



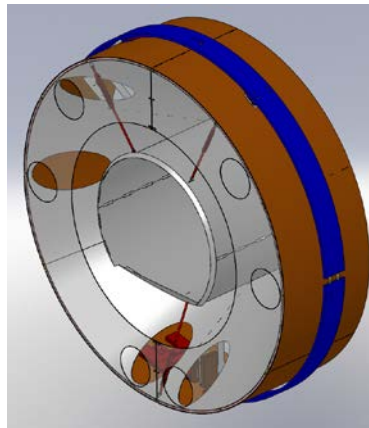
Statement of Work

AO – 509 Manifold Cryopump Tube Baffle ITM Weldment Assembly

C1202433-v4

1.0 Scope

This Statement of Work (SOW) is for the fabrication of four Manifold Cryopump Tube Baffle ITM weldment assemblies. The primary baffle piece parts are large. A completely assembled baffle will reside within an 8' by 8' area. This Manifold Cryopump Tube baffle will reside inside ultra-high vacuum. Materials, fabrication processing and cleanliness must adhere to the requirements specified within the LIGO control documents.



2.0 Document Access

Many supplemental documents and specifications are incorporated into and made a part this Statement of Work. Click on the document links to access these documents from the LIGO Document Control Center (DCC) or go on line to the LIGO Public DCC at <https://dcc.ligo.org/> to access the DCC#.

3.0 Commercial Terms and Applicable LIGO Specifications:

Note: The documents listed below are invoked for this Statement of Work and comprise additional requirements which are integral to this Statement of Work.

- [LIGO-C080185-v1](#) LIGO Commercial Items or Services Contract General Provisions
- [LIGO-Q0900001-v5](#) Advanced LIGO Supplier Quality Requirements
- [LIGO-Q1100003-v1](#) Acceptable Quality Level (AQL) for Inspection of LIGO Components
- [LIGO-E0900364-v8](#) Metal Components for use in the Advanced LIGO Vacuum System
- [LIGO-E1100842-v3](#) Specification for Oxidation of Polished Mirror (Super #8) Stainless Steel for aLIGO Baffles and Beam Dumps
- [LIGO-E0900048-v9](#) Welding Specification for Weldments used within the Advanced LIGO Vacuum System

4.0 Quality System:

Referring to the above referenced LIGO Specification Q0900001, Suppliers should include a copy of their current ISO 9001, AS9100, or TS16949 certification in their bid package. Suppliers lacking current certification should send a copy of their Quality Manual with their bid package.

5.0 Parts/Assemblies to be manufactured, Quantity Required, and Inspection requirements:

Note: refer to Section 8.0 for delivery schedule and location

5.1 Parts

| Item | Part Number | Rev | Description | Material | Total QTY | Starting Serial Number |
|------|-------------|-----|--|----------------------|-----------|------------------------|
| 1 | D0902619 | v3 | aLIGO_Manifold_Cryo_Baffle_Inner_Segment_Right | 18 GAUGE 304 SSTL | 4 | 002 |
| 2 | D0902620 | v3 | aLIGO_Manifold_Cryo_Baffle_Radial_Segment, Bottom | 18 GAUGE 304 SSTL | 4 | 002 |
| 3 | D0902621 | v3 | aLIGO_Manifold_Cryo_Baffle_Bracket | 14 GAUGE 304 SSTL | 24 | 007 |
| 4 | D0902622 | v3 | aLIGO_Manifold_Cryo_Baffle_Inner_Segment_Left | 18 GAUGE 304 SSTL | 4 | 002 |
| 5 | D0902623 | v3 | aLIGO_Manifold_Cryo_Baffle_Inner_Segment_Bottom | 18 GAUGE 304 SSTL | 4 | 002 |
| 6 | D1000536 | v3 | aLIGO_Manifold_Cryo_Baffle_Brace_Brkt | 14 GAUGE 304 SSTL | 24 | 007 |
| 7 | D1000558 | v3 | aLIGO_Manifold_Cryo_Baffle_Radial_Segment_Left | 18 GAUGE 304 SSTL | 4 | 002 |
| 8 | D1000559 | v3 | aLIGO_Manifold_Cryo_Baffle_Radial_Segment_Right | 18 GAUGE 304 SSTL | 4 | 002 |
| 9 | D1000570 | v3 | aLIGO_Manifold_Cryo_Baffle_Cylinder | 18 GAUGE 304 SSTL | 4 | 002 |
| 10 | D1001018 | v3 | aLIGO_Manifold_Cryo_Baffle_Scraper_Plate | 18 GAUGE 304 SSTL | 4 | 002 |
| 11 | D1001073 | v3 | aLIGO_Radial_Attachment | 14 GAUGE 304 SSTL | 12 | 004 |
| 12 | D1002849 | v3 | aLIGO Manifold-Cryo Baffle Weldment Center Brace | 14 GAUGE 304 SSTL | 12 | 004 |
| 13 | D1101501 | v1 | aLIGO Manifold-Cryo Baffle ,Lower Face Plate, ITM | 18 GAUGE 304 SSTL | 4 | 002 |
| 14 | D1101503-1 | v1 | aLIGO Manifold-Cryo Baffle, Upper Side Face Plate, ITM | 18 GAUGE 304 SSTL | 4 | 002 |
| 15 | D1101503-2 | v1 | aLIGO Manifold-Cryo Baffle, Upper Side Face Plate, ITM | 18 GAUGE 304 SSTL | 4 | 002 |

5.2 Assemblies

| Item | Part Number | Rev | Description | Total QTY |
|------|-------------|-----|---|-----------|
| 1 | D0902654 | v3 | aLIGO_Manifold_Cryo_Baffle_Subassembly_Weldment_Right | 4 |
| 2 | D0902655 | v3 | aLIGO_Manifold_Cryo_Baffle_Weldment Subassy, Bottom | 4 |
| 3 | D0902656 | v3 | aLIGO_Manifold_Cryo_Baffle_Weldment Subassy, Left | 4 |
| 4 | D1001348 | v3 | aLIGO_Manifold_Cryo_Baffle_Cyl-Scraper_Assy | 4 |

Note: **AQL = 1.0**, refer to Q1100003 for the AQL table, see link in Section 3.0.

6.0 Manufacturing

6.1 Requirements:

Suppliers must refer to the LIGO Specifications referenced in Section 3 for additional, and in some cases, non-industry standard requirements.

6.2 Sub-Contracted Work:

- LIGO expects that at least 2/3 (by dollar value) of the contracted work be performed by the Supplier named on the Purchase Order. The Supplier shall be responsible for all sub-contracted work.
- The Supplier's quote shall state their intent to sub-contract any welding operations performed on components intended for Vacuum use. If E0900048 is invoked in Section 3, then the component will be used in Vacuum.

6.3 Precedence:

The drawings typically represent the finished part as needed for use in service. There may be requirements on the drawing (such as coatings) which are specifically defined as not the responsibility of the supplier in this SOW. Suppliers shall always contact a LIGO representative to resolve any discrepancies uncertainties in the documentation or instructions.

6.4 Special Instructions:

- All parts shall be shipped as specified in Section 8.0. Shipping containers shall be supplied by the awarded vendor and constructed for multiple uses.
- Selected vendor shall purchase 18 gauge 304 Super #8 Stainless Steel material from approved LIGO supplier.
- Return unused materials to:
LIGO Laboratory
California Institute of Technology
Attn: Lisa C. Austin
MS 100-36
391 S. Holliston Ave.
Pasadena, CA 91125

- Some parts will require electro-polish processing, as specified in drawing. Processing is the responsibility of the awarded vendor. LIGO recommends Cal Tech Plating of San Fernando, CA or another LIGO approved supplier. These parts must be handled with clean gloves after electro-polish process.
- Do not remove PVC layer on 18 gauge 304 Stainless Steel materials. It is expected that PVC will be peeled back to allow for welding.
- All bidders are required to submit weld samples along with their bids.

6.5 Exclusions:

- Supplier is NOT responsible for cleaning except as specified in E0900364 above.
- Supplier is NOT responsible for the oxidation process.

7.0 End Item Data Package:

Before delivery of the parts, the Supplier shall provide the following data, as a minimum:

- Any as-built modifications (with approval of the LIGO Contracting Officer) as mark-ups to the drawings
- Material certifications
- Heat Treat and/or Stress Relief certifications, if applicable
- Electro-polish certifications, if applicable
- Pickle/Passivation certifications, if applicable
- Inspection reports of all dimensional features for the number of parts specified per the AQL number and referenced in the AQL table Q1100003 and any other inspection requirements detailed in Section 5 of this SOW
- Certificate of compliance for each part number stating conformance to contract and drawing requirements

8.0 Delivery Requirements:

8.1 Shipping Containers and Packaging:

The contractor is responsible for providing shipping containers and transportation which protects these parts from damage from the transportation environment (weather, handling, accidents, etc.). Mating edges of parts shall be especially protected from damage during shipping.

8.2 Shipping Destination(s):

The deliveries are FOB at these destinations, i.e. the Supplier has the responsibility for shipping title and control of goods until they are delivered and the transportation has been completed. The contractor selects the carrier and is responsible for the risk of transportation and for filing claims for loss or damage.

- Caltech will determine the ship to location at time of award.
- Shipping terms will be prepay and add.

