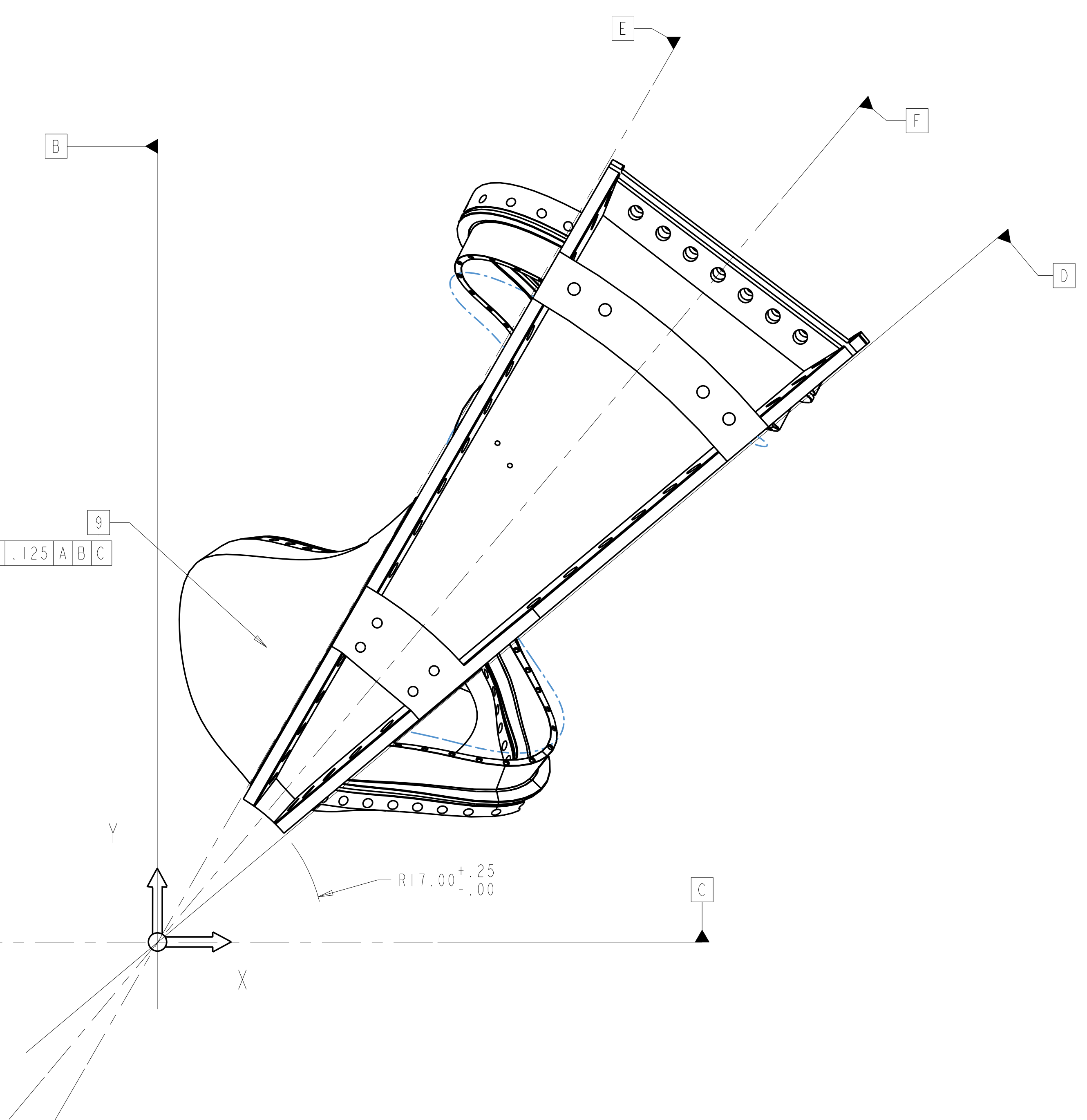


- NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M
 2. DIMENSIONS ARE IN INCHES
 3. BACK SPOTFACE ALL THRU HOLES MINIMUM TO CLEANUP.
 4. SEE SPECIFICATION, NCSX-CSPEC I41-01-04, FOR ADDITIONAL REQUIREMENTS.
 5. GEOMETRY IS DEFINED IN PRO ENGINEER CAD MODELS/FILES SEI41-116P.PRT.
 6. DRAWING AND MODELS COMBINED DEFINE FINISHED MACHINED PART.
 7. MACHINED FINISHED SURFACES TO CAD DATA, PROFILE WITHIN 0.020" UNLESS OTHERWISE SPECIFIED. PROFILE TOLERANCE IS BILATERAL, i.e. 0.010" EITHER SIDE OF THE REFERENCE SURFACE.
 8. AS-CAST SURFACES SHOWN IN NOMINAL MATERIAL CONDITION, THICKNESS TOLERANCE +/- 0.25. SURFACE PROFILE MUST BE WITHIN 0.5 INCHES OF CAD DATA, EXCEPT IN REGIONS OF INTERSECTING SURFACES WHERE FILLETS ARE EXPECTED.
 9. DESIGNATED SURFACE PROFILES MUST BE WITHIN .125 OF CAD DATA.
 10. DIMENSIONS APPLY AT ROOM TEMPERATURE. OPERATING TEMP 80 K.



ISOMETRIC VIEW



DATUM A = PLANE THRU "XY"
 DATUM B = PLANE THRU "YZ"
 DATUM C = PLANE THRU "XZ"

RELEASED FOR FABRICATION / INSTALLATION

SCALE: .125

SEI41-103	SEI41-116P	PROTOTYPE TYPE "C" WINDING FORM	SEE NOTE 4	SEE NOTE 4	I
CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	SPECIFICATION	FIND NO
SEI41-103	←	NEXT ASSEMBLY	PARTS LIST		

APPROXIMATE WEIGHT = 5574 LBS

REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REQ	DATE	ORNL	DOE	DATE

SCALE NOTED	DES T BROWN	1-28-04
TOLERANCES UNLESS OTHERWISE SPECIFIED	DRW GARY LOVETT	
FRACTIONS	CHK D. WILLIAMSON	
XX DECIMALS ± .01	SECT :	
XXX DECIMALS ± .005	DEPT :	
ANGLES ± 0°15'	PE :	
BREAK SHARP EDGES 06 MAX	CR :	
FINISH .125 UNLESS OTHERWISE SPECIFIED	PJ :	
	RED :	
	PPPL DRFT :	

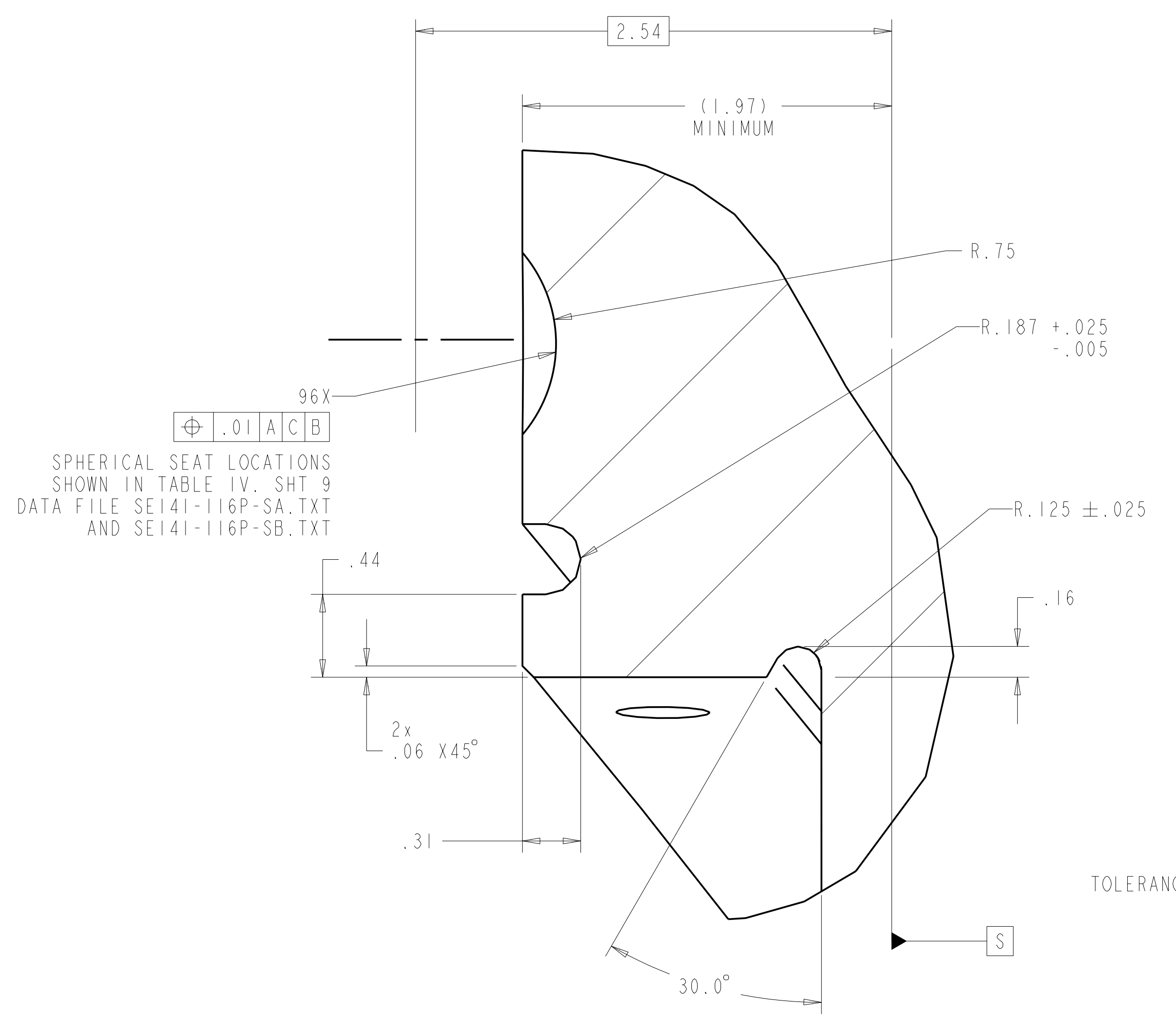
Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC. Oak Ridge, Tennessee PROJECT NAME NATIONAL COMPACT STELLARATOR EXPERIMENT					
PROTOTYPE TYPE "C" WINDING FORM					
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE CLASS
42	X-10	5700	3	19	S U
RELEASE LEVEL	Fabrication				REV 0
SEI41-116P					

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
G
F
E
D
C
B
A

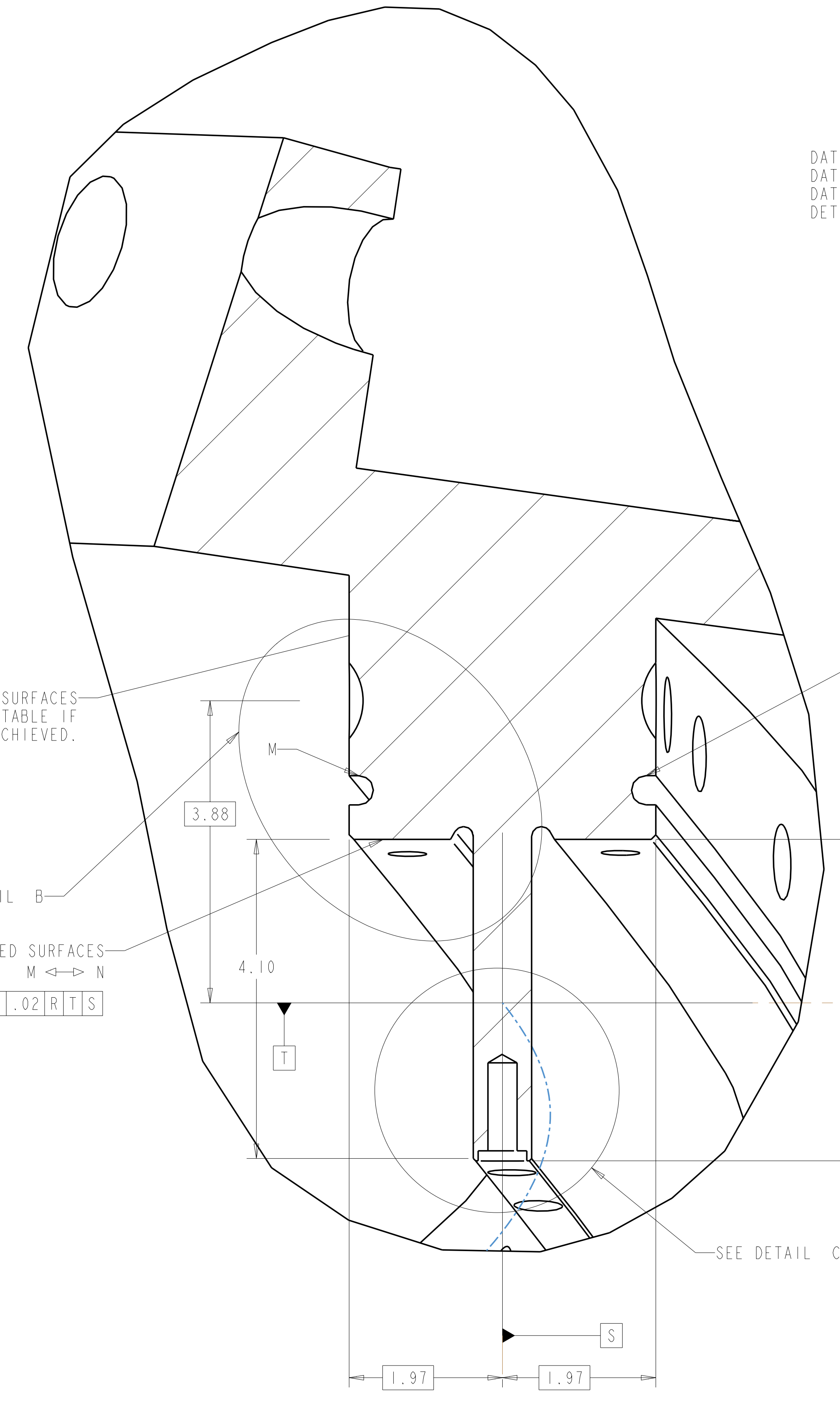
FOR GEN. NOTES AND PARTS LIST SEE SHT. 1



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.