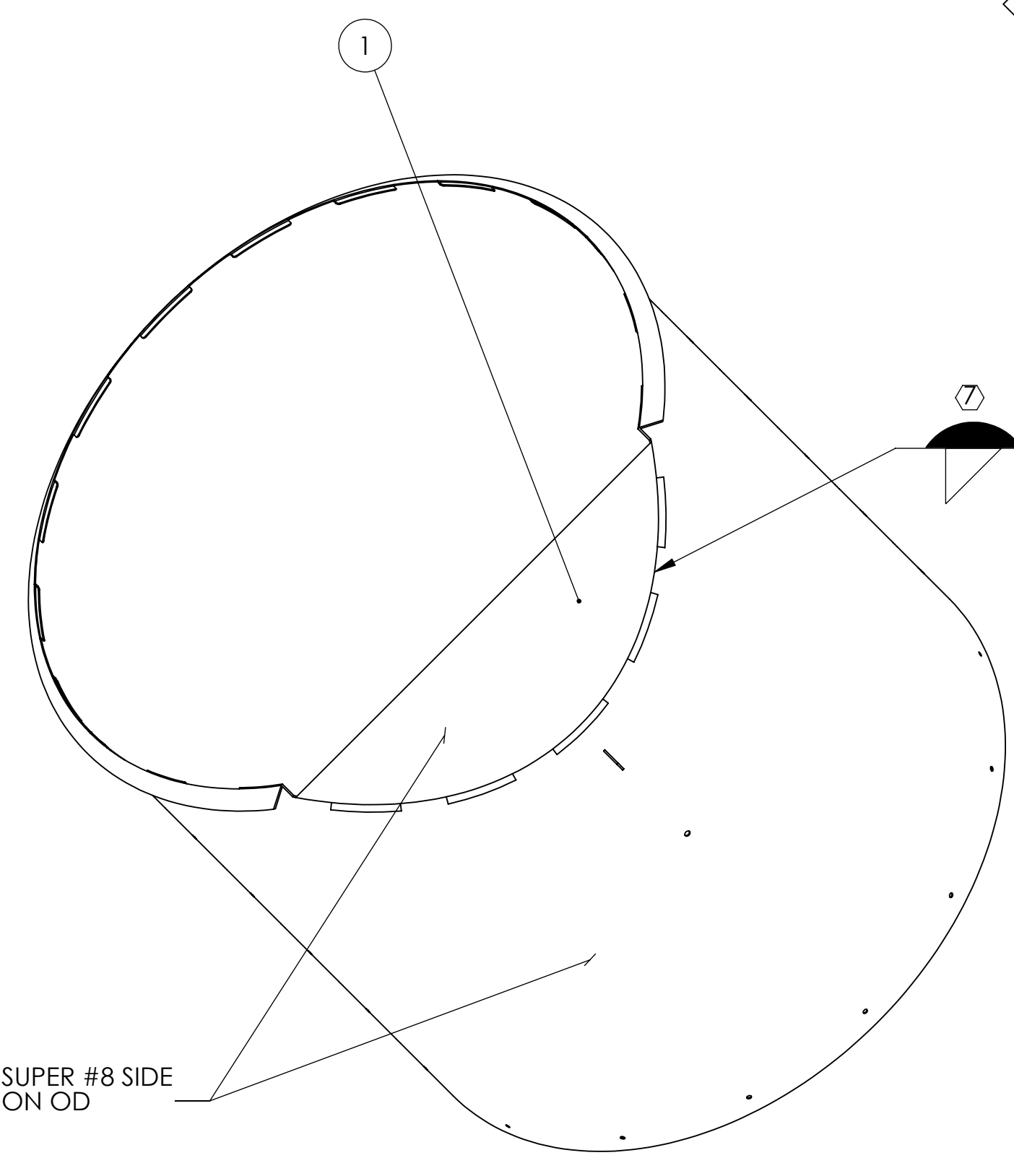
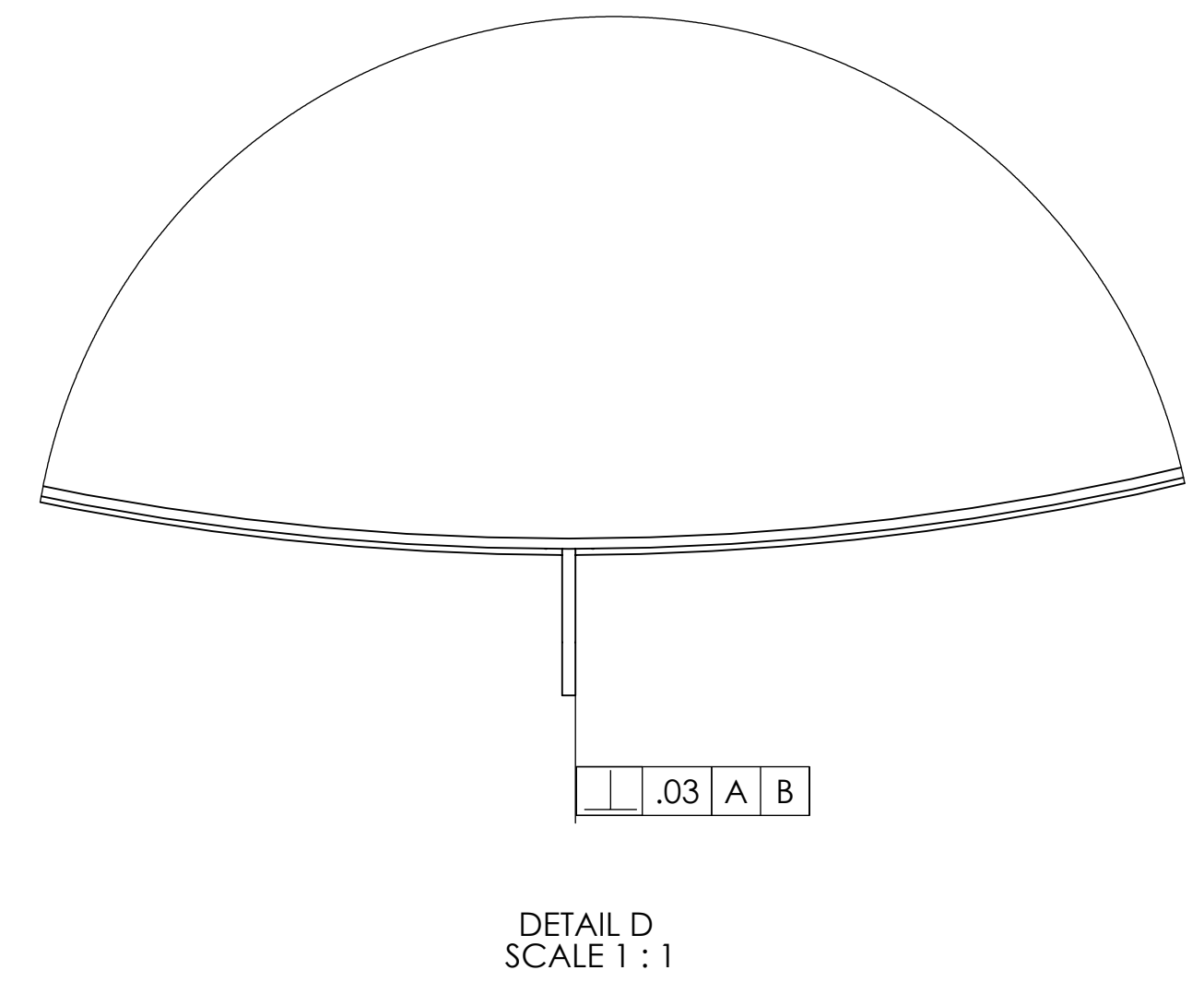
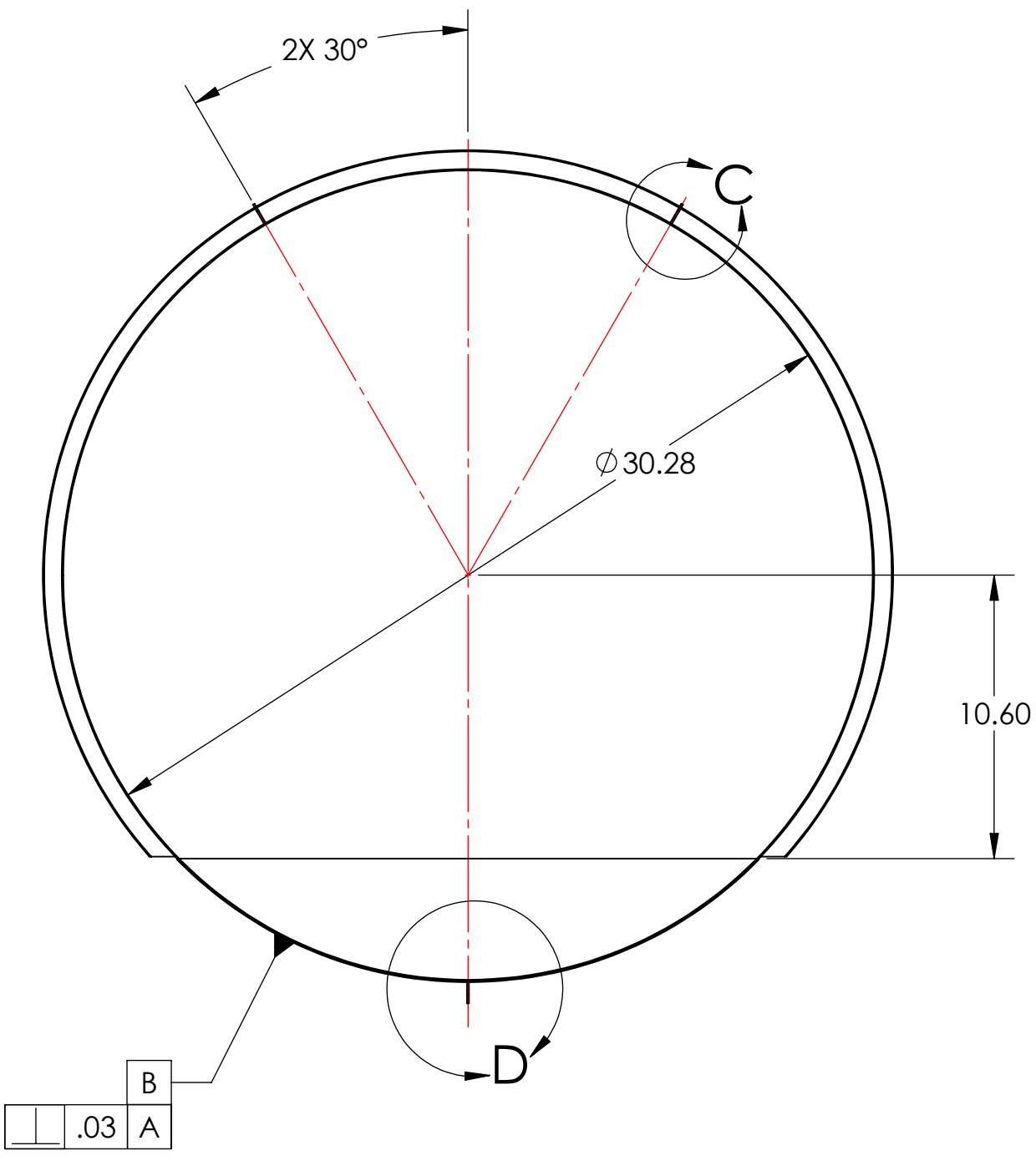
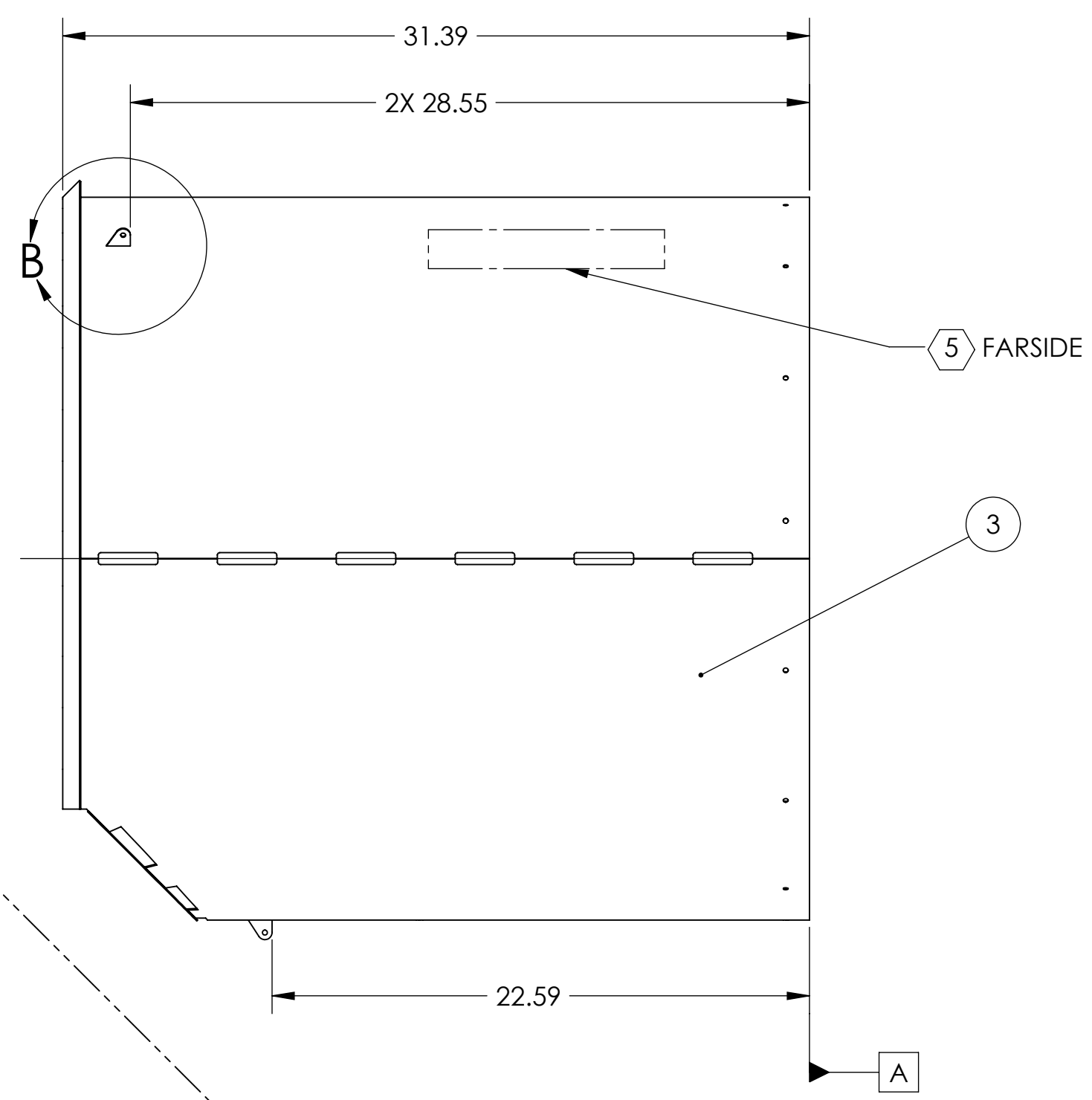
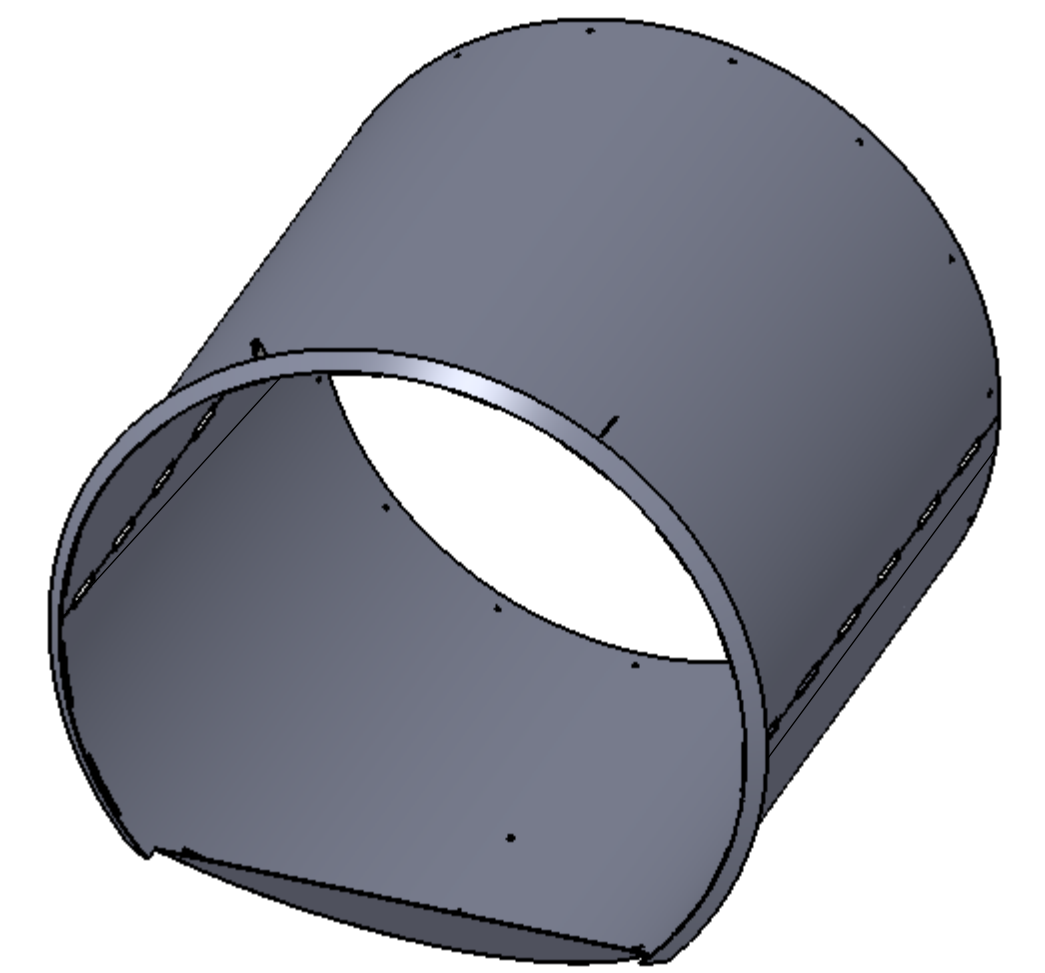
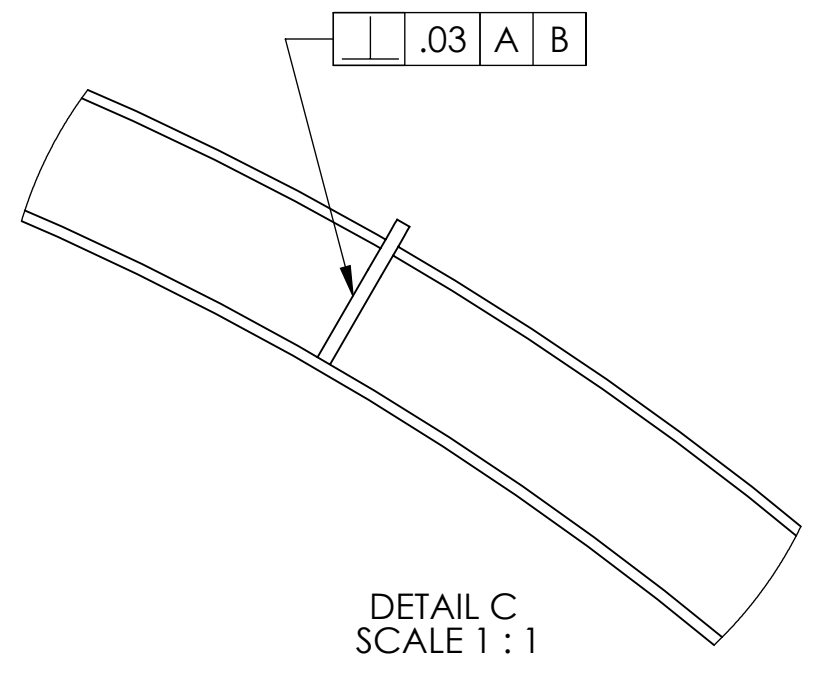
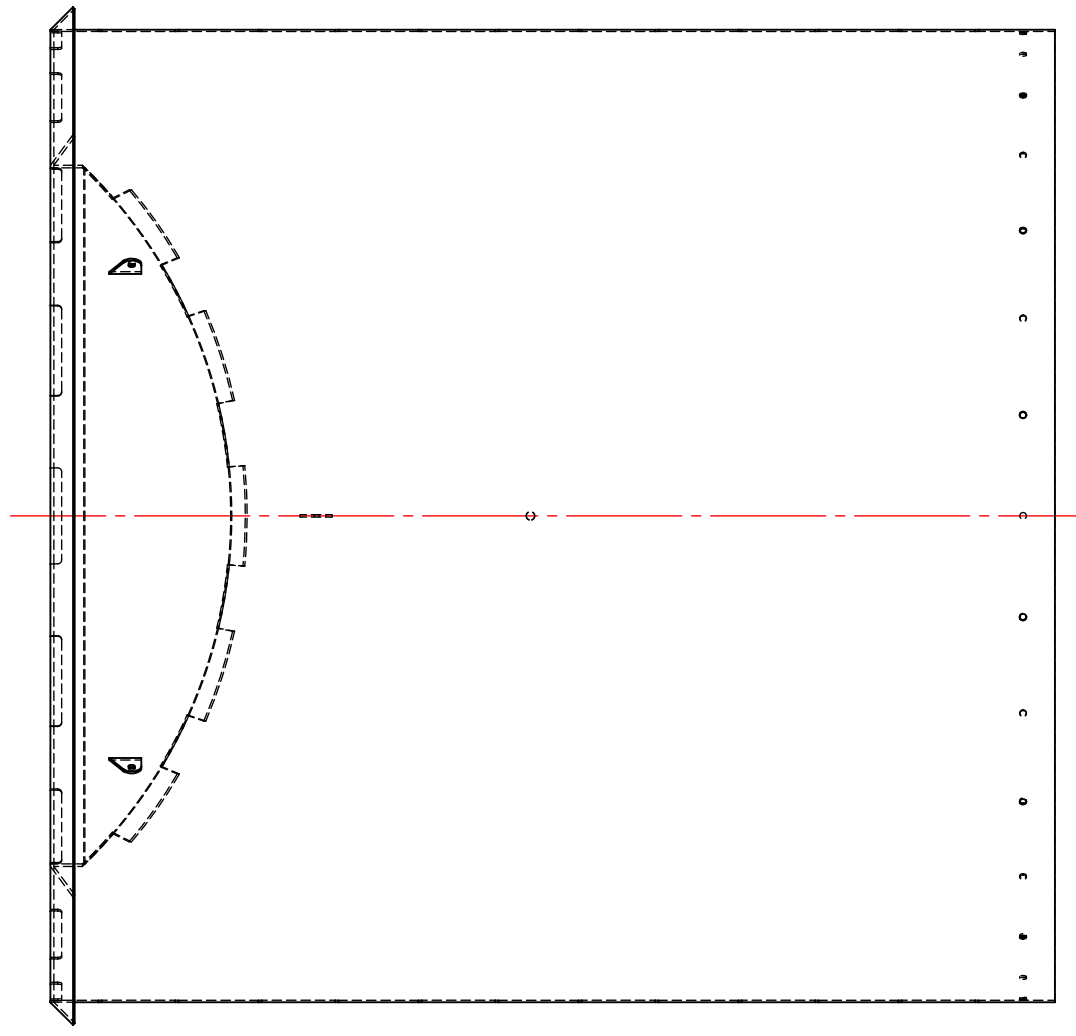
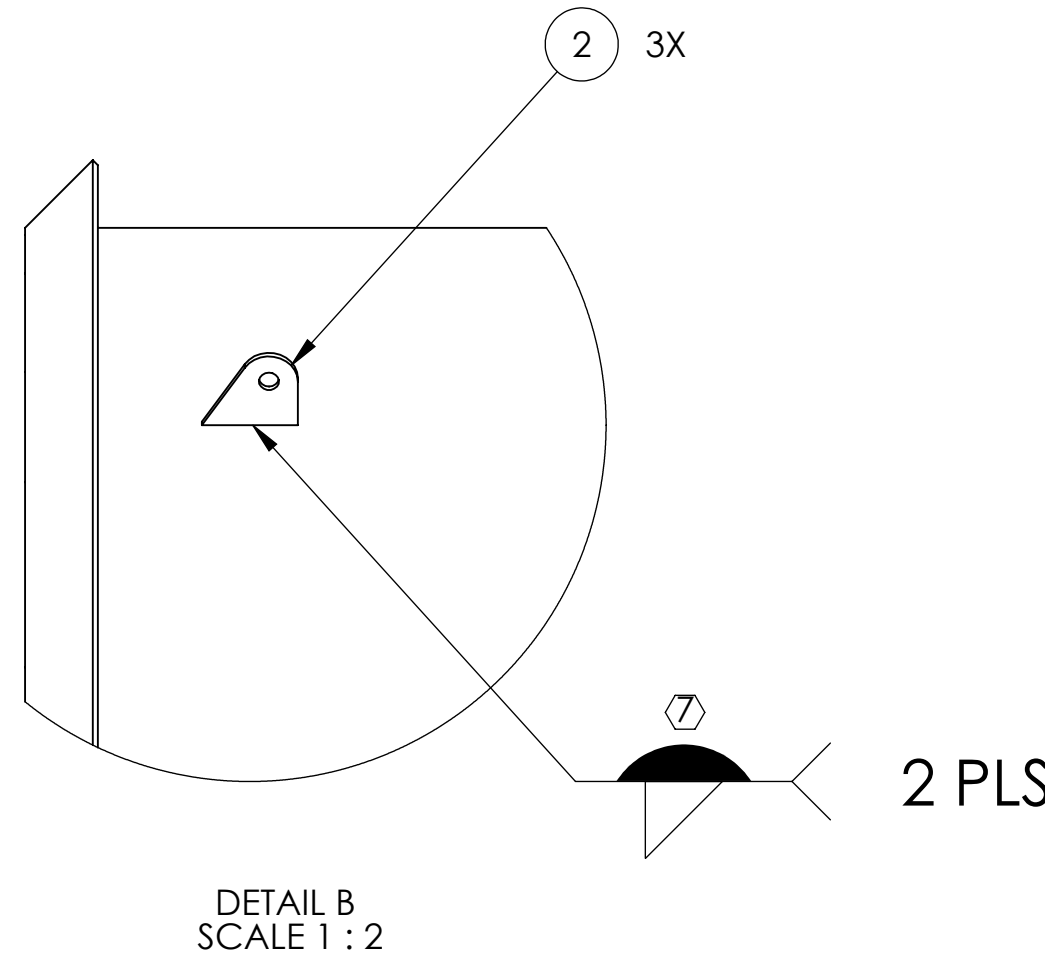
8.3 Delivery Schedule:

Deliveries are to be completed as specified below. If this cannot be accommodated, please provide an alternative delivery schedule for consideration with your bid package. Early or partial deliveries are welcome.

- Requested delivery - 8 weeks ARO.

NOTES CONTINUED:
 ⑤ DELETED.
 6. ASSEMBLY TO BE OXIDIZED AFTER WELDMENT IS COMPLETED PER SPECIFICATION ET1100842.
 ⑦ FILLET WELD WHERE ITEMS ① & ③ AND ③ & ② MAKE CONTACT. WELDING MUST BE PER SPECIFICATION E0900048.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 20 MAY 2010 | E1000360 | E1000367 |
| v2 | 11 MAY 2011 | E1000360-v2 | - |
| v3 | 3 OCT 2011 | E1000360-v3 | - |



| ITEM NO. | PART NUMBER | DESCRIPTION | MATERIAL | REQ | SPARE | TOTAL |
|----------|-------------|-------------------------------|-------------------|-----|-------|-------|
| 3 | D1000570 | MANIFOLD-CRYO BAFFLE CYLINDER | 18 GAUGE 304 SSSL | 1 | | 1 |
| 2 | D1000536 | BAFFLE BRACE BRACKET | 14 GAUGE 304 SSSL | 3 | | 3 |
| 1 | D1001018 | ELLIPSE SCRAPER BLADE | 18 GAUGE 304 SSSL | 1 | | 1 |

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

- INTERPRET DRAWING PER ASME Y14.5-1994.
- REMOVE ALL SHARP EDGES .005-.015 ON ALL EDGES AND HOLES.
- DO NOT SCALE FROM DRAWING.
- ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

TOLERANCES:
 .X ± .1
 .XX ± .06
 .XXX ± .010

ANGULAR ± 1.0°

MATERIAL: N/A
 FINISH: N/A

SYSTEM: ADVANCED LIGO
 SUB-SYSTEM: AOS
 NEXT ASSY: D1101398, D1003183, D1003221

CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PART NAME: MANIFOLD-CRYO BAFFLE CYLINDER-SCRAPER ASSEMBLY

DESIGNER: H. KELMAN
 DRAFTER: TQ. NGUYEN
 CHECKER: M. SMITH
 APPROVAL: D. COYNE

DATE: 25 MAY 2010
 DATE: 07 SEP 2010
 DATE: 27 JUL 2011

SIZE: D
 DWG. NO.: D1001348
 REV.: v3

SCALE: 1:6
 PROJECTION: [Symbol]
 SHEET 1 OF 1

D:\001348_d\UGO_Manifold_Cryo_Baffle_Cyl_Scraper Assy.PART.PDM.REV.X-045.DRAWING.PDM.REV.X-029

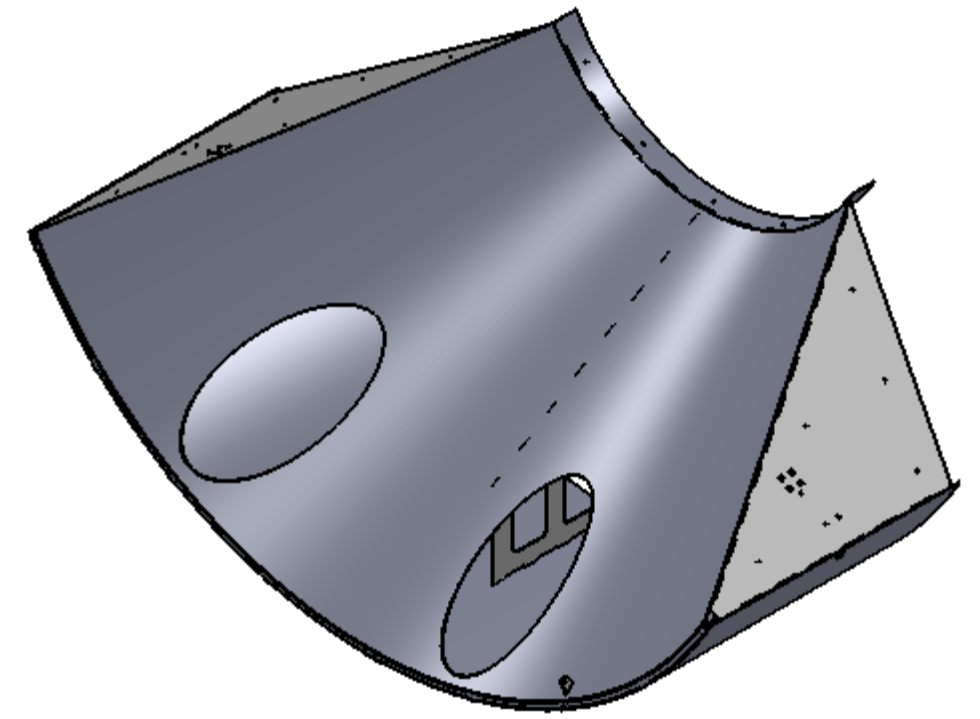
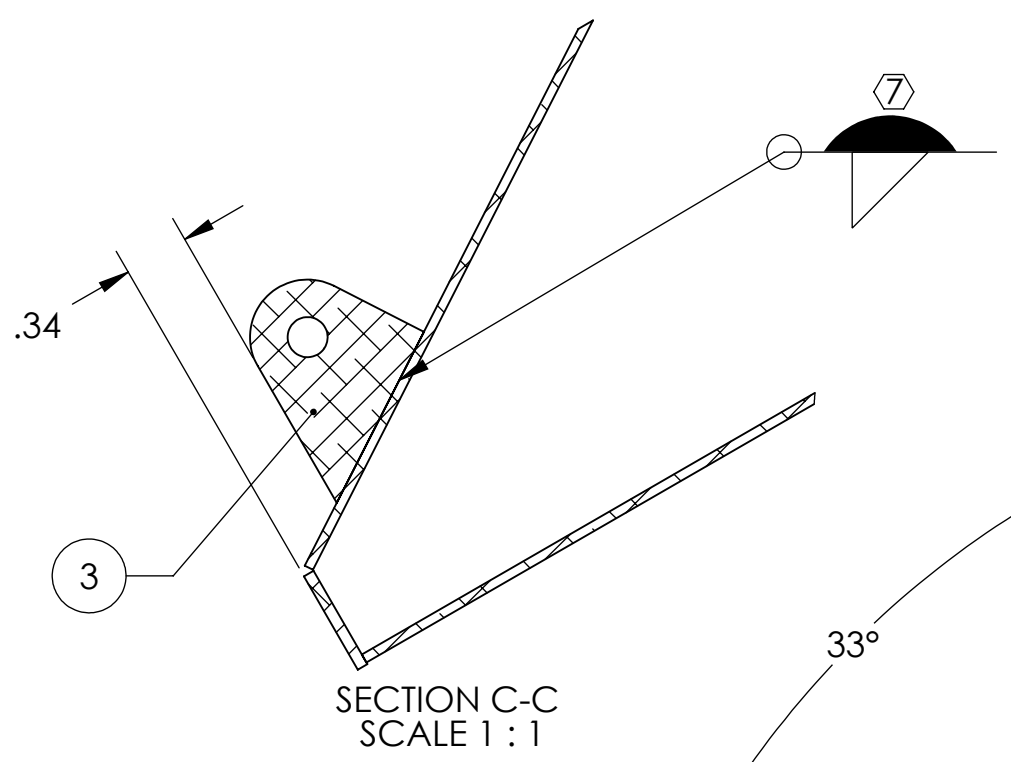
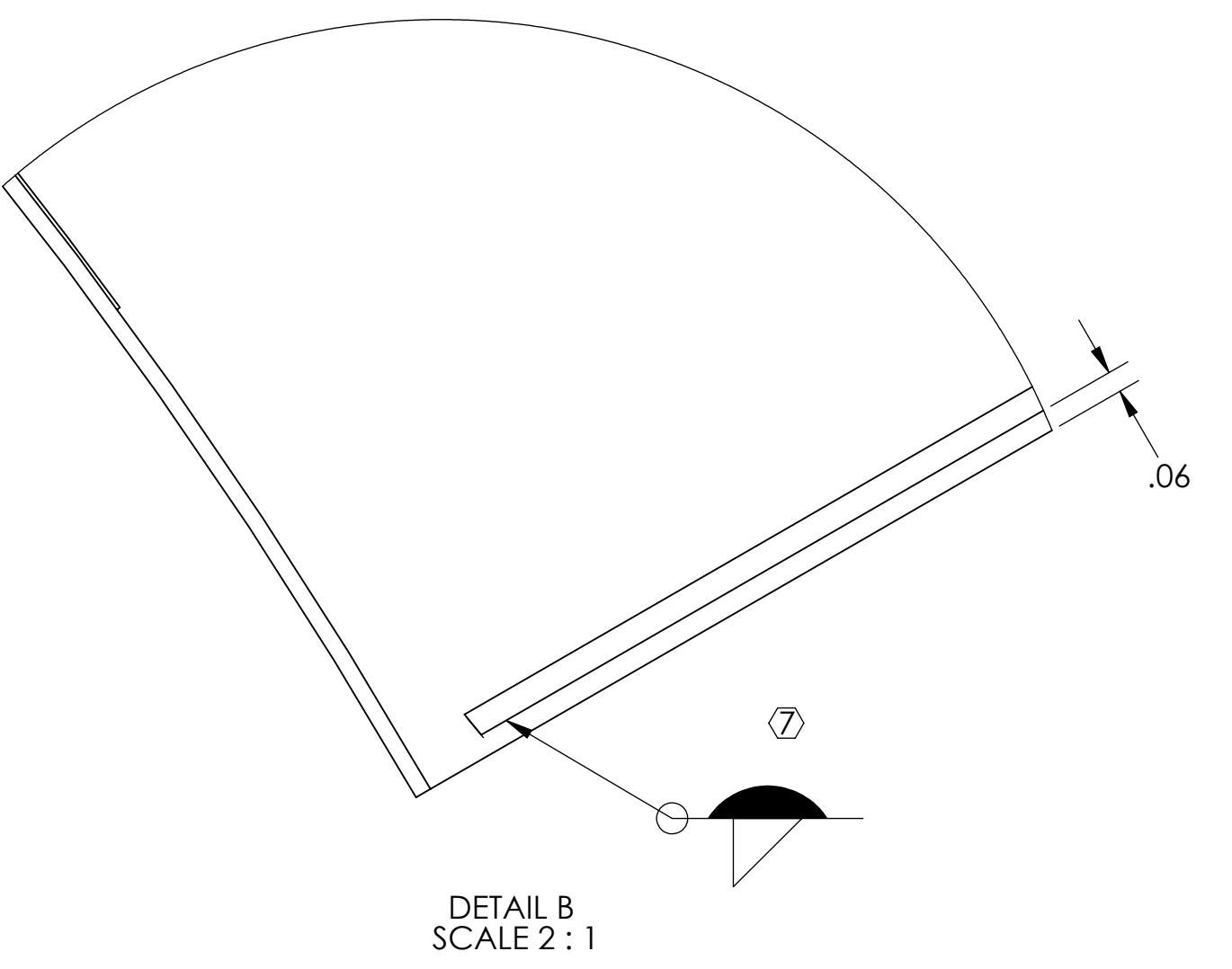
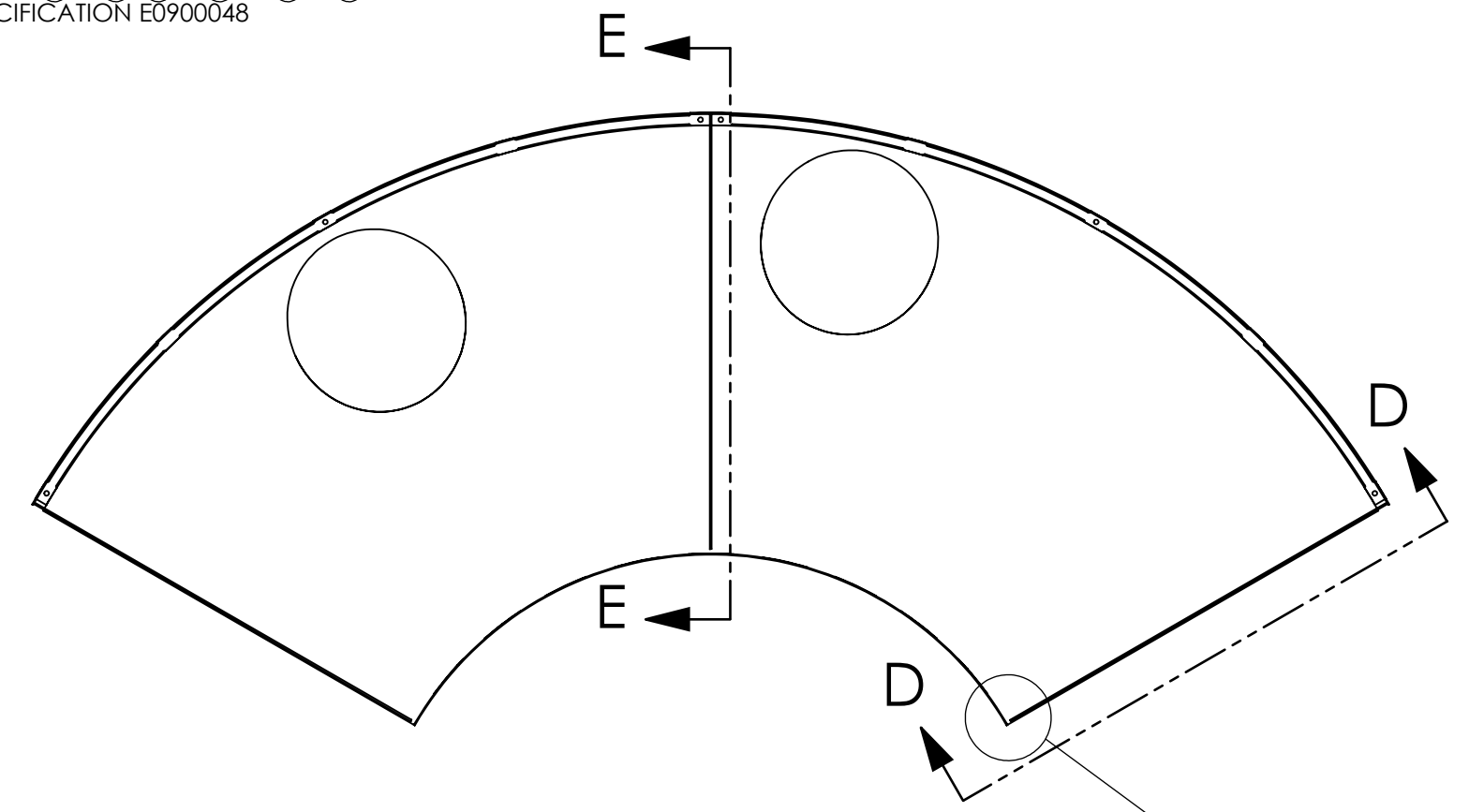
NOTES CONTINUED:

⑤ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR TYPE IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS.
 EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX
 DO NOT APPLY MARK ON SUPER #8 SIDE

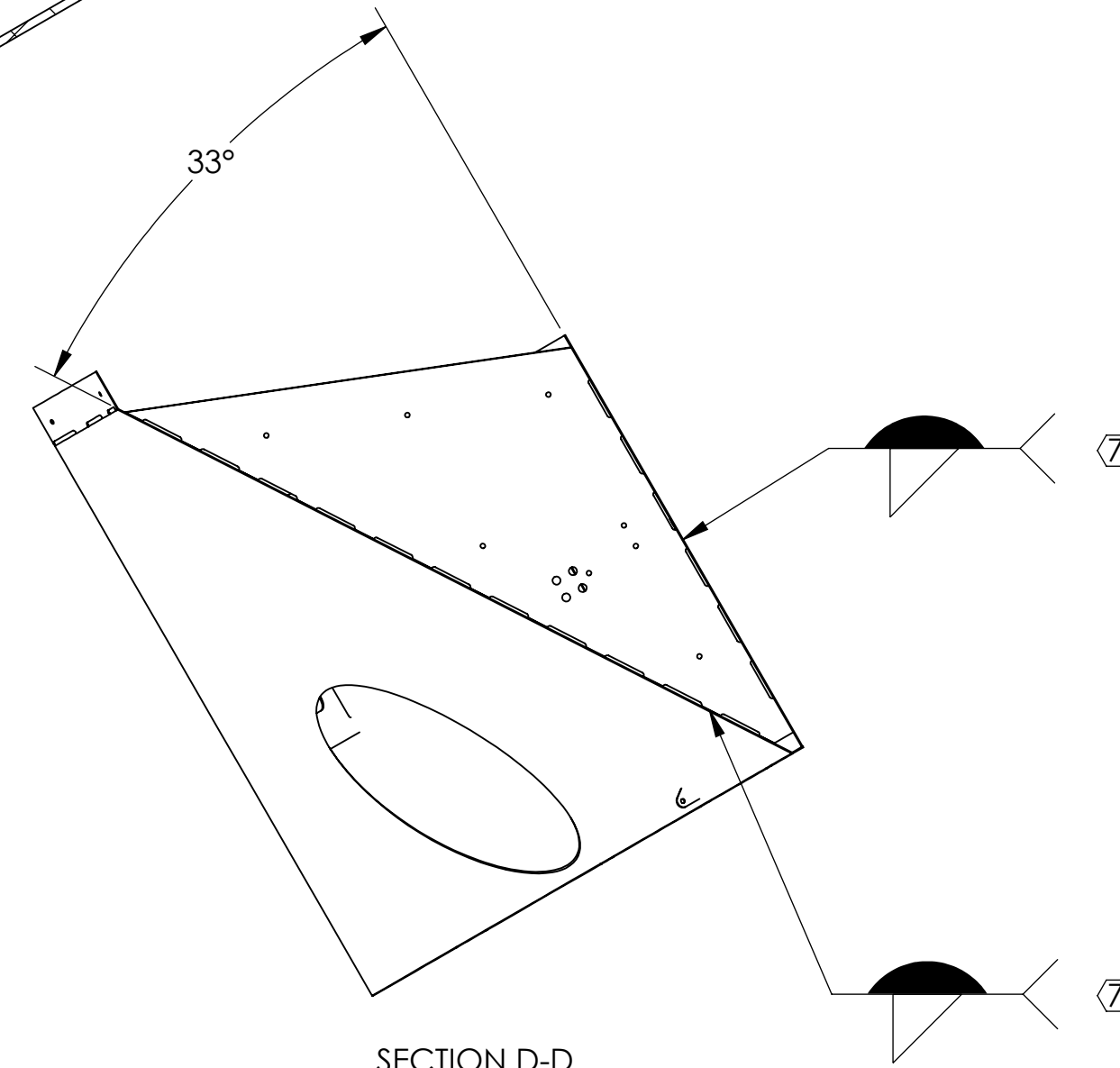
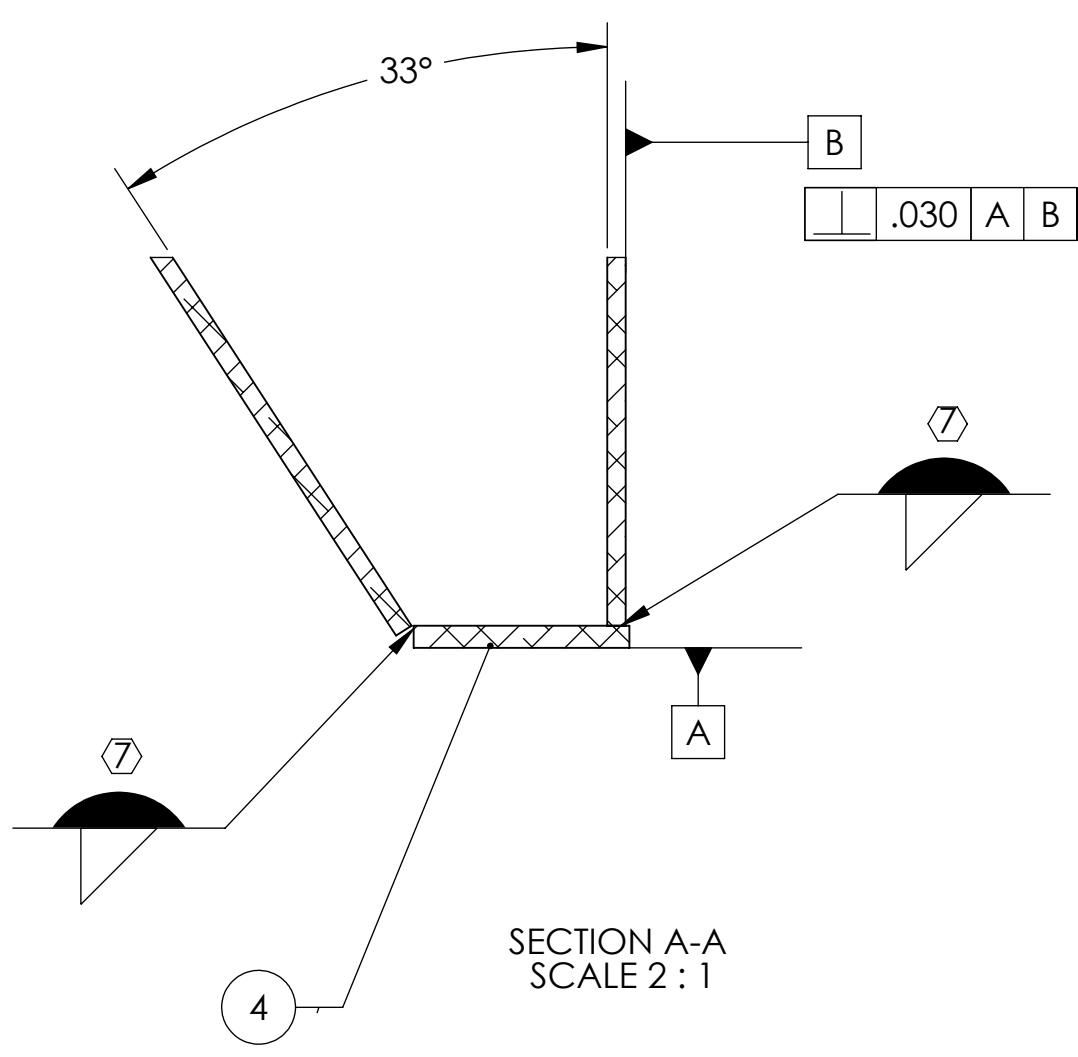
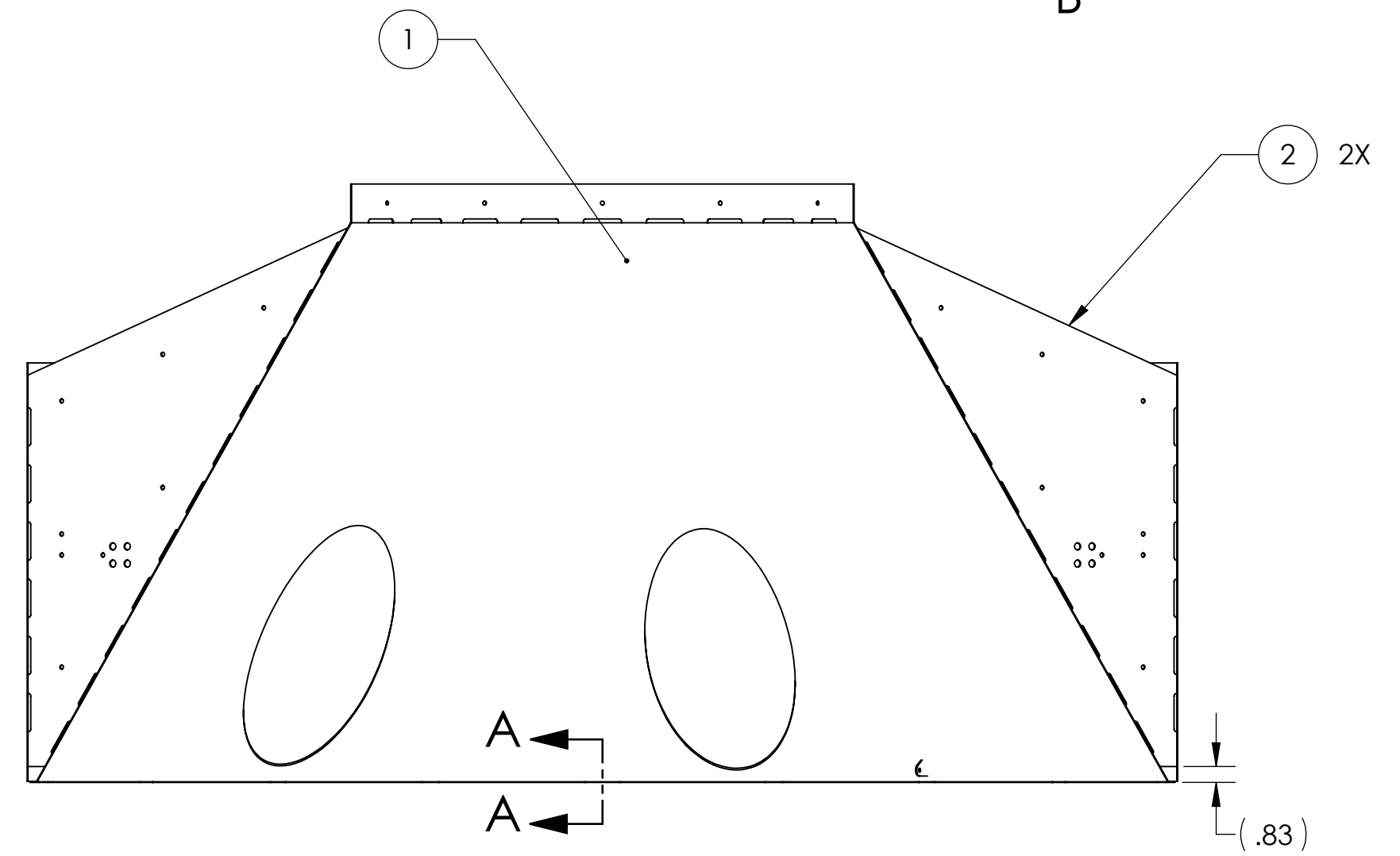
6. ASSEMBLY TO BE OXIDIZED AFTER WELDMENT IS COMPLETED PER SPECIFICATION E1100842.