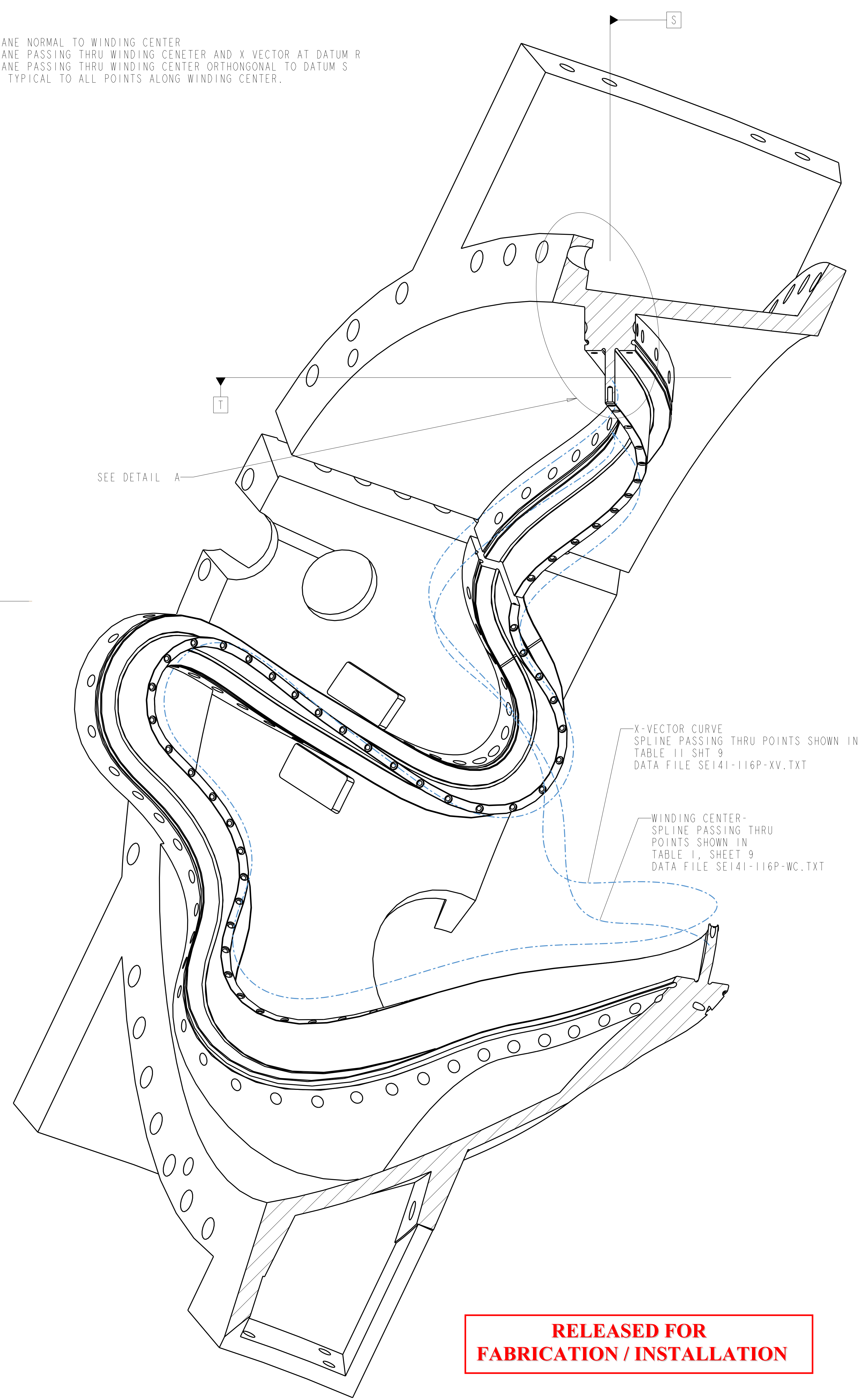


DATUM R = PLANE NORMAL TO WINDING CENTER
DATUM S = PLANE PASSING THRU WINDING CENTER AND X VECTOR AT DATUM R
DATUM T = PLANE PASSING THRU WINDING CENTER ORTHOGONAL TO DATUM S
DETAIL A IS TYPICAL TO ALL POINTS ALONG WINDING CENTER.

DETAIL A
SCALE 1.000

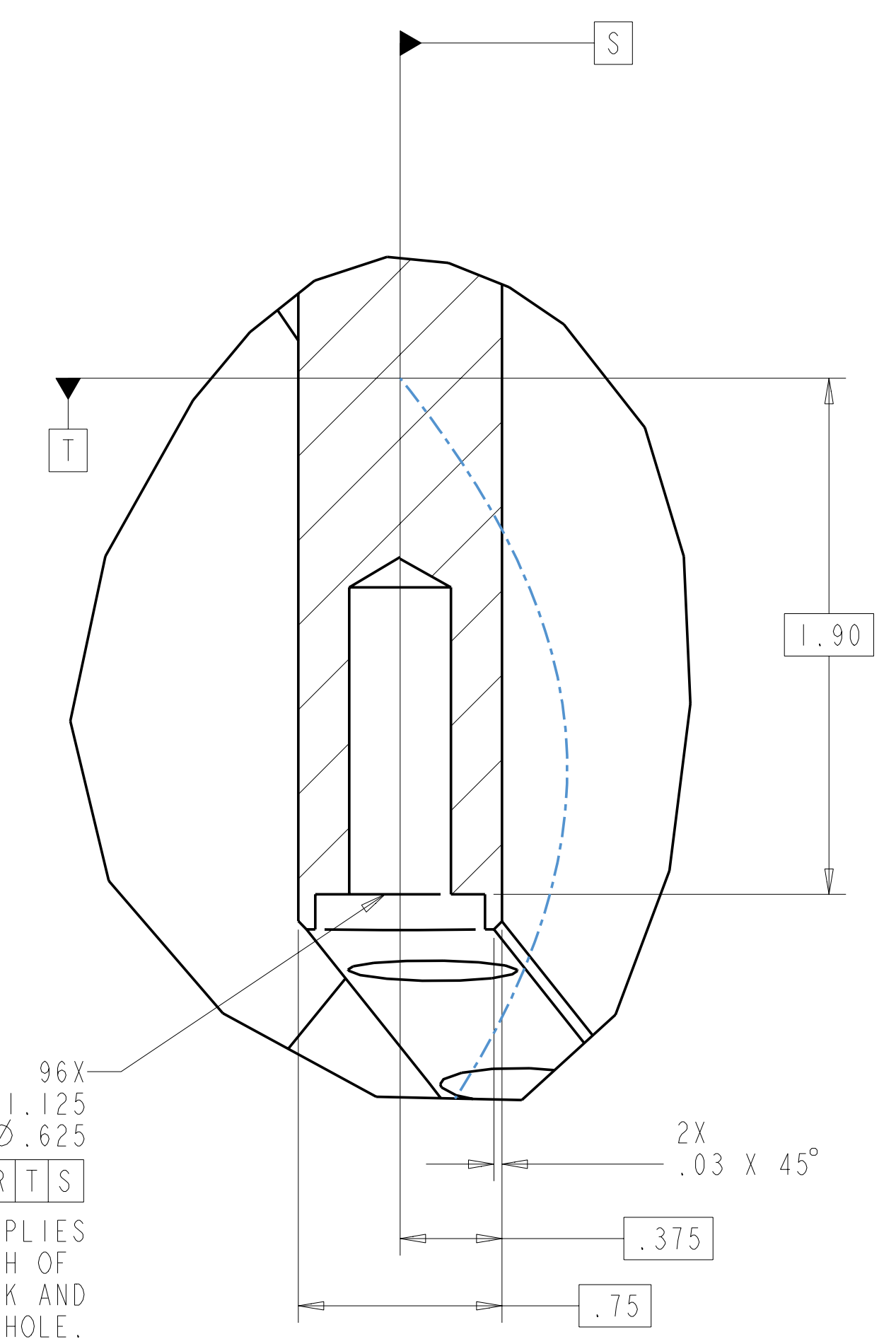
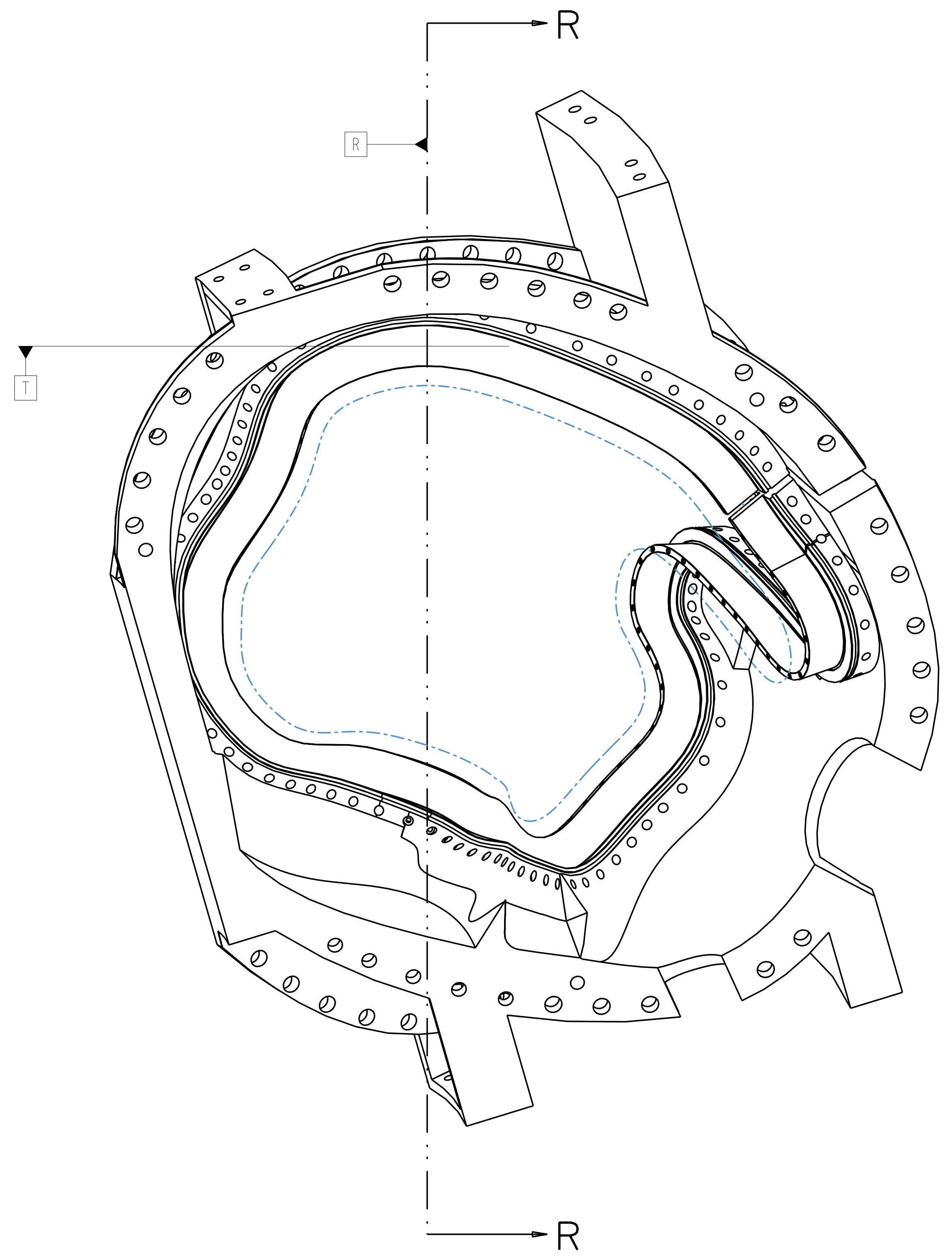
AS CAST SURFACES
ACCEPTABLE IF
TOLERANCE CAN BE ACHIEVED.

MACHINED SURFACES
M ↔ N



SECTION R-R
SCALE 0.250

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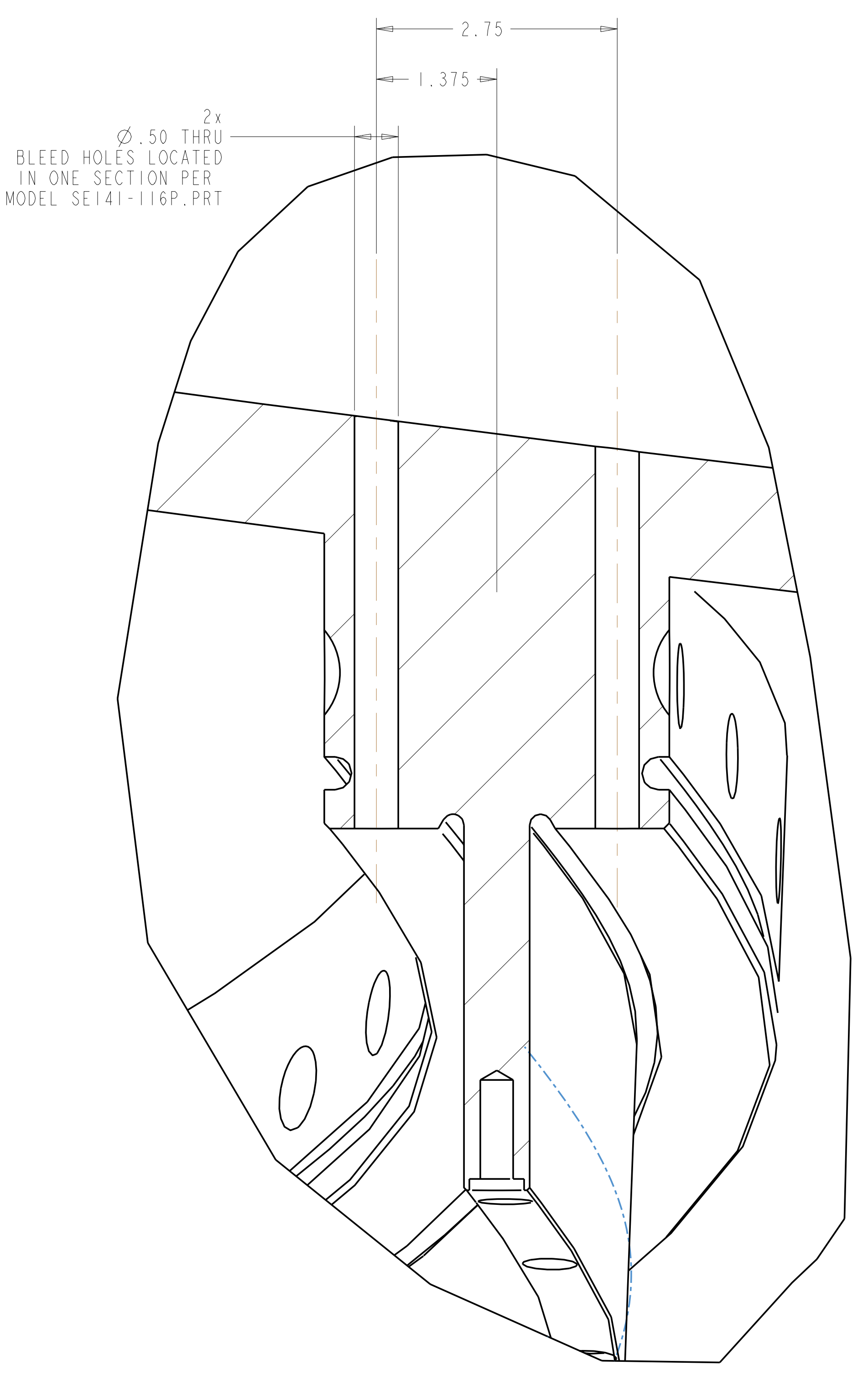
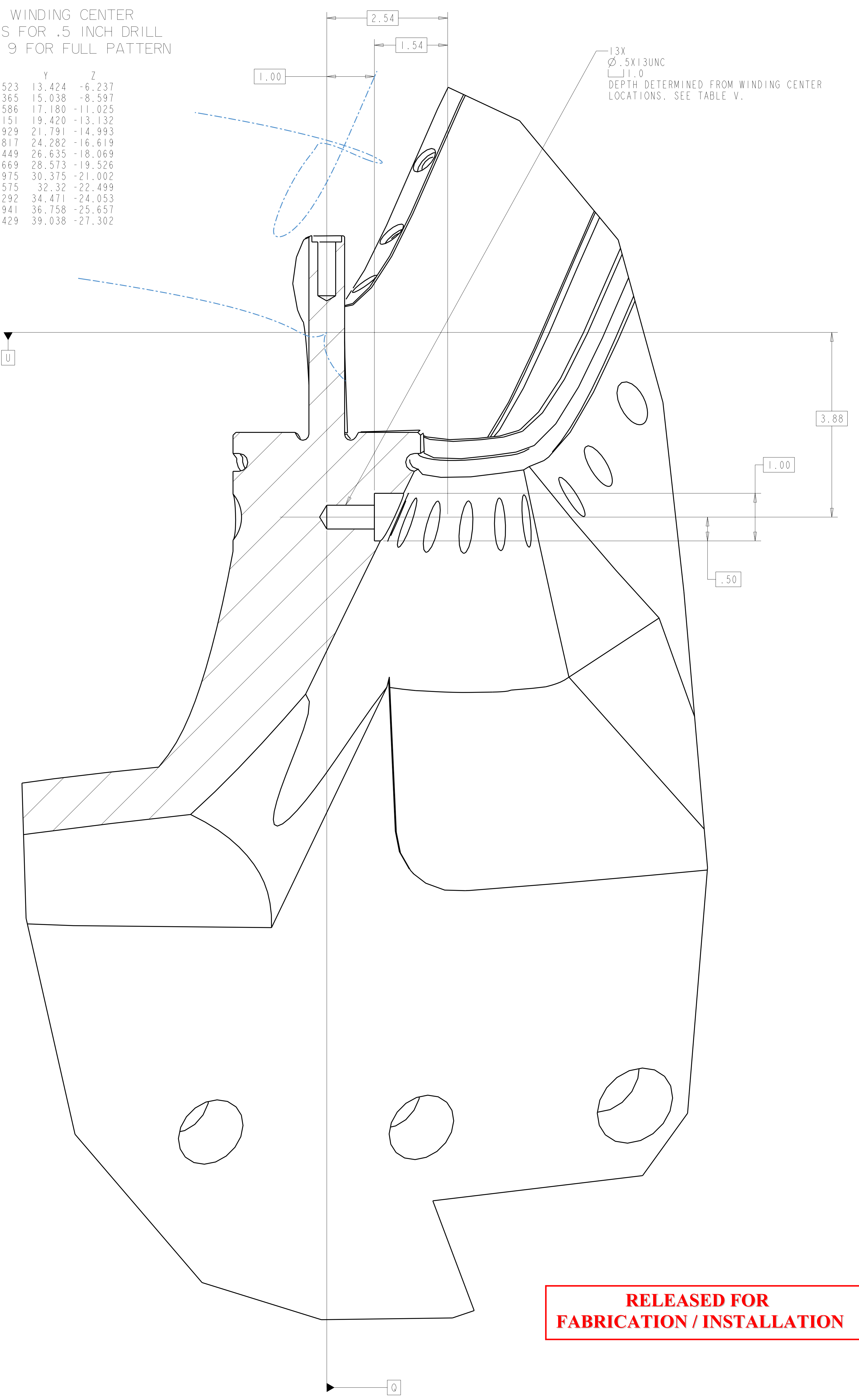
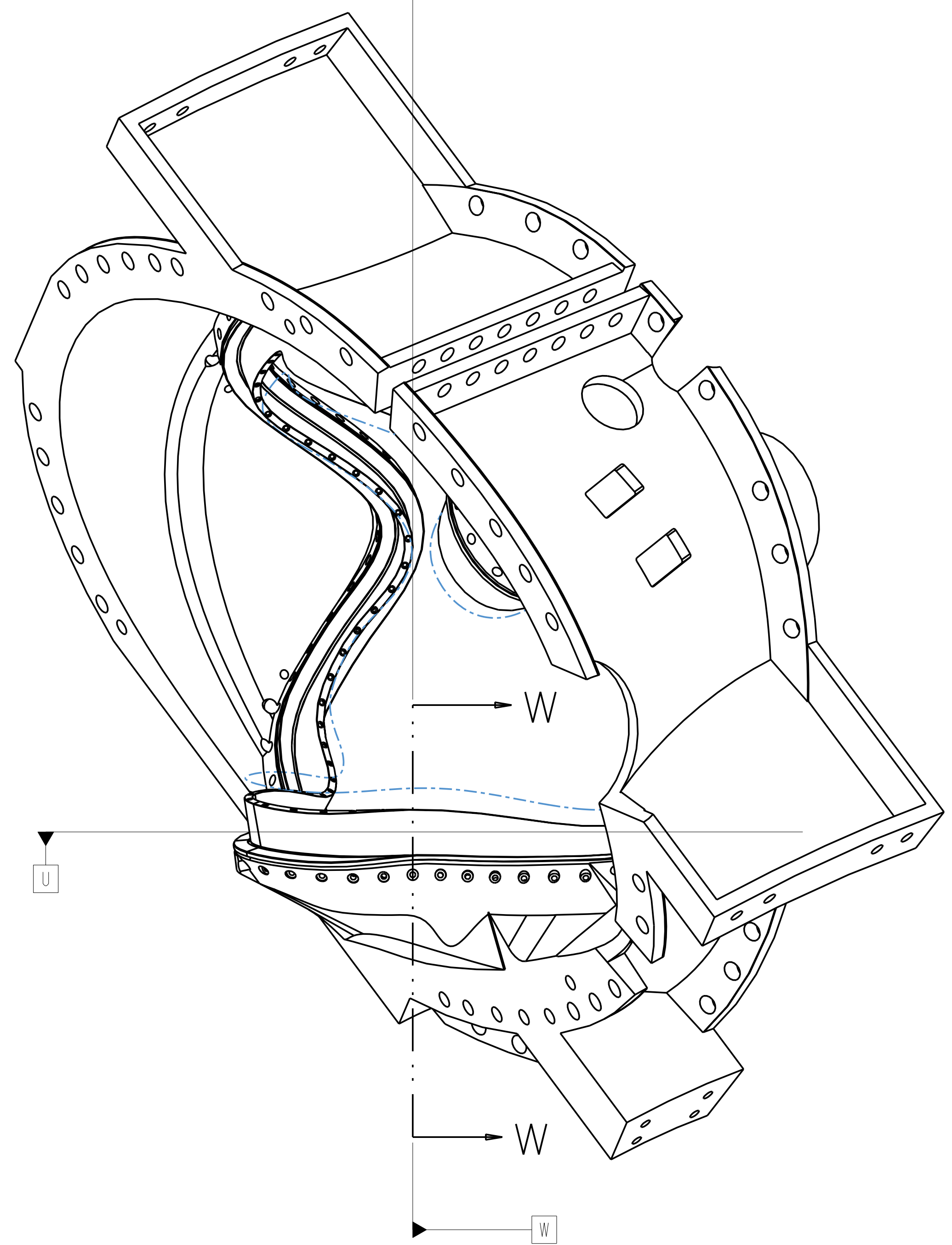
DETAIL C
SCALE 2.000