⑦ FILLET WELDS WHERE ITEMS ① & ③, ① & ⑤, & ① & ④ MAKE CONTACT. WELDING MUST BE PER SPECIFICATION E0900048

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
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| v2 | 9 MAY 2011 | E1000360-v2 | |
| v3 | 6 OCT 2011 | E1000360-v3 | |

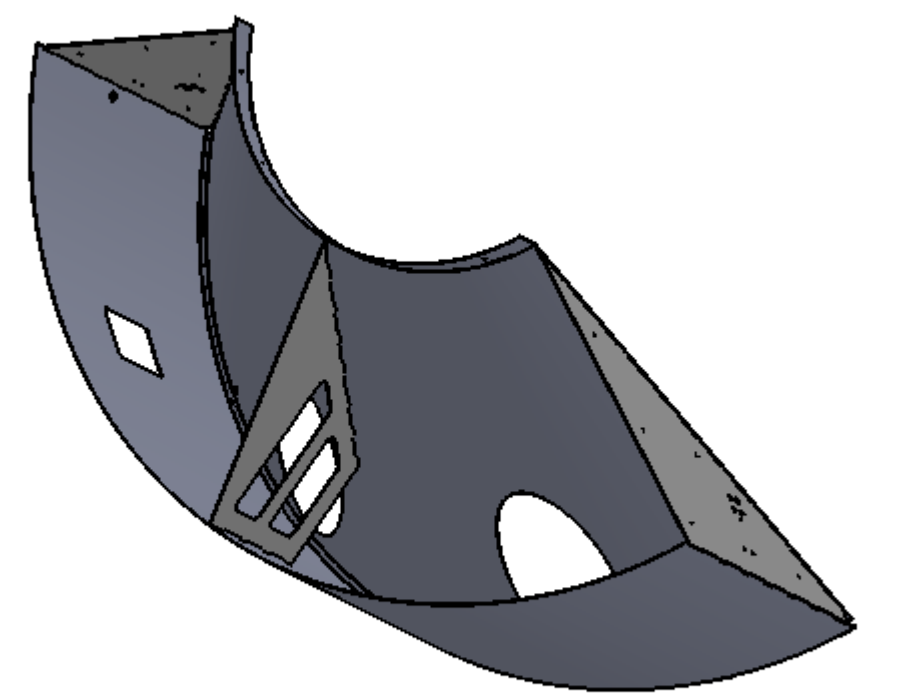


GENERAL VIEW FOR REFERENCE ONLY NO SCALE

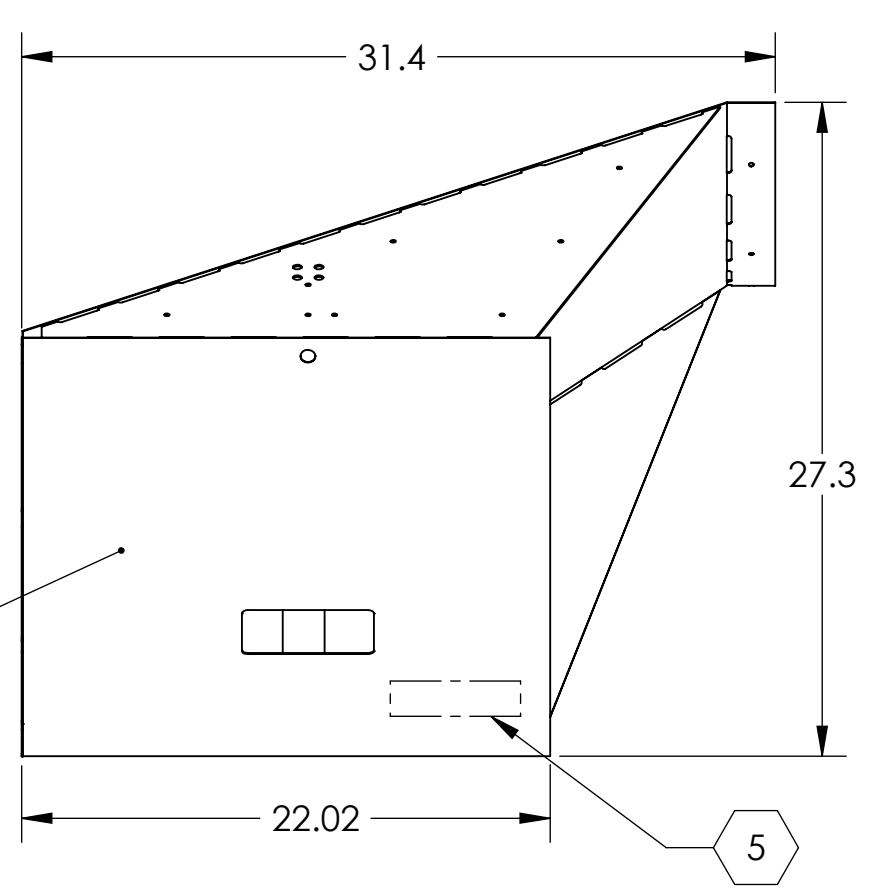
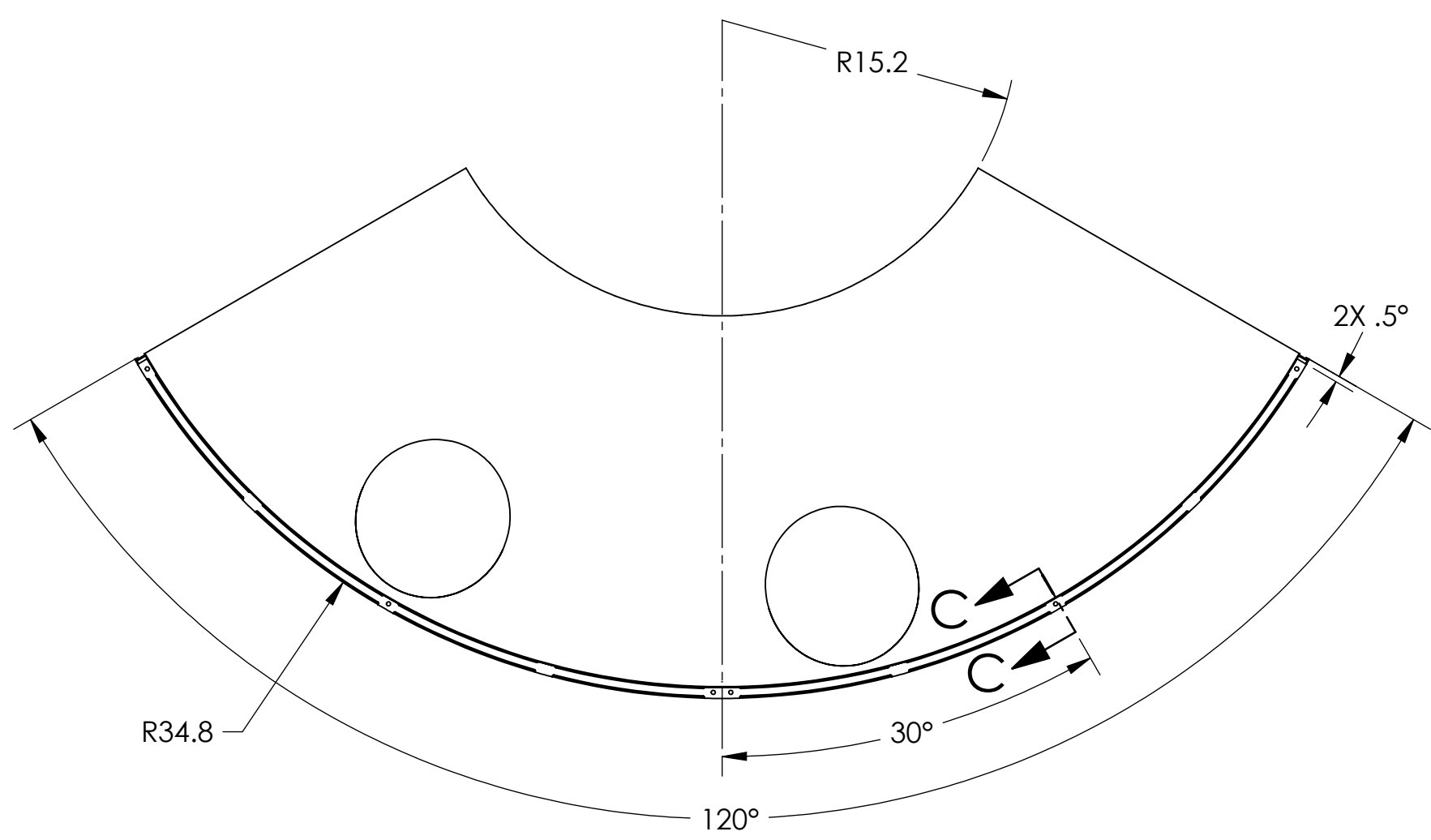


⑦7 PLS

⑦12 PLS



GENERAL VIEW FOR REFERENCE ONLY NO SCALE



| ITEM NO. | PART NUMBER | DESCRIPTION | MATERIAL | REQ | SPARE | TOTAL |
|----------|-------------|--|-------------------|-----|-------|-------|
| 6 | D1002849 | MANIFOLD CRYO BAFFLE WELDMENT BRACE | 14 GAUGE 304 SSSL | 1 | | 1 |
| 5 | D1000559 | RADIAL SEGMENT, RIGHT | 18 GAUGE 304 SSSL | 1 | | 1 |
| 4 | D1001073 | RADIAL ATTACHMENT NUT PLATE | 14 GAUGE 304 SSSL | 1 | | 1 |
| 3 | D1000536 | BAFFLE BRACE BRACKET | 14 GAUGE 304 SSSL | 1 | | 1 |
| 2 | D0902621 | MANIFOLD CRYO BAFFLE BRACKET | 14 GAUGE 304 SSSL | 2 | | 2 |
| 1 | D0902619 | MANIFOLD-CRYO BAFFLE INNER SEGMENT WELDMENT, ITM XY, RIGHT | 18 GAUGE 304 SSSL | 1 | | 1 |

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
|--|---|
| DIMENSIONS ARE IN INCHES | |
| TOLERANCES: .X ± .1 .XX ± .06 .XXX ± .010 ANGULAR ± 1.0° | |
| 1. INTERPRET DRAWING PER ASME Y14.5-1994. | 2. REMOVE ALL SHARP EDGES, .005-.015. FOR ALL EDGE AND HOLES. |
| 3. DO NOT SCALE FROM DRAWING. | |
| 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | |
| MATERIAL | FINISH |
| N/A | N/A |

ADVANCED LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY

MANIFOLD CRYO BAFFLE SEGMENT SUBASSEMBLY WELDMENT, ITM XY, RIGHT

| | | | | | |
|----------|------------|-------------|------------|-------------|--------------|
| DESIGNER | H. KELMAN | 20 MAY 2010 | SIZE | DWG. NO. | REV. |
| DRAFTER | TQ. NGUYEN | 07 SEP 2010 | D | D0902654 | v3 |
| CHECKER | M. SMITH | | SCALE: 1:8 | PROJECTION: | SHEET 1 OF 1 |
| APPROVAL | D. COYNE | | | | |