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

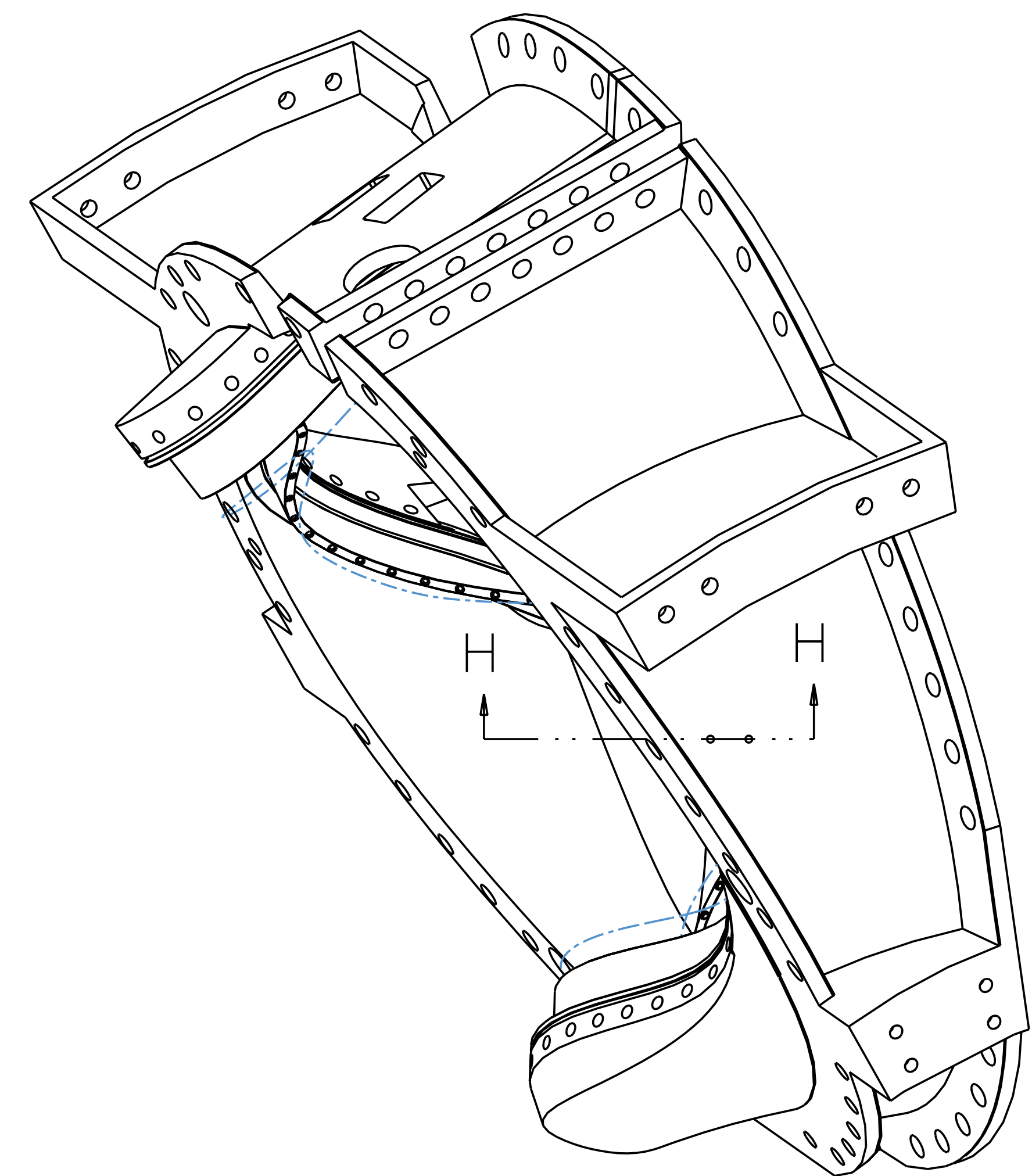
Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee							
NATIONAL COMPACT STELLARATOR EXPERIMENT							
PROTOTYPE TYPE "C" WINDING FORM							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
42	X-10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



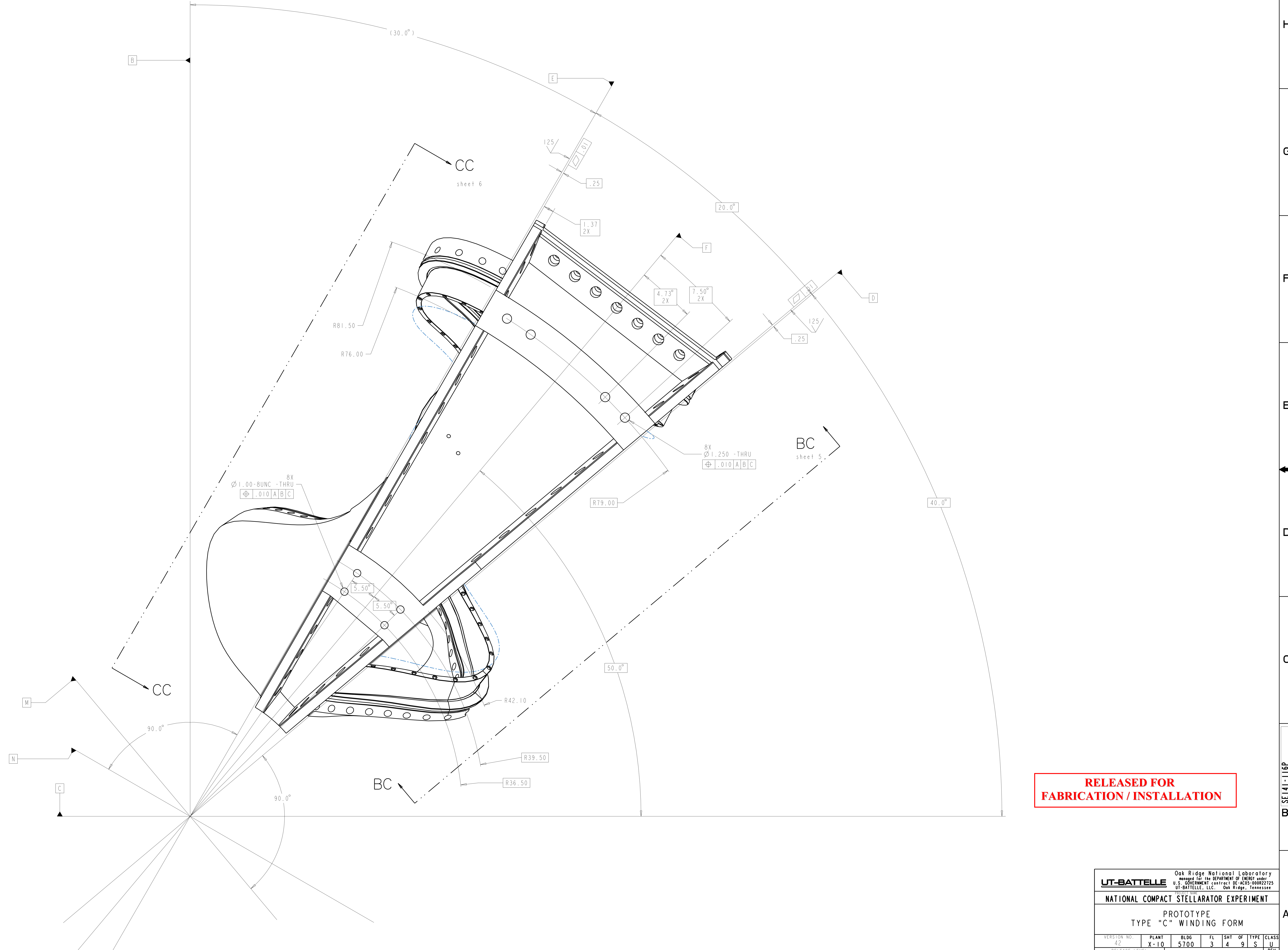
SECTION W-W
SCALE 1.000

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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						REV 0
SE141-116P						U

SE141-116P

FOR GEN. NOTES AND PARTS LIST SEE SHT. 1

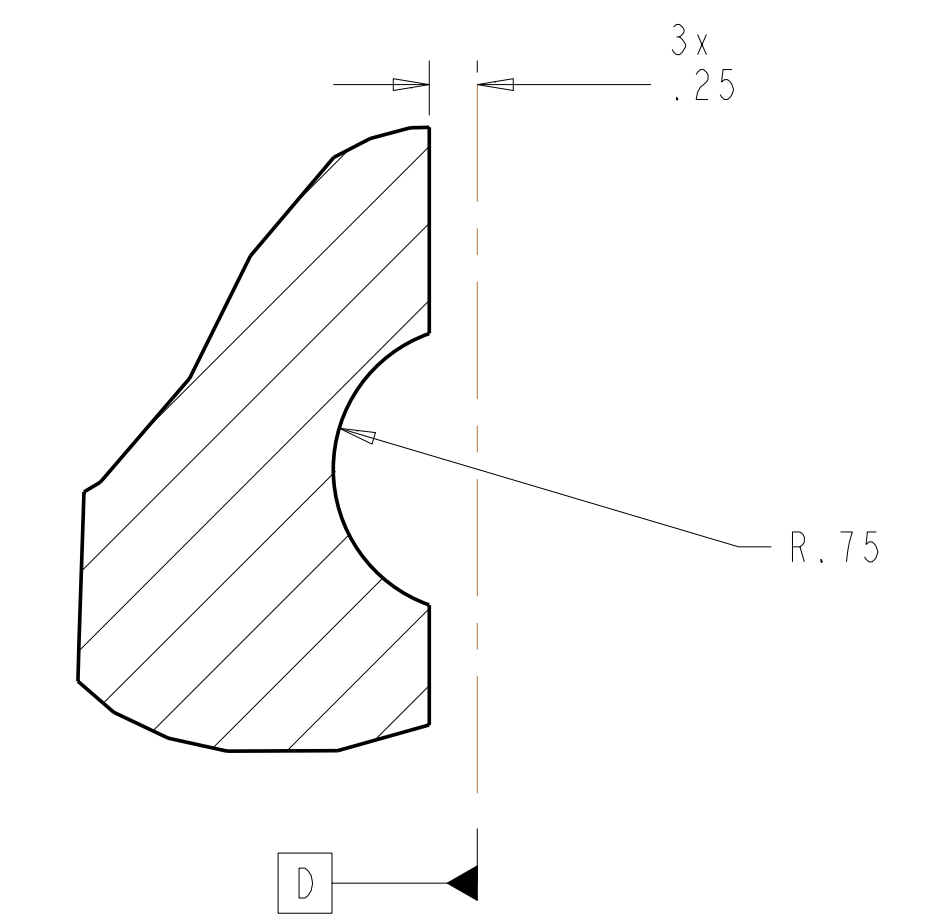


**RELEASED FOR
 FABRICATION / INSTALLATION**

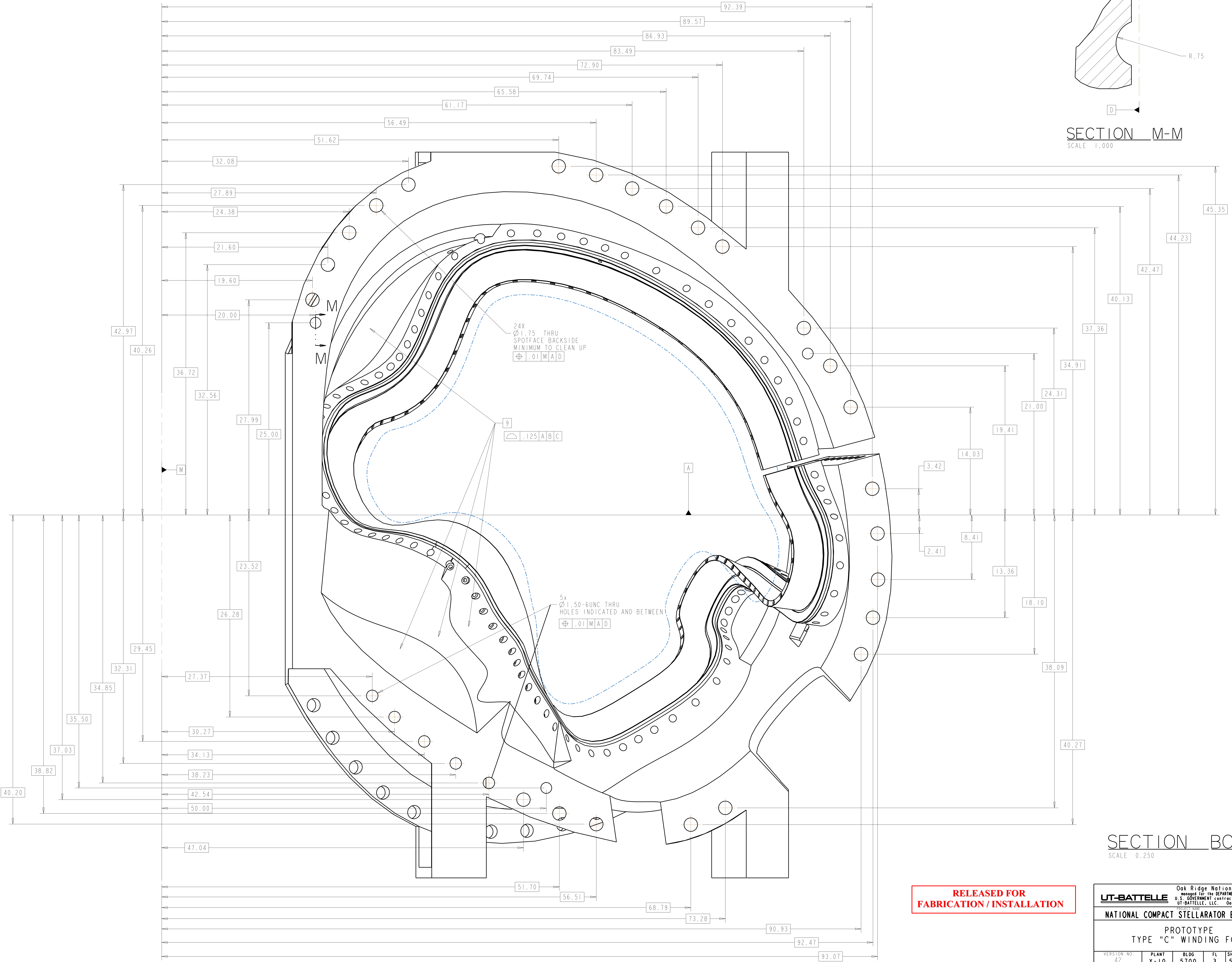
Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee						
UT-BATTELLE						
NATIONAL COMPACT STELLARATOR EXPERIMENT						
PROTOTYPE TYPE "C" WINDING FORM						
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE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

SEI41-116P

A



SECTION M-M
SCALE 1.000



SECTION BC-BC
SCALE 0.250

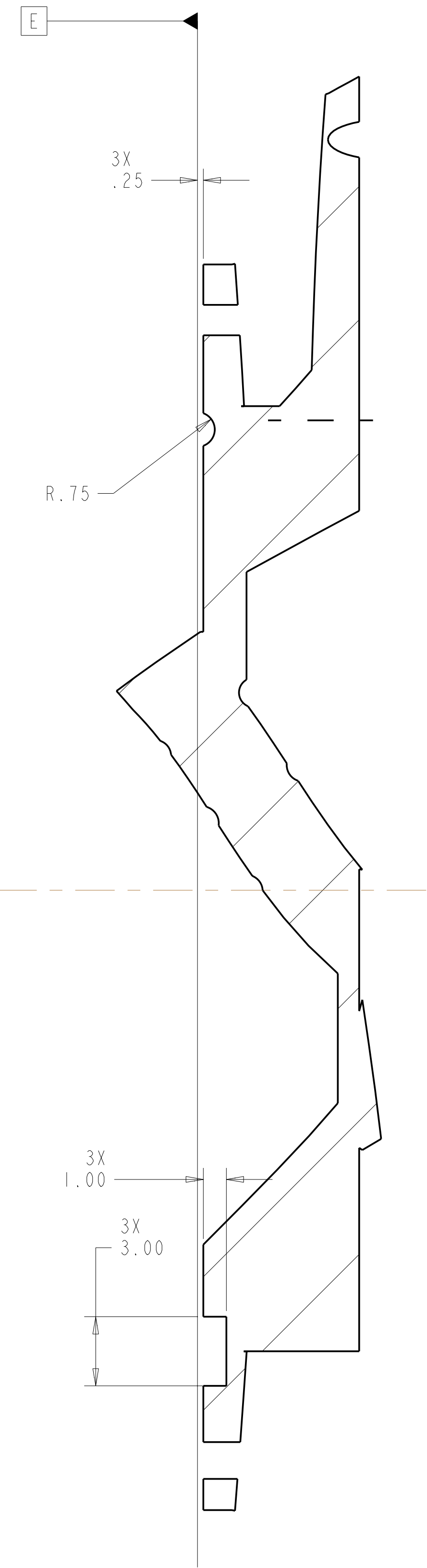
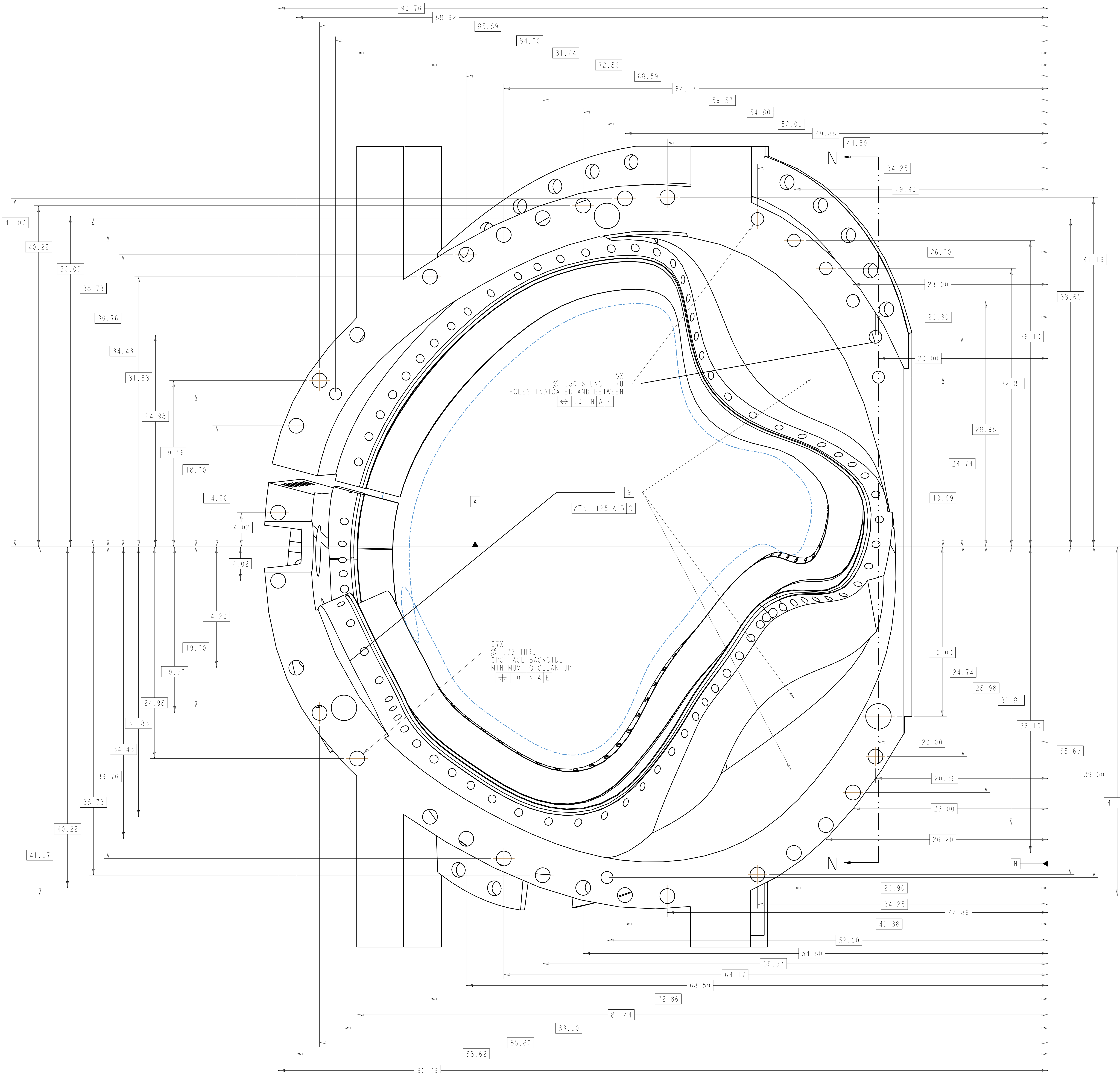
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Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725 UT-BATTELLE, LLC. Oak Ridge, Tennessee PROJECT NAME						
UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT						
PROTOTYPE TYPE "C" WINDING FORM						
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS
42	X-10	5700	3	59	S	U
RELEASE LEVEL		REV				
Fabrication		SE141-116P 0				