SYSTEM: ADVANCED LIGO SUB-SYSTEM: AOS NEXT ASSY: D1101398

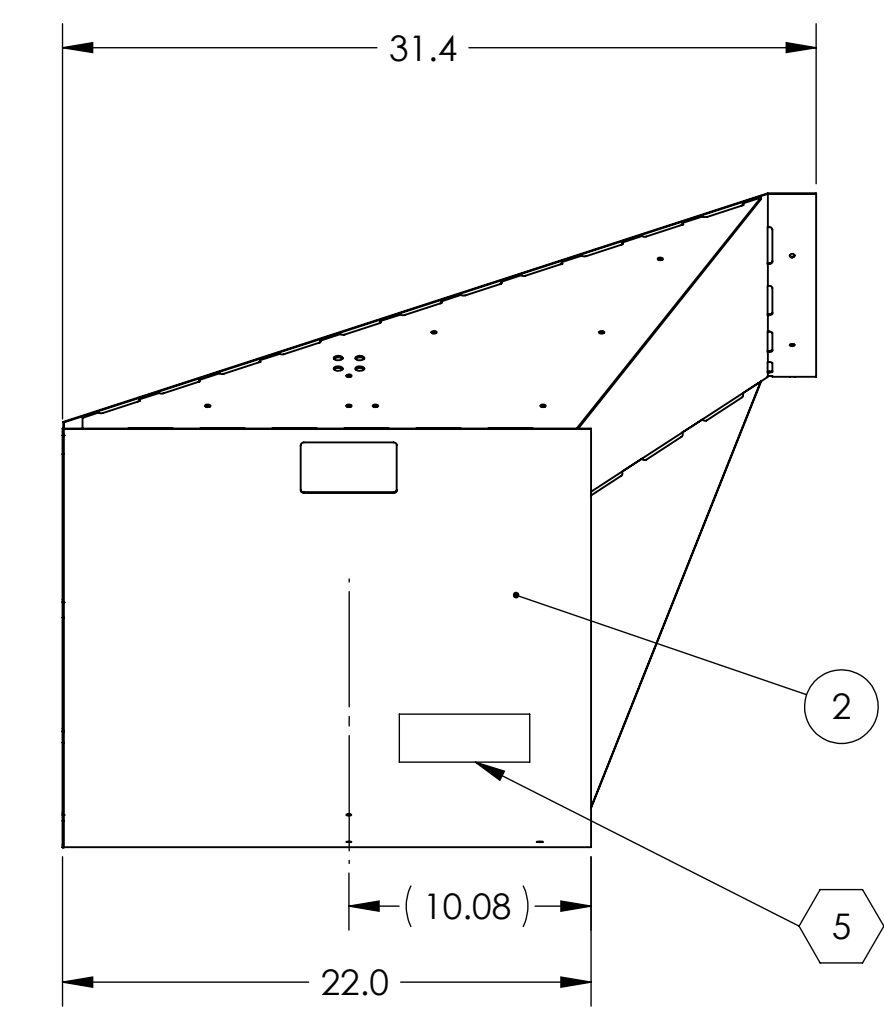
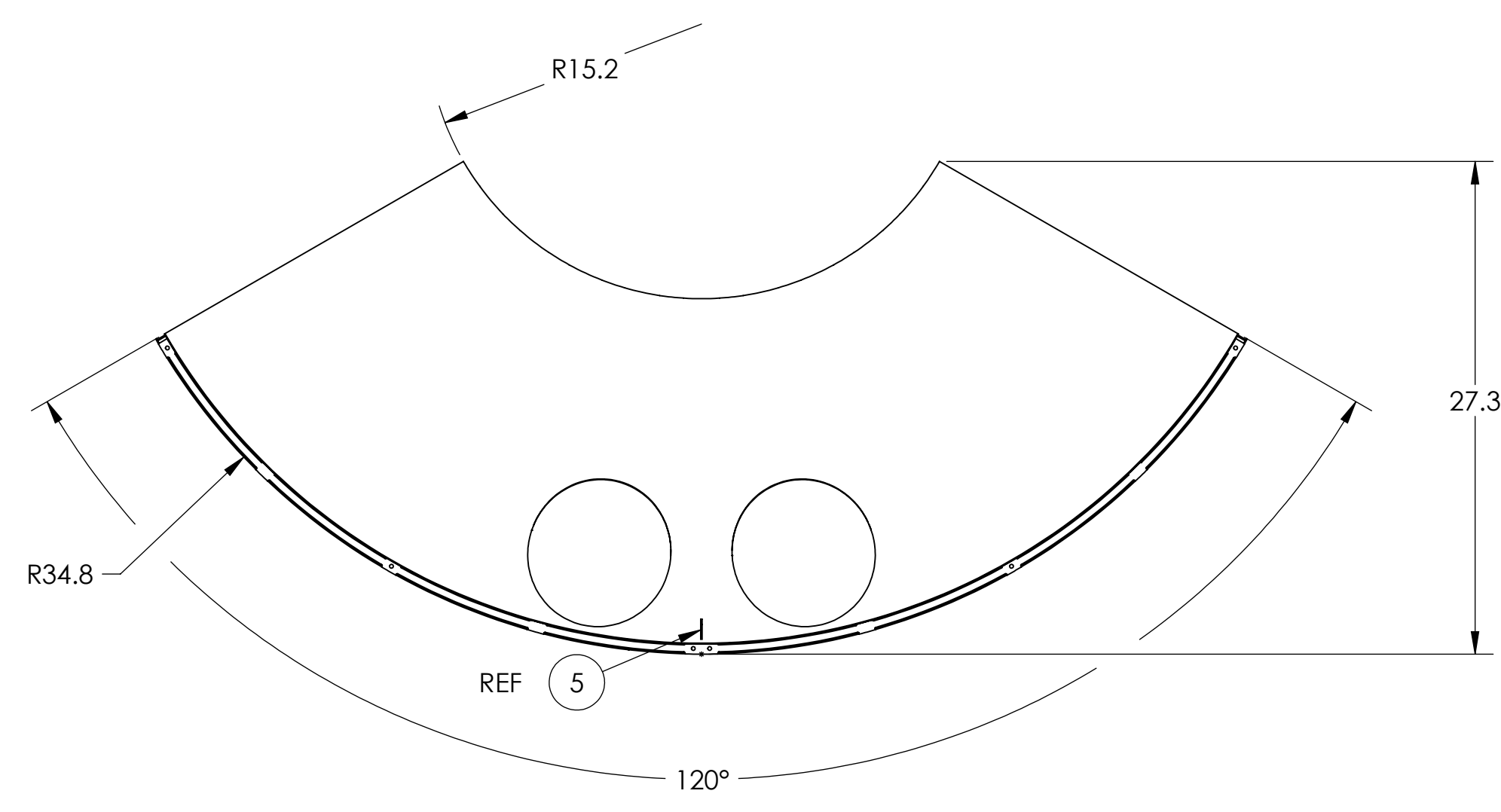
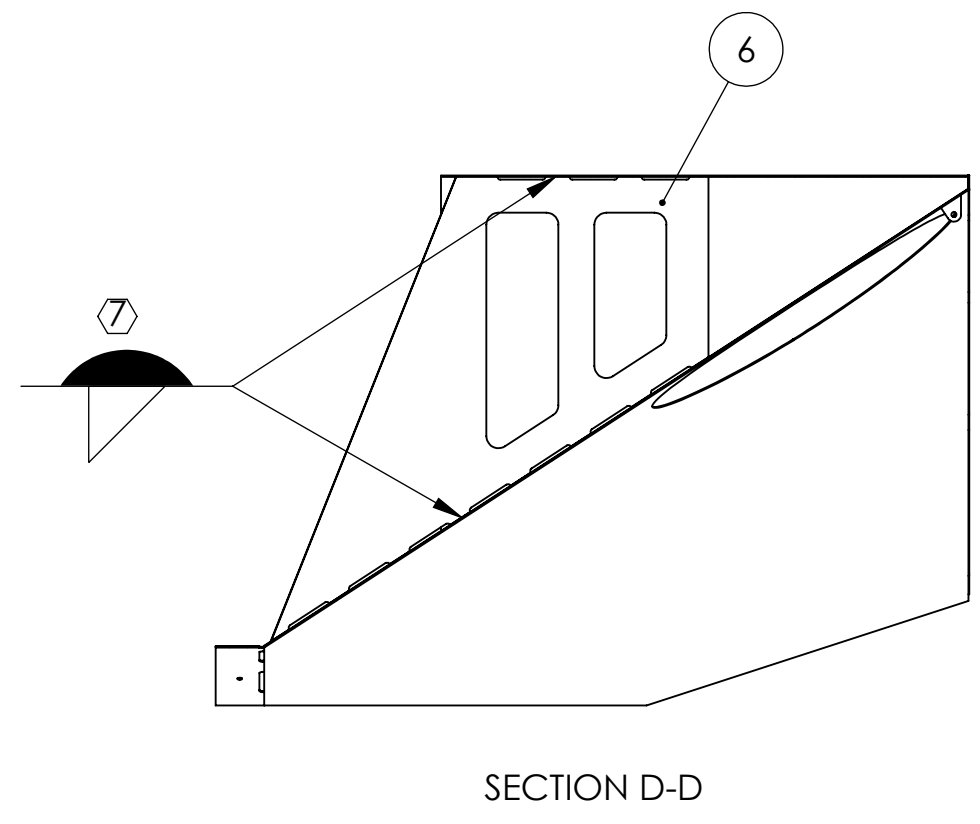
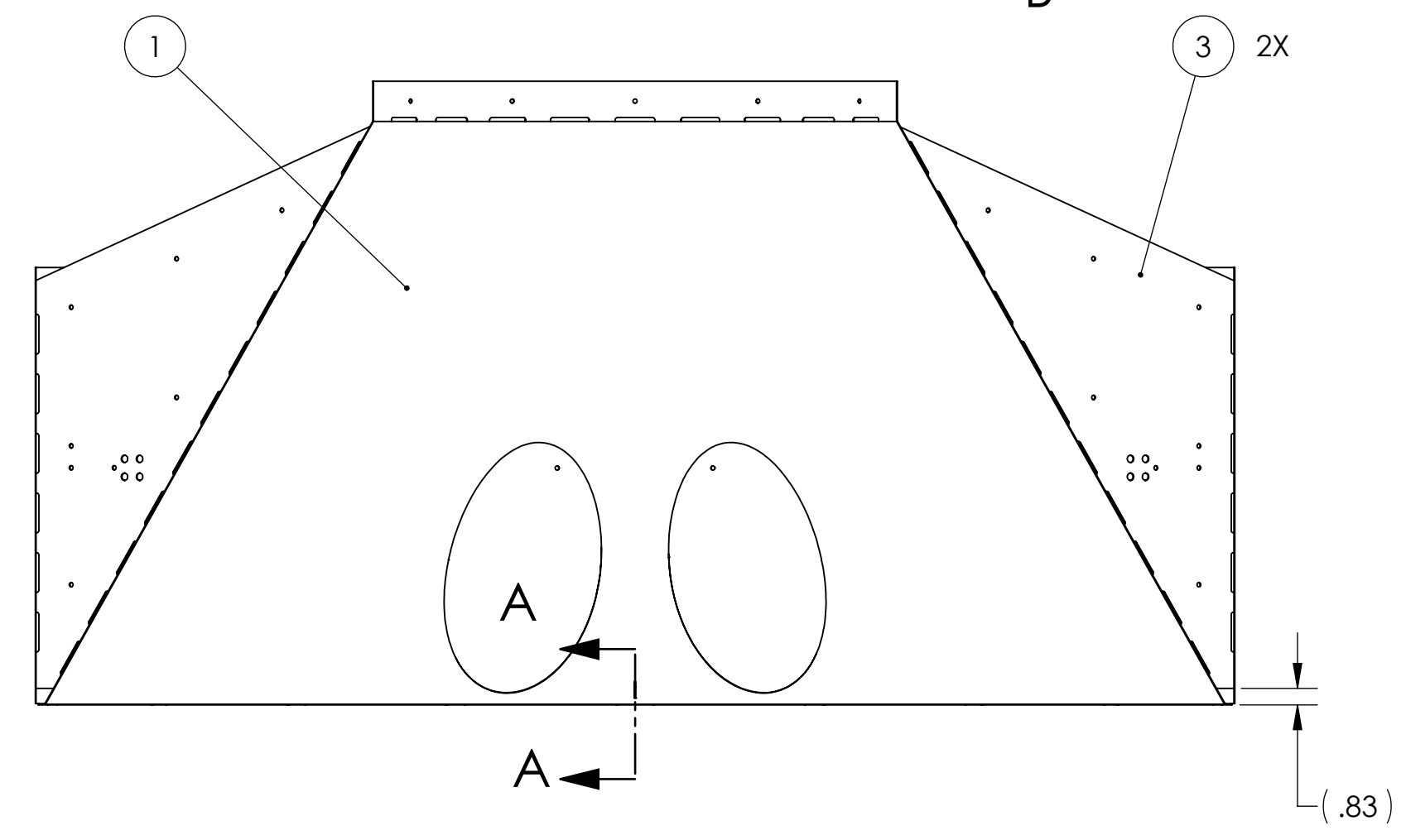
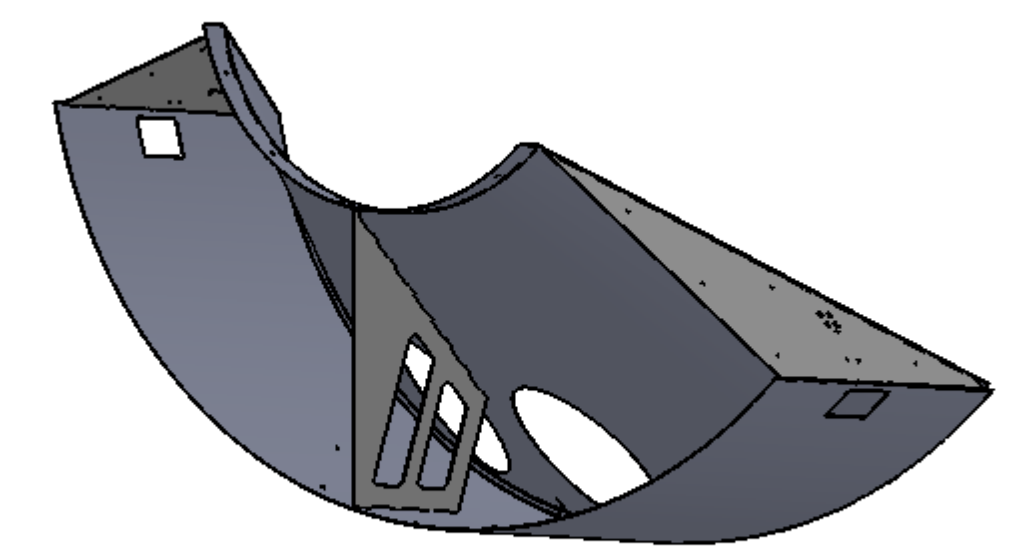
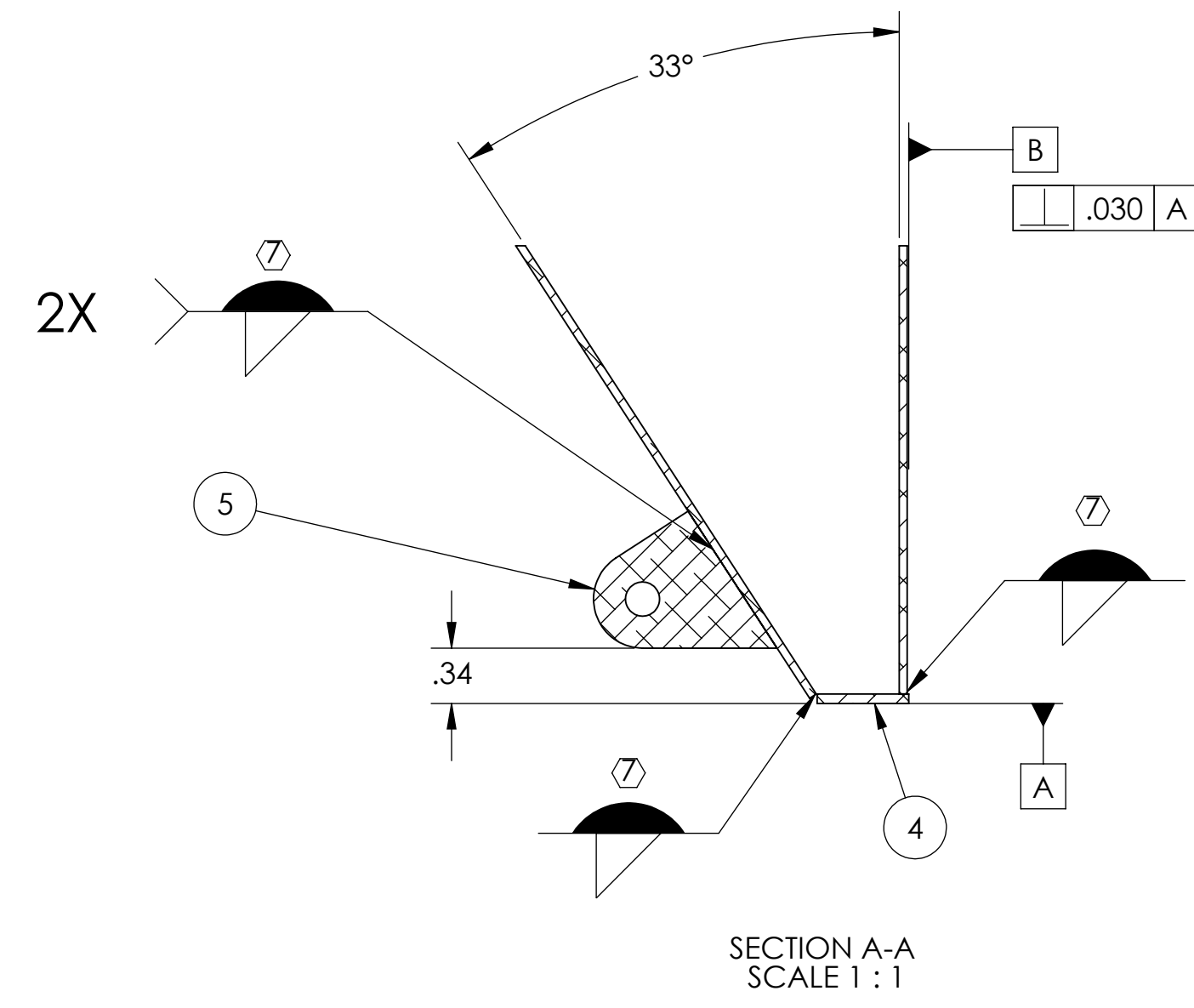
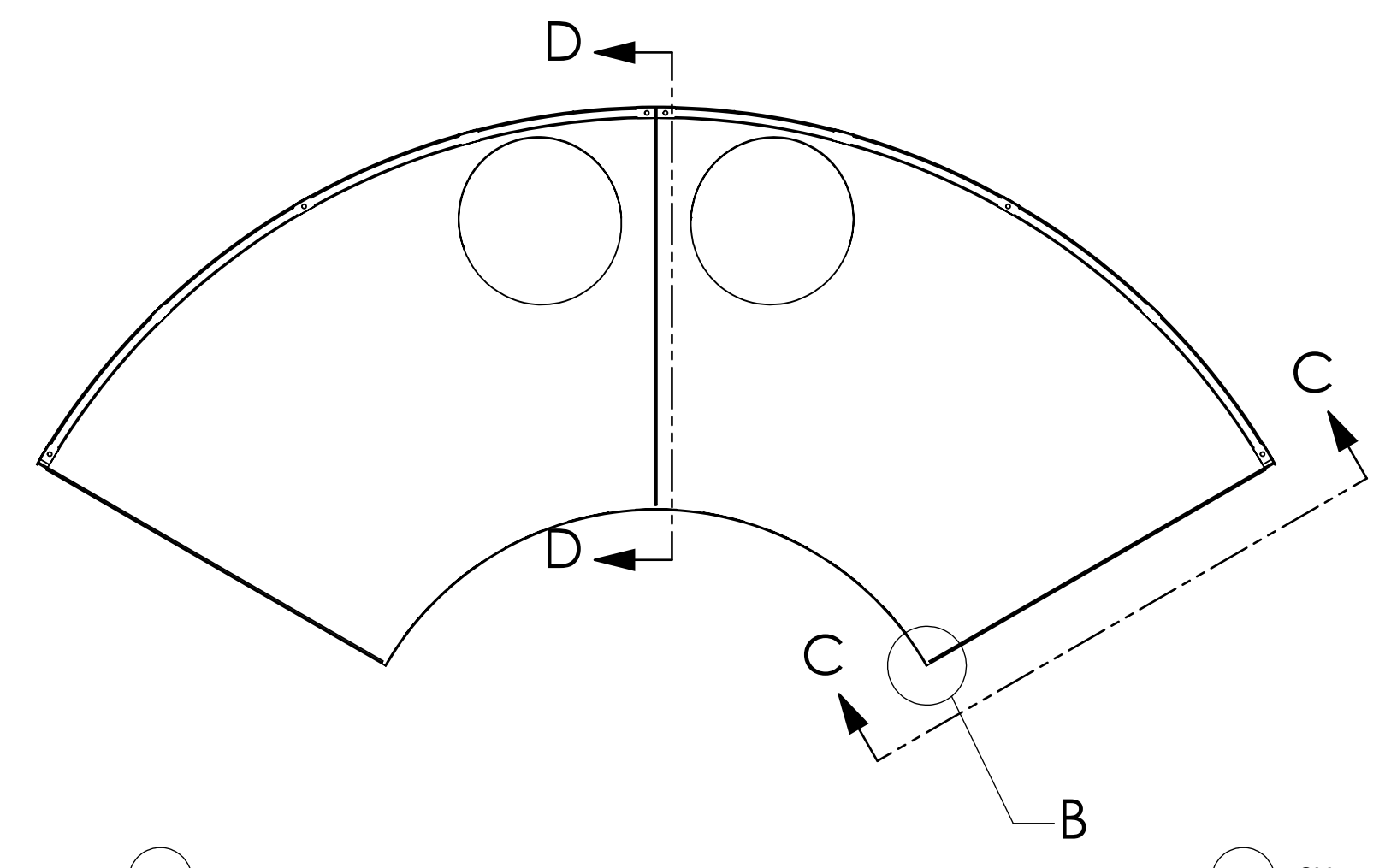
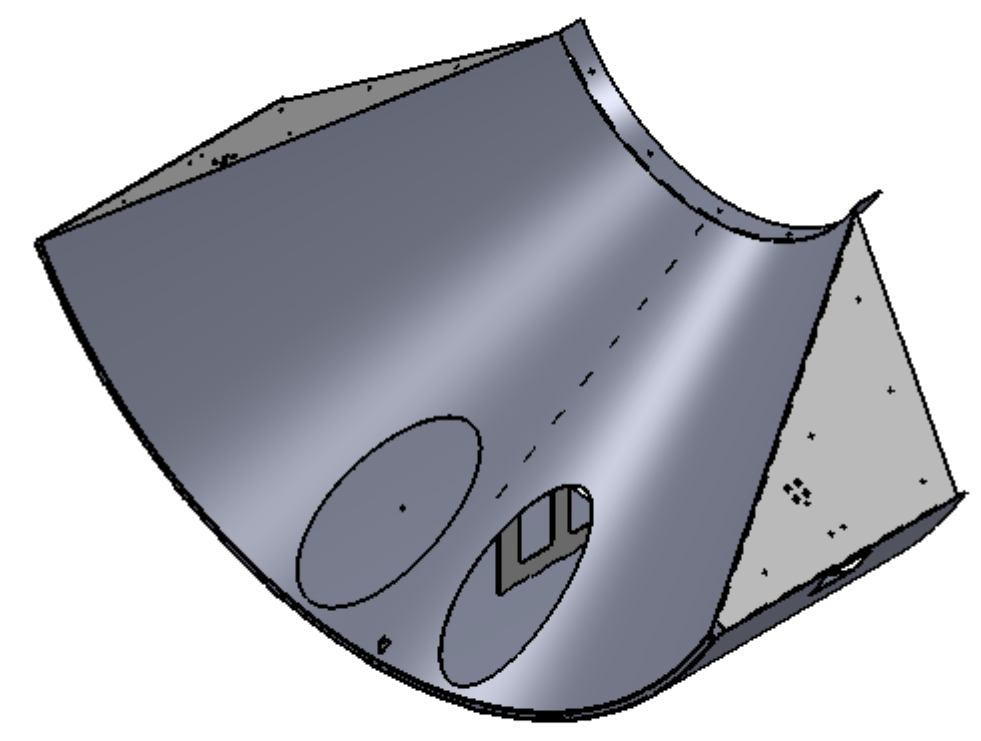
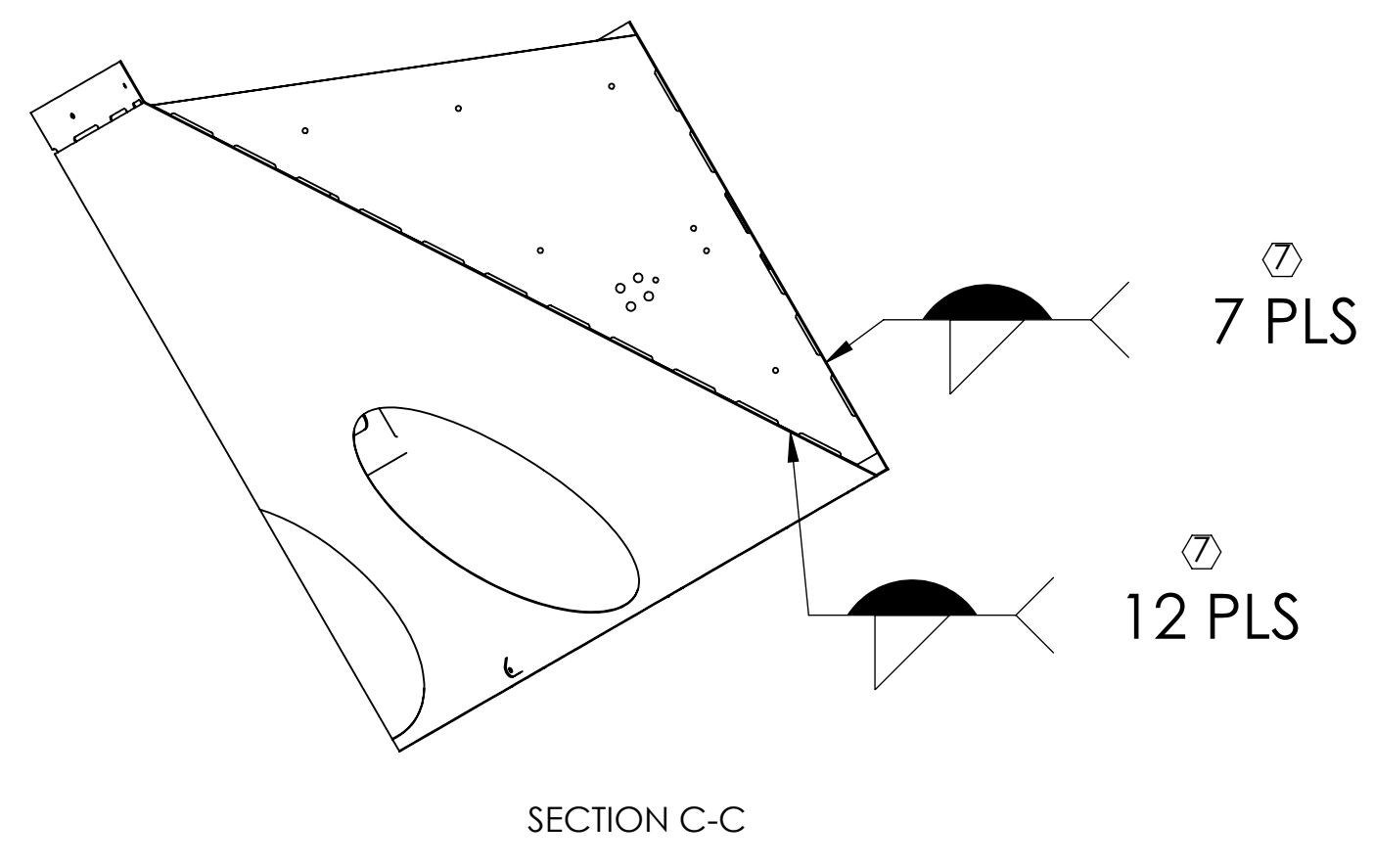
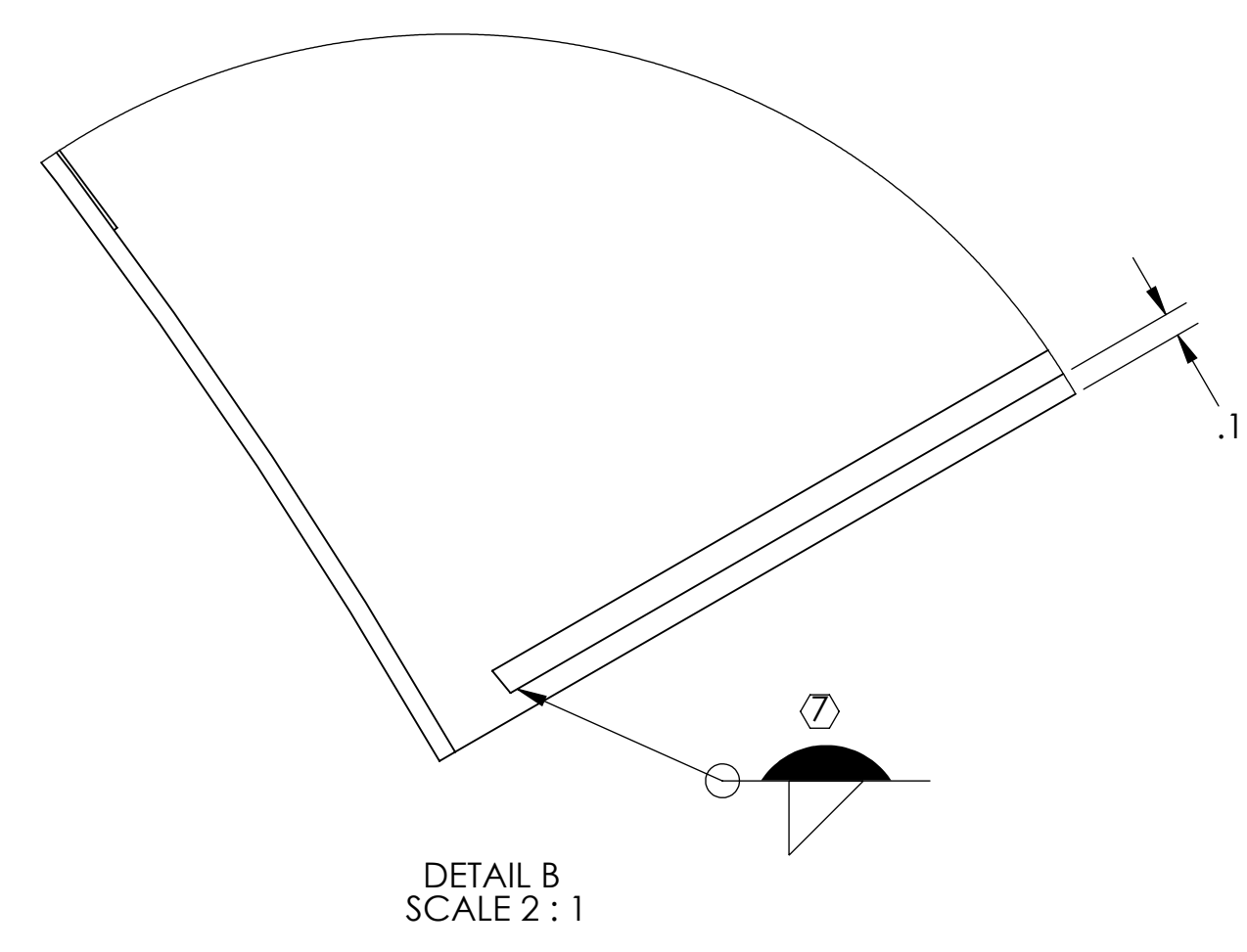
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NOTES CONTINUED:
 5. SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR TYPE IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE

6. ASSEMBLY TO BE OXIDIZED AFTER WELDMENT IS COMPLETED PER SPECIFICATION E1100842.

7. FILLET WELDS WHERE ITEMS MAKE CONTACT. WELDING MUST BE PER SPECIFICATION E0900048.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 17 MAR 2010 | E1000360 | E1000085 |
| v2 | 9 MAY 2011 | E1000360-v2 | - |
| v3 | 6 OCT 2011 | E1000360-v3 | - |



| ITEM NO. | PART NUMBER | DESCRIPTION | MATERIAL | REQ | SPARE | TOTAL |
|----------|-------------|--|-------------------|-----|-------|-------|
| 6 | D1002849 | MANIFOLD CRYO BAFFLE WELDMENT BRACE | 14 GAUGE 304 SSSL | 1 | | 1 |
| 5 | D1000536 | BAFFLE BRACE BRACKET | 14 GAUGE 304 SSSL | 1 | | 1 |
| 4 | D1001073 | RADIAL ATTACHMENT NUT PLATE | 14 GAUGE 304 SSSL | 1 | | 1 |
| 3 | D0902621 | MANIFOLD CRYO BAFFLE BRACKET | 14 GAUGE 304 SSSL | 2 | | 2 |
| 2 | D0902620 | RADIAL SEGMENT, BOTTOM | 18 GAUGE 304 SSSL | 1 | | 1 |
| 1 | D0902623 | MANIFOLD-CRYO BAFFLE INNER SEGMENT, ITM XY, BOTTOM | 18 GAUGE 304 SSSL | 1 | | 1 |

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

- INTERPRET DRAWING PER ASME Y14.5-1994.
- REMOVE ALL SHARP EDGES, .005-.015 FOR EDGES AND HOLES.
- DO NOT SCALE FROM DRAWING.
- ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

DIMENSIONS ARE IN INCHES

TOLERANCES:
 .X ± .1
 .XX ± .06
 .XXX ± .010

ANGULAR ± 1.0°

MATERIAL: N/A FINISH: N/A

LOGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO SUB-SYSTEM: AOS NEXT ASSY: D1101398

PART NAME: MANIFOLD -CRYO BAFFLE SEGMENT SUBASSEMBLY WELDMENT, ITM XY, BOTTOM

DESIGNER: H. KELMAN 17 MAR 2010 SIZE: DWG. NO. D0902655 REV. v3
 DRAFTER: TQ. NGUYEN 03 SEP 2010
 CHECKER: M. SMITH
 APPROVAL: D. COYNE

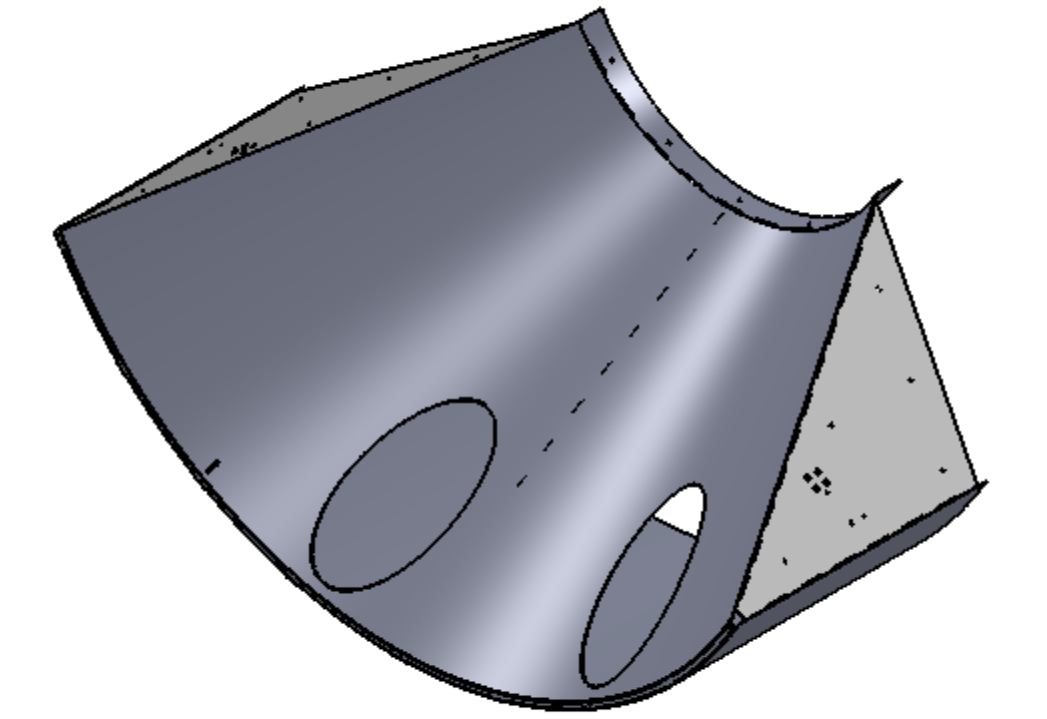
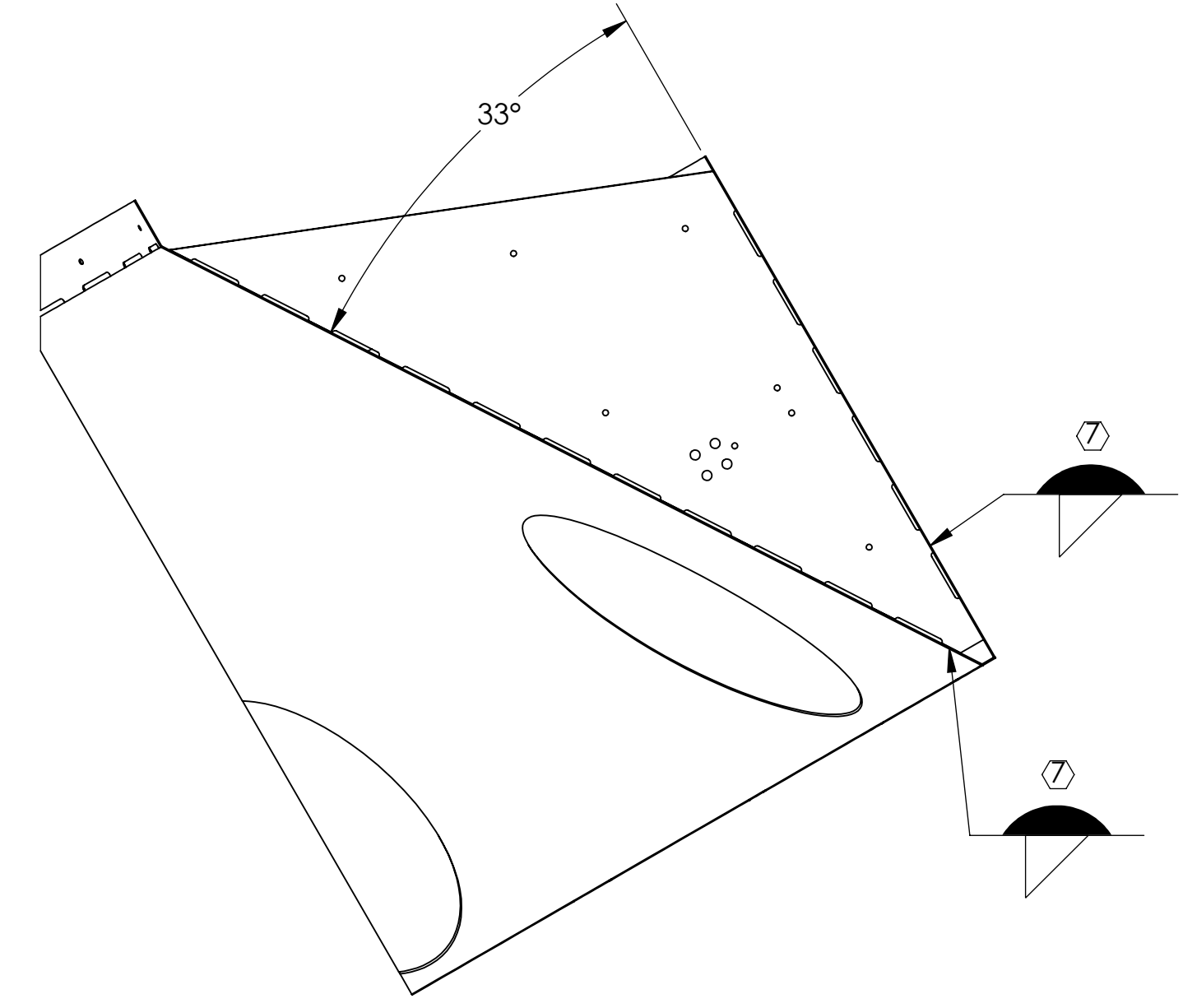
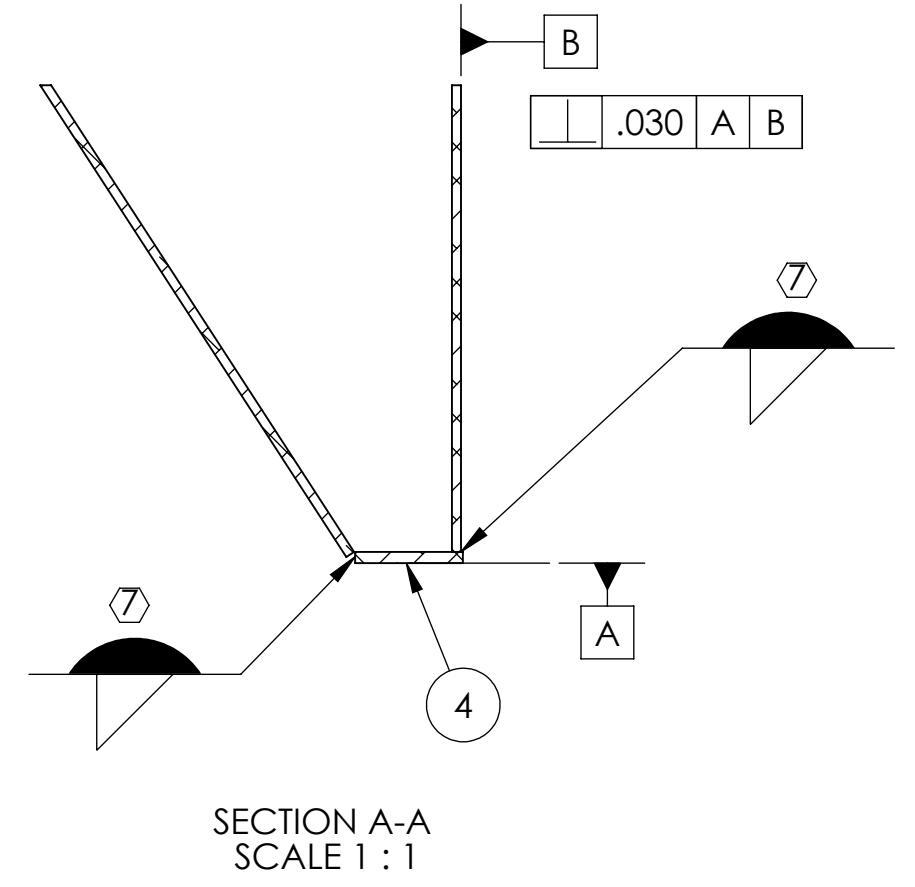
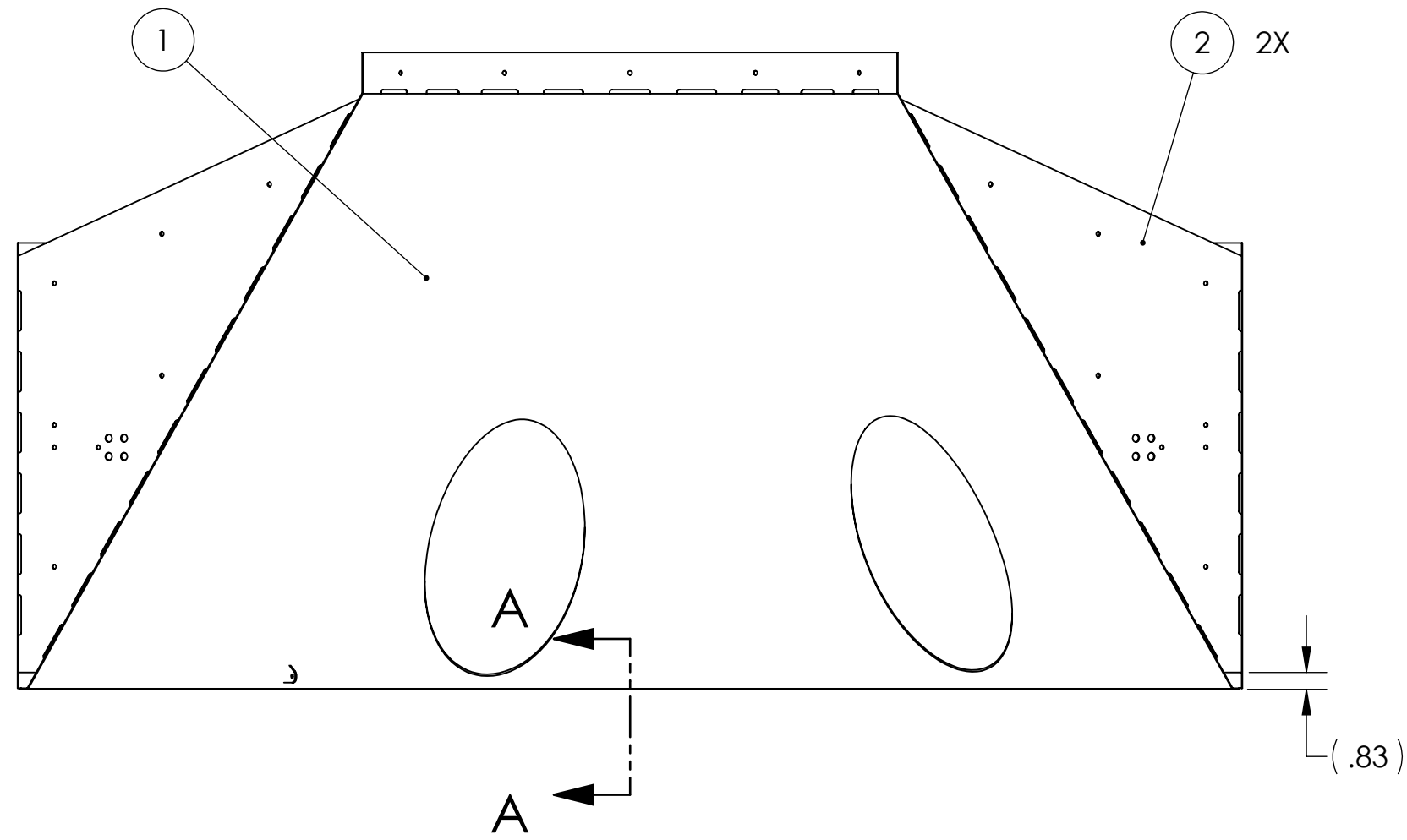
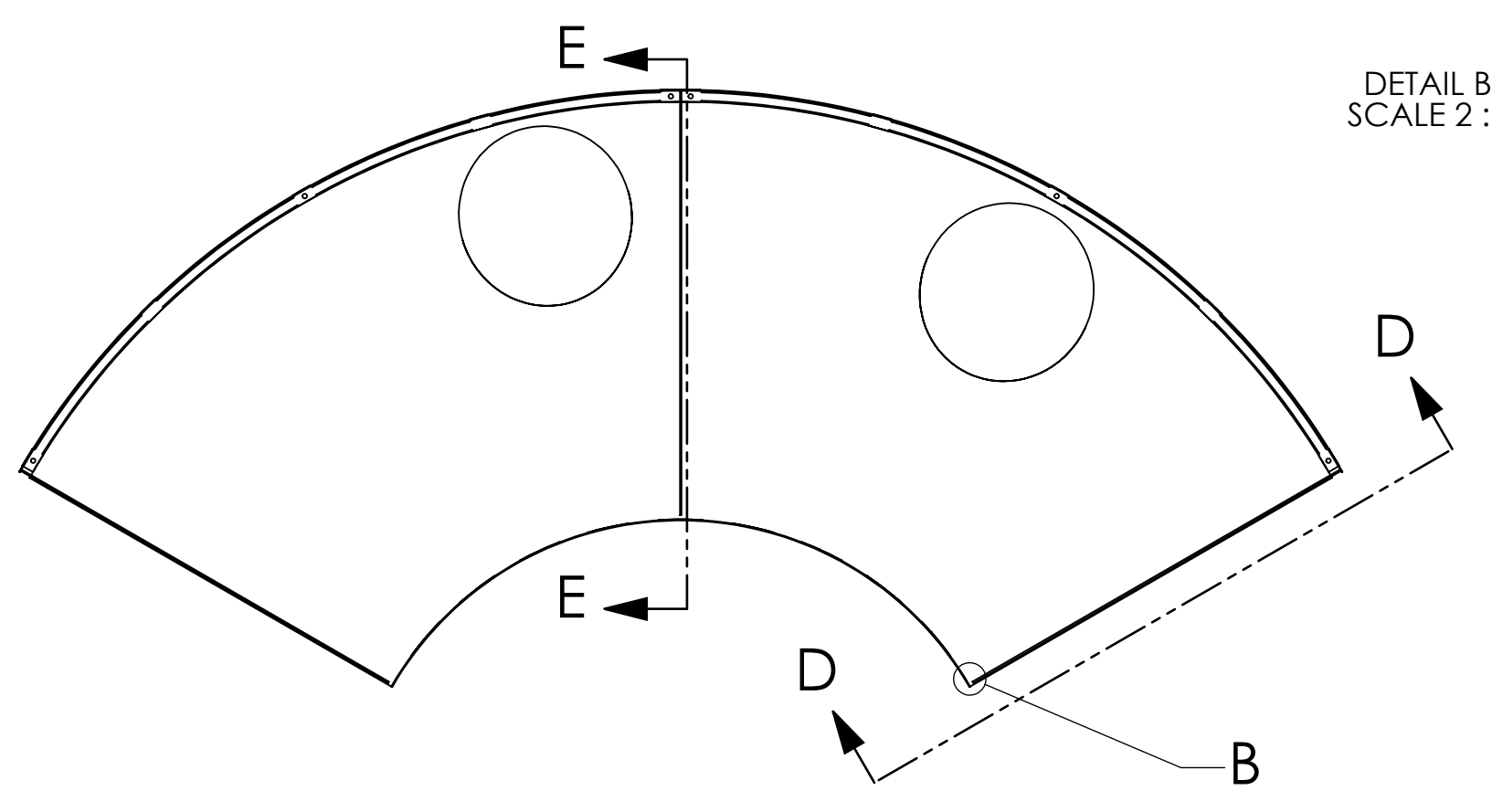