SE141-116P

A

FOR GEN. NOTES AND PARTS LIST SEE SHT. 1



SECTION N-N

RELEASED FOR FABRICATION / INSTALLATION

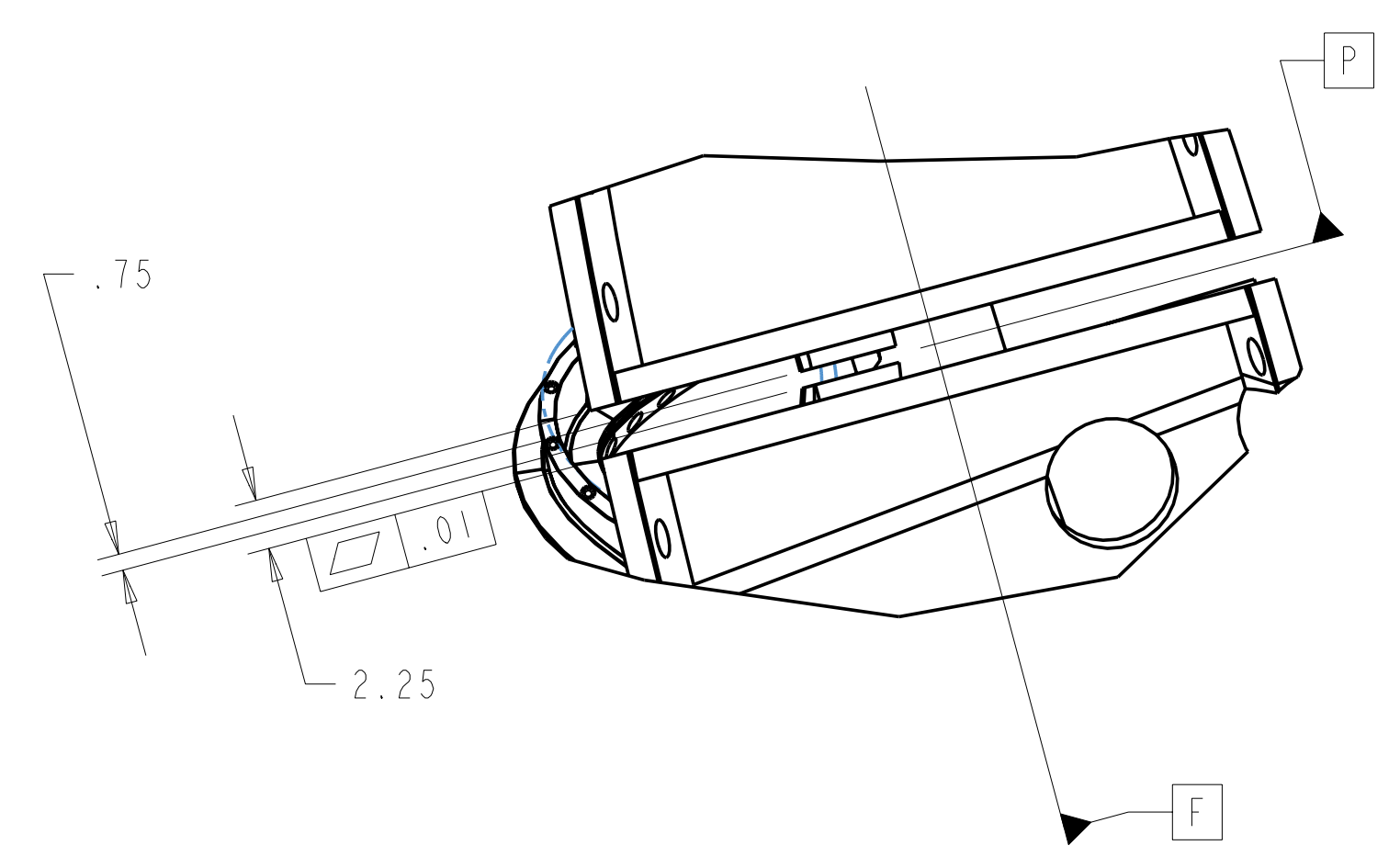
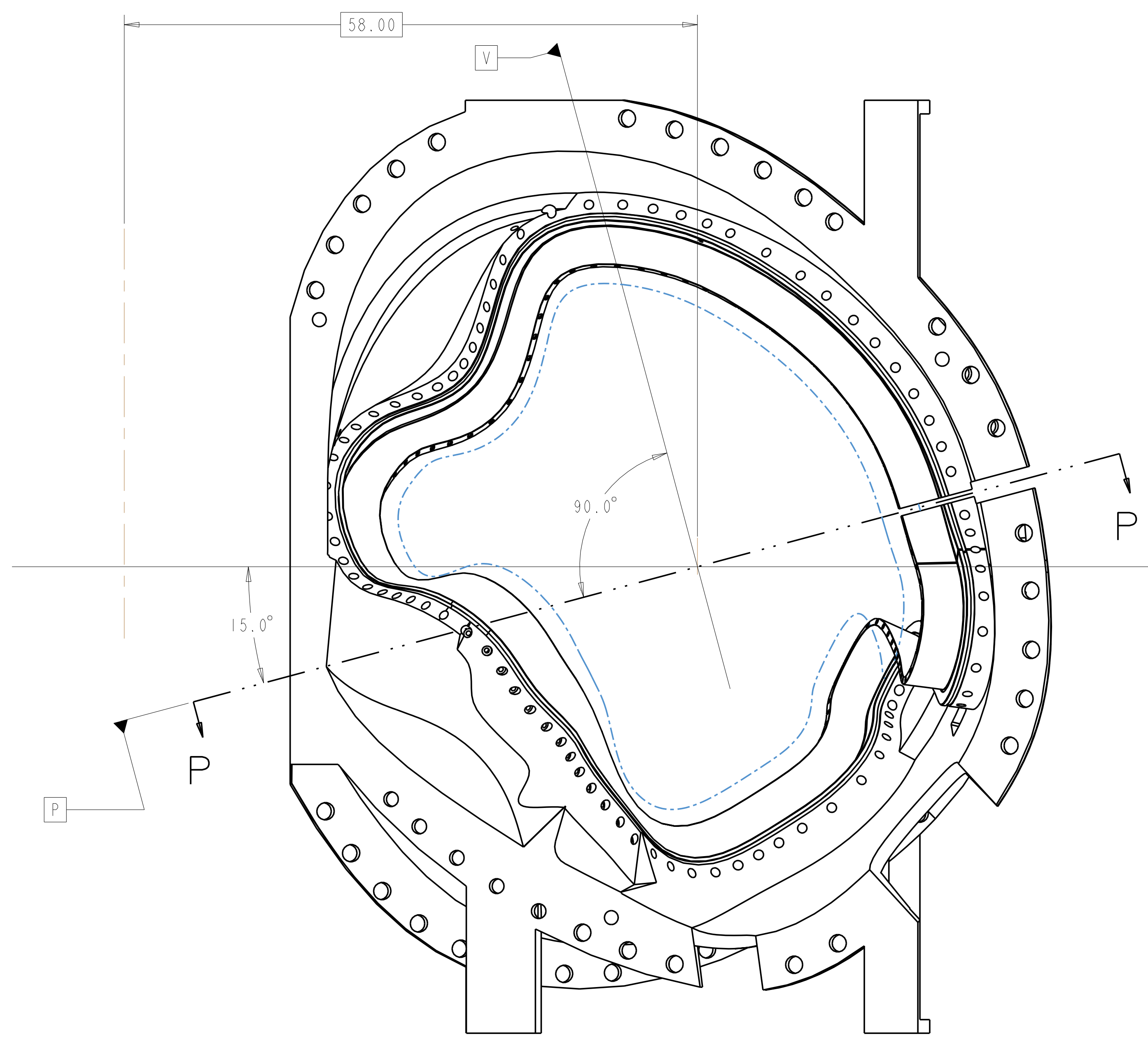
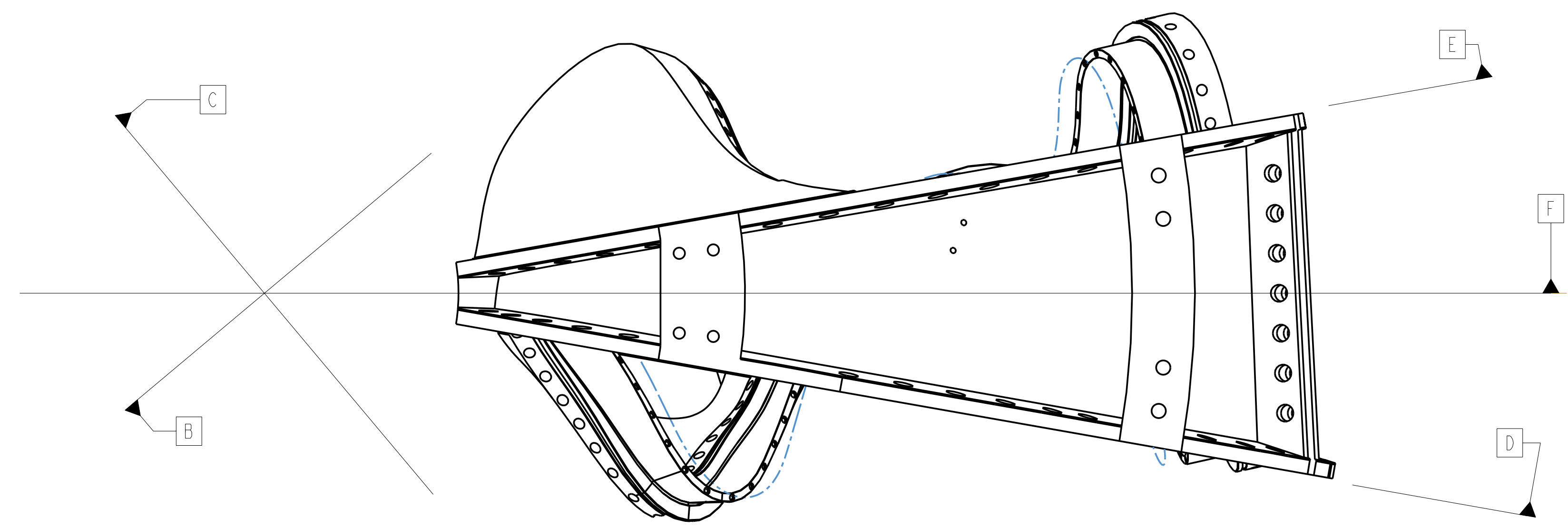
SECTION CC-CC

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UT-BATTELLE							
NATIONAL COMPACT STELLARATOR EXPERIMENT							
PROJECT NAME PROTOTYPE TYPE "C" WINDING FORM							
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS	
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RELEASE LEVEL		SEI41-116P					
Fabrication		REV 0					

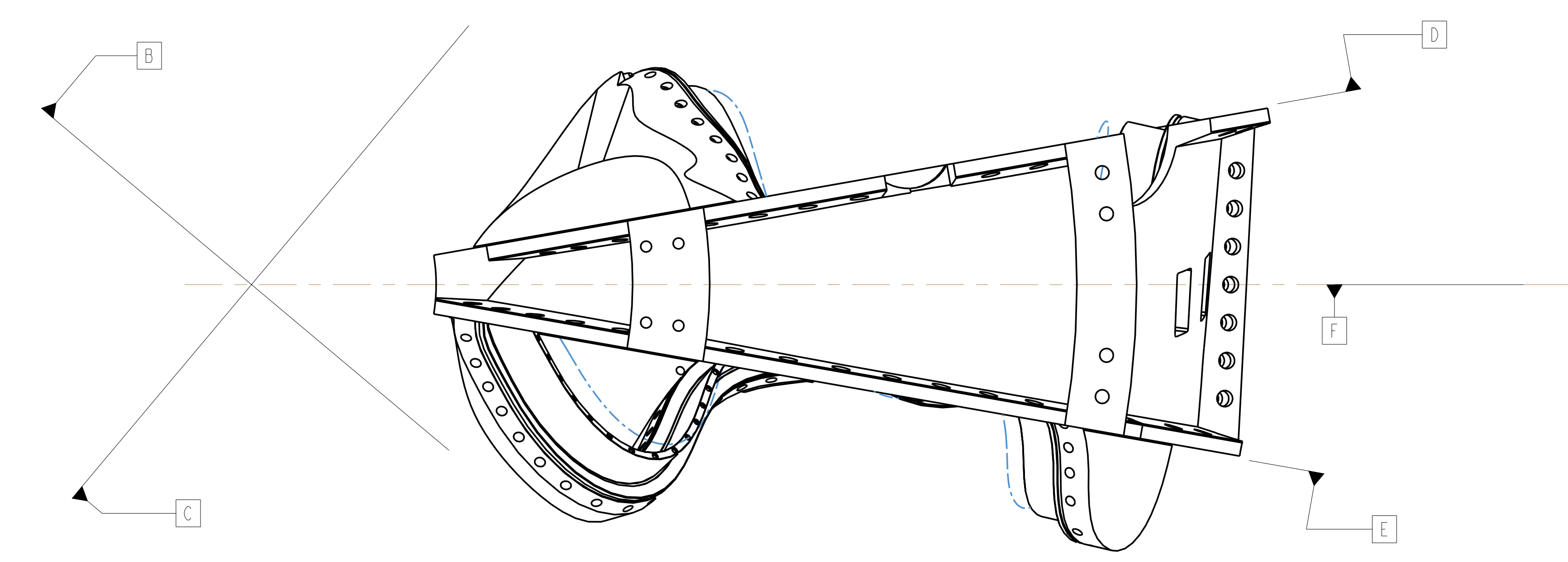
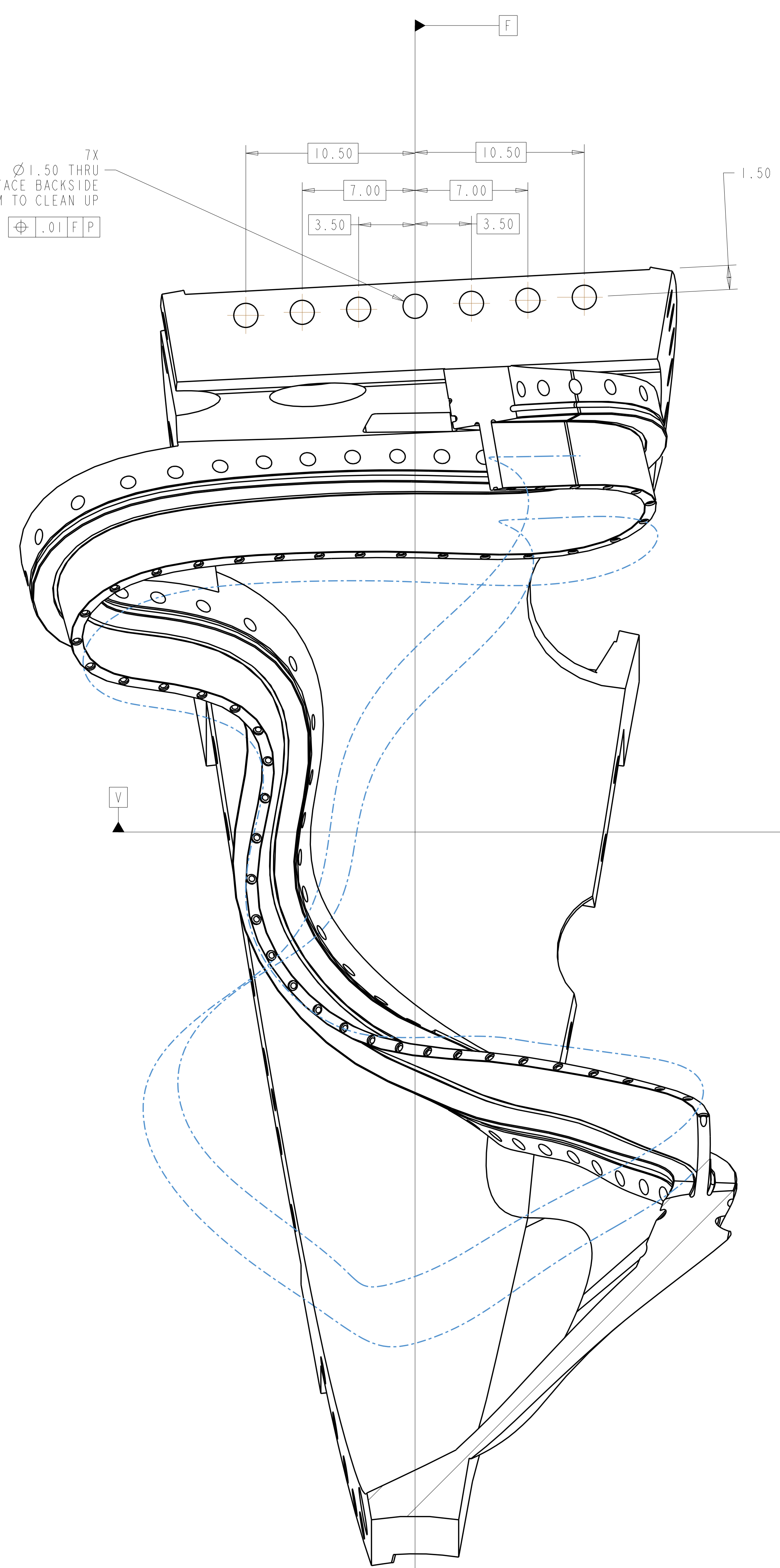
SEI41-116P

A

FOR GEN. NOTES AND PARTS LIST SEE SHT. 1



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



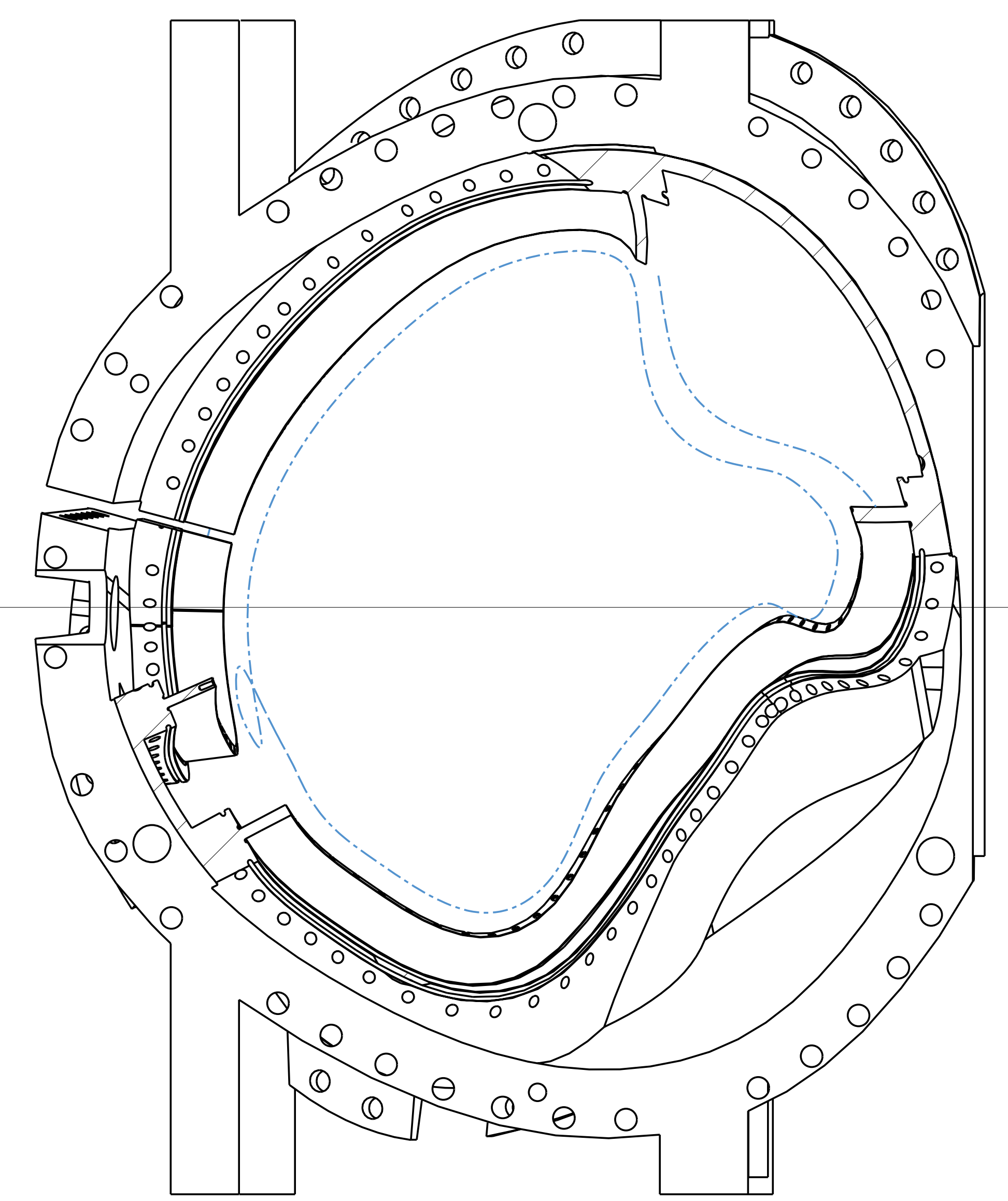
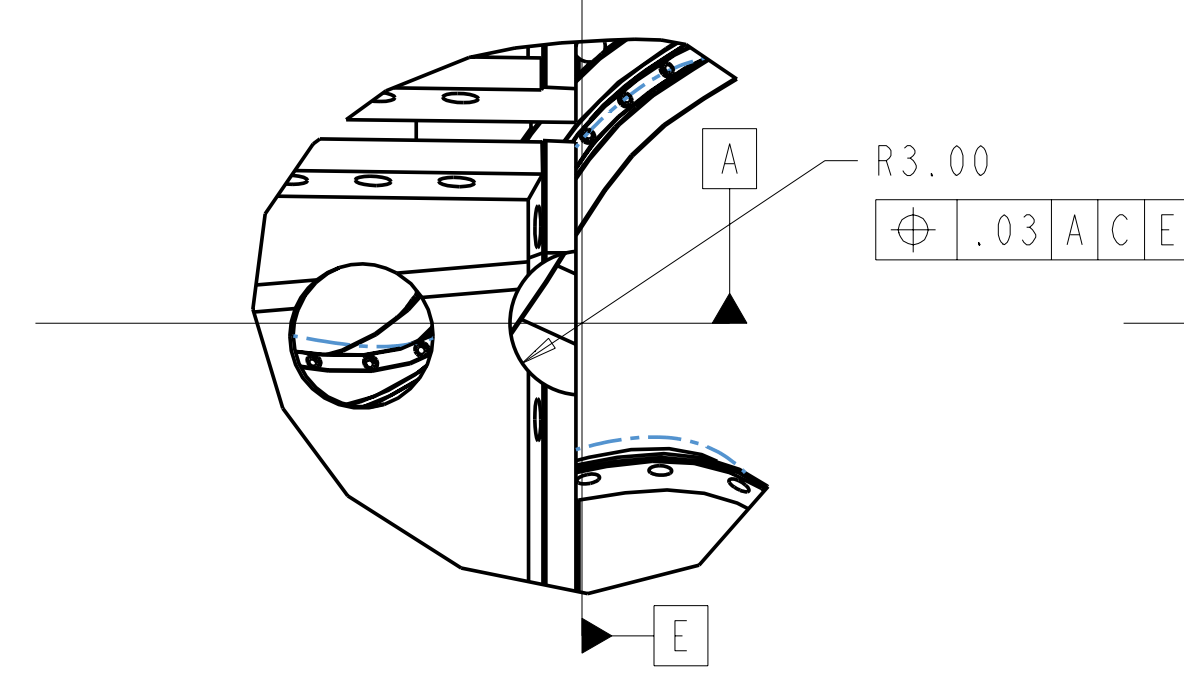
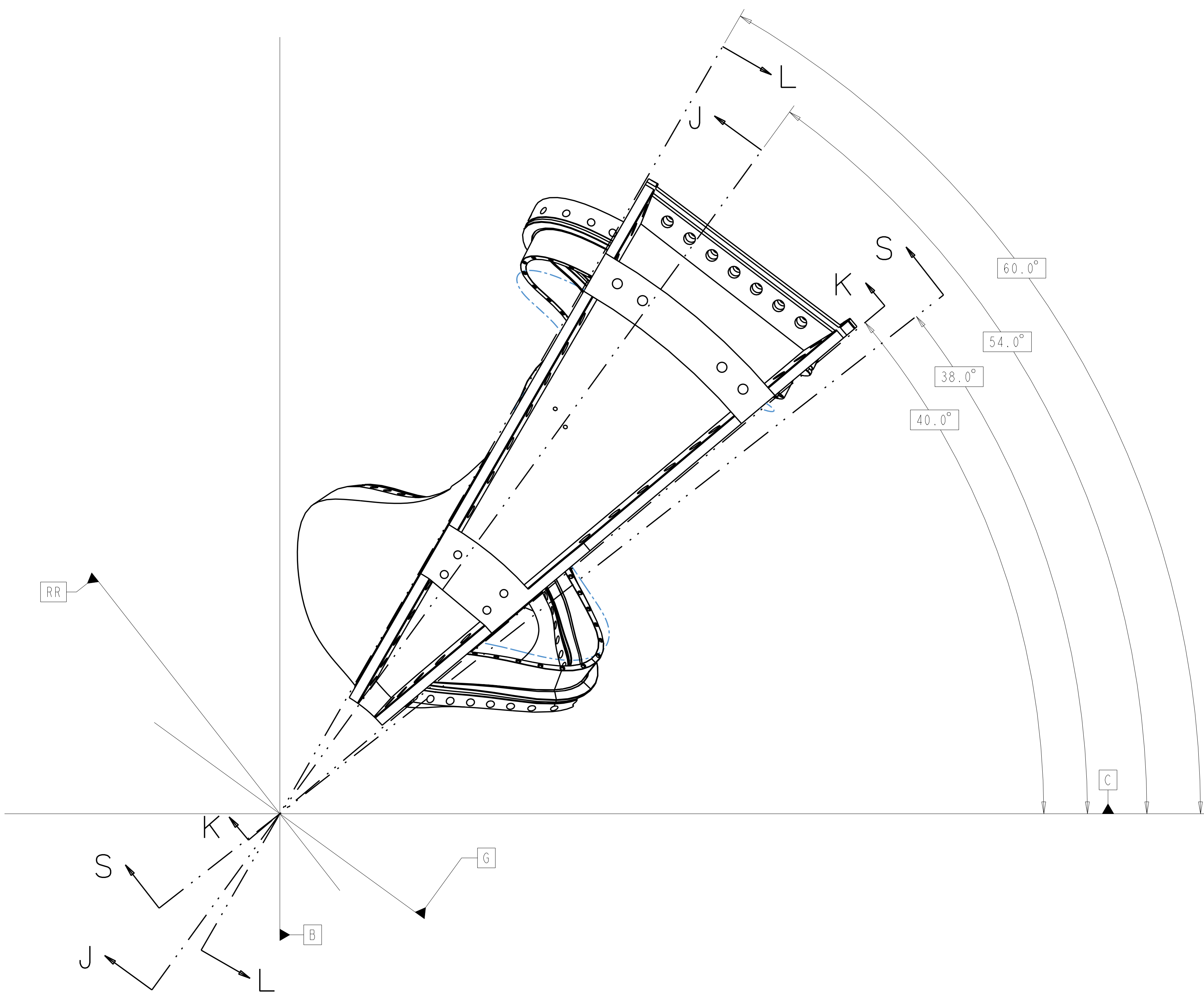
**RELEASED FOR
 FABRICATION / INSTALLATION**

SECTION P-P
 SCALE 0.250

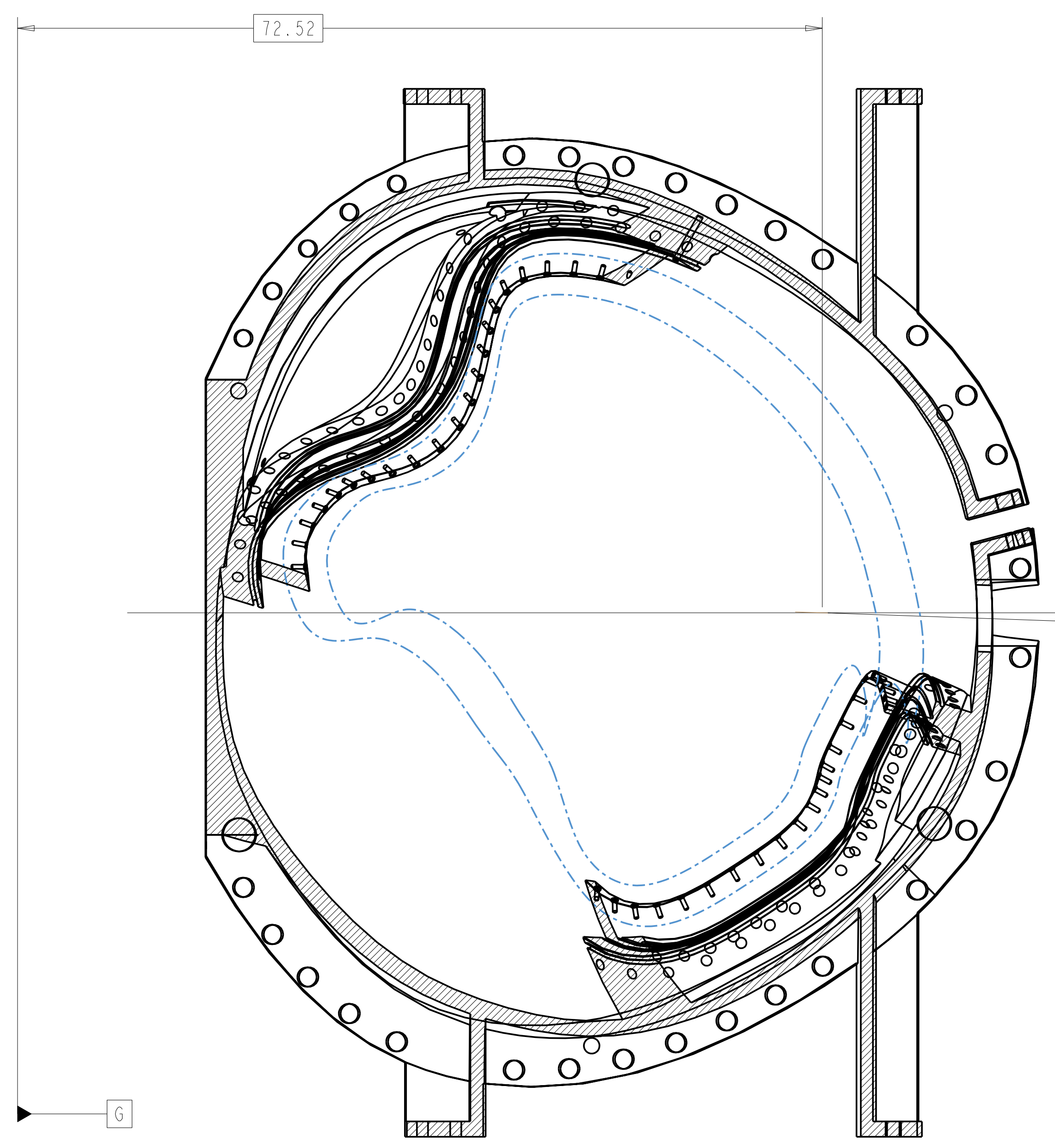
Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee						
UT-BATTELLE						
NATIONAL COMPACT STELLARATOR EXPERIMENT						
PROJECT NAME PROTOTYPE TYPE "C" WINDING FORM						
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS
42	X-10	5700	3	7	9	U
RELEASE LEVEL Fabrication						REV 0
SE141-116P						U

SE141-116P

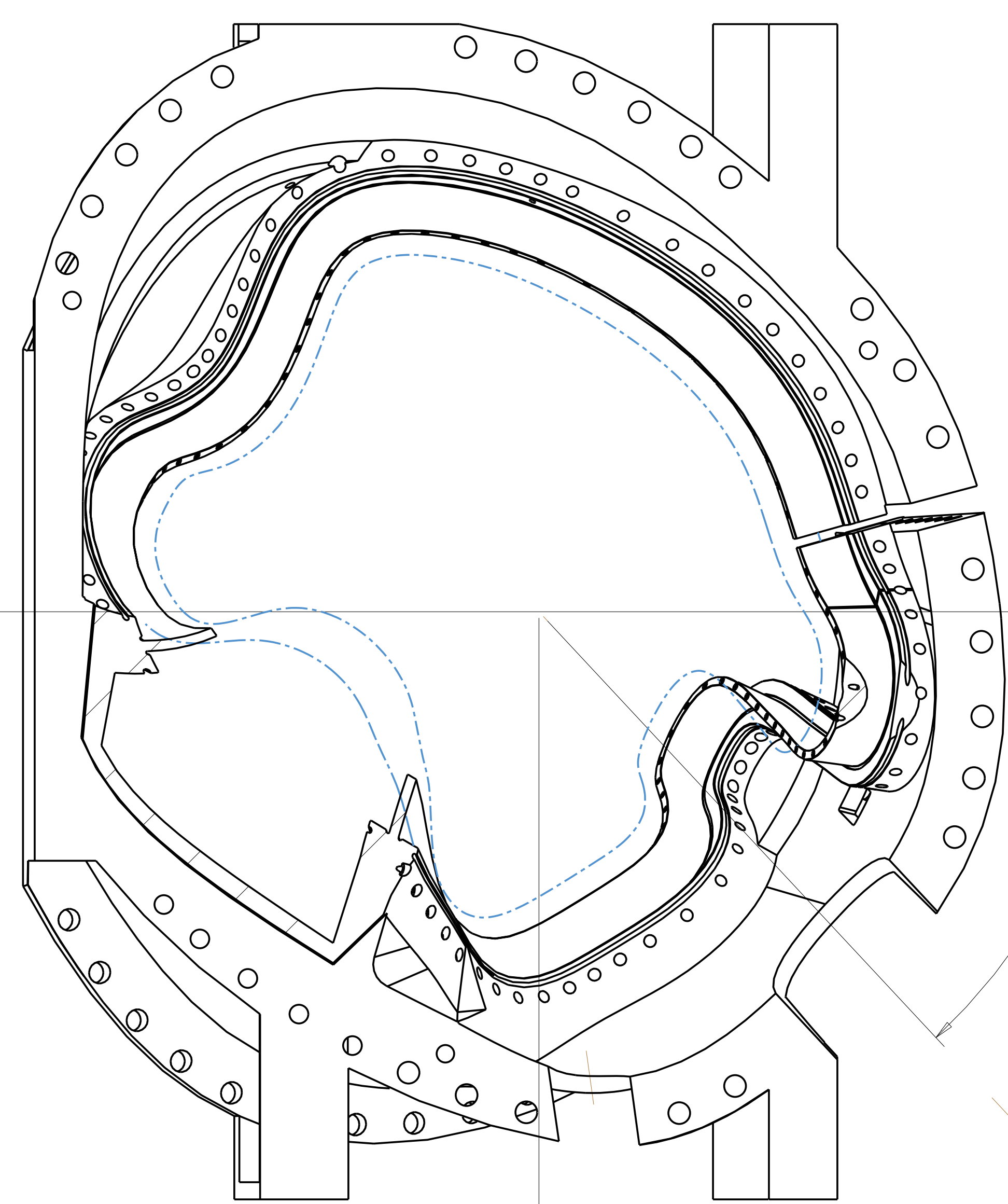
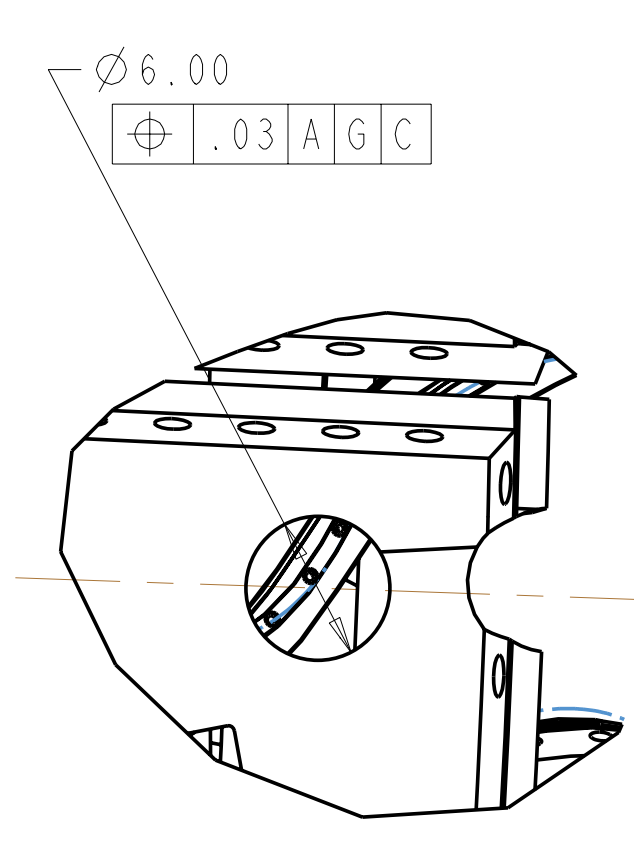
FOR GEN. NOTES AND PARTS LIST SEE SHIT. 1



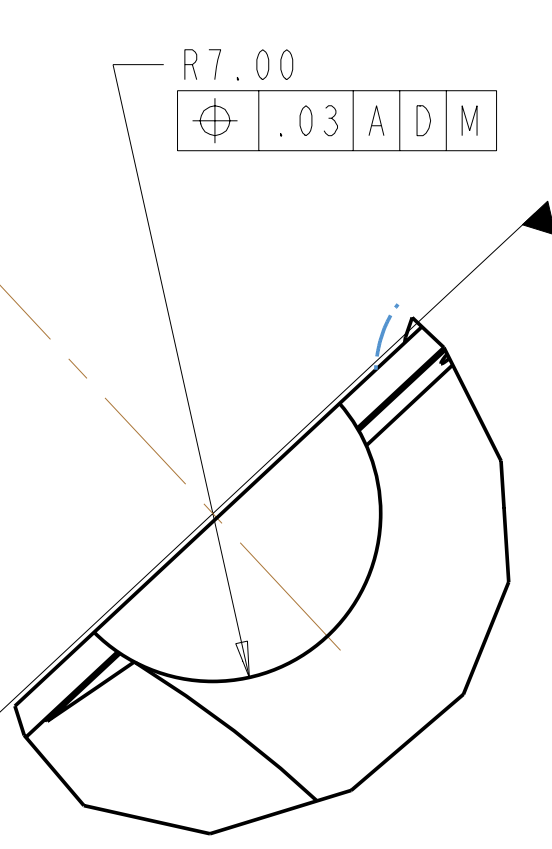
SECTION L-L



SECTION J-J



SECTION K-K



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UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT						
PROJECT NAME PROTOTYPE TYPE "C" WINDING FORM						
VERSION NO.	PLANT	BLDG	FL	SHIT OF	TYPE	CLASS
42	X-10	5700	3	8 9	S	U
RELEASE LEVEL		SEI41-116P			REV	0
Fabrication						

H
G
F
E
D
C
B
A

SEI41-116P

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	-5.462
47	24.788	18.307	-8.511
48	27.365	18.030	-12.361
49	29.931	17.652	-16.270
50	32.494	17.273	-20.415
51	35.028	17.114	-24.930
52	37.378	17.455	-29.943
53	38.999	18.562	-35.590
54	39.391	20.227	-41.911
55	38.948	22.059	-48.920
56	38.254	23.967	-56.610
57	37.524	25.943	-64.987
58	36.701	27.920	-74.059
59	35.763	29.820	-83.846
60	34.793	31.625	-94.368
61	33.903	33.362	-105.639
62	33.146	35.089	-117.670
63	32.490	36.854	-130.472
64	31.865	38.690	-144.045
65	31.269	40.647	-158.399
66	30.783	42.808	-173.544
67	30.499	45.207	-189.490
68	30.477	47.768	-206.247
69	30.808	50.319	-223.824
70	31.626	52.619	-242.231
71	32.955	54.471	-261.476
72	34.623	55.924	-281.569
73	36.363	57.257	-302.519
74	37.796	58.796	-324.334
75	38.357	60.653	-347.024
76	37.834	62.588	-370.609
77	36.556	64.343	-395.109
78	34.902	65.986	-420.544
79	33.118	67.574	-446.934
80	31.730	69.226	-474.299
81	31.467	70.665	-502.660
82	32.350	71.447	-531.037
83	34.161	71.434	-560.450
84	36.508	70.729	-590.919
85	38.865	69.675	-622.464
86	41.103	68.510	-655.114
87	43.261	67.281	-688.899
88	45.389	65.991	-723.750
89	47.500	64.629	-759.699
90	49.582	63.190	-796.776
91	51.624	61.690	-834.911
92	53.637	60.150	-874.134
93	55.657	58.597	-914.485
94	57.737	57.067	-955.994
95	59.894	55.659	-1000.000
96	61.987	54.568	-1045.556
97	63.512	54.094	-1092.711
98	63.981	54.255	-1141.511
99	63.347	54.877	-1191.999
100	61.939	55.773	-1244.222
101	60.145	56.794	0.000

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	2.886
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	-10.764
58	36.171	31.978	-11.820
59	35.202	33.659	-13.433
60	34.128	35.192	-14.954
61	33.015	36.626	-16.554
62	31.934	38.039	-18.177
63	30.919	39.505	-19.797
64	30.020	41.095	-21.377
65	29.386	42.917	-22.881
66	29.008	45.005	-23.944
67	28.900	47.333	-24.533
68	29.158	49.714	-24.388
69	29.937	51.836	-23.588
70	31.222	53.508	-22.422
71	32.804	54.817	-21.166
72	34.456	56.011	-19.877
73	35.820	57.395	-18.457
74	36.077	59.117	-16.844
75	35.181	60.815	-15.400
76	33.770	62.378	-14.223
77	32.154	63.865	-13.223
78	30.624	65.372	-12.151
79	29.829	66.871	-10.477
80	30.132	67.939	-8.366
81	31.415	68.301	-6.387
82	33.393	67.975	-5.091
83	35.622	67.171	-4.744
84	37.773	66.151	-5.106
85	39.604	65.051	-5.797
86	41.755	63.898	-6.622
87	43.673	62.689	-7.444
88	45.576	61.412	-8.196
89	47.455	60.064	-8.880
90	49.301	58.659	-9.544
91	51.121	57.220	-10.200
92	52.949	55.764	-10.791
93	54.831	54.315	-11.217
94	56.801	52.930	-11.275
95	58.812	51.718	-10.724
96	60.658	50.858	-9.482
97	61.888	50.555	-7.459
98	62.103	50.818	-5.098
99	61.294	51.503	-2.951
100	59.824	52.420	-1.285
101	58.052	53.430	0.000

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	54.522	62.373	10.062
5	54.393	61.003	13.102
6	54.263	59.545	15.665
7	53.876	58.118	17.976
8	53.128	56.779	20.114
9	52.011	55.568	22.091
10	50.564	54.548	23.864
11	48.357	53.571	25.799
12	45.779	52.888	27.474
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	-6.954
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	34.866	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	46.527	-32.738
66	29.		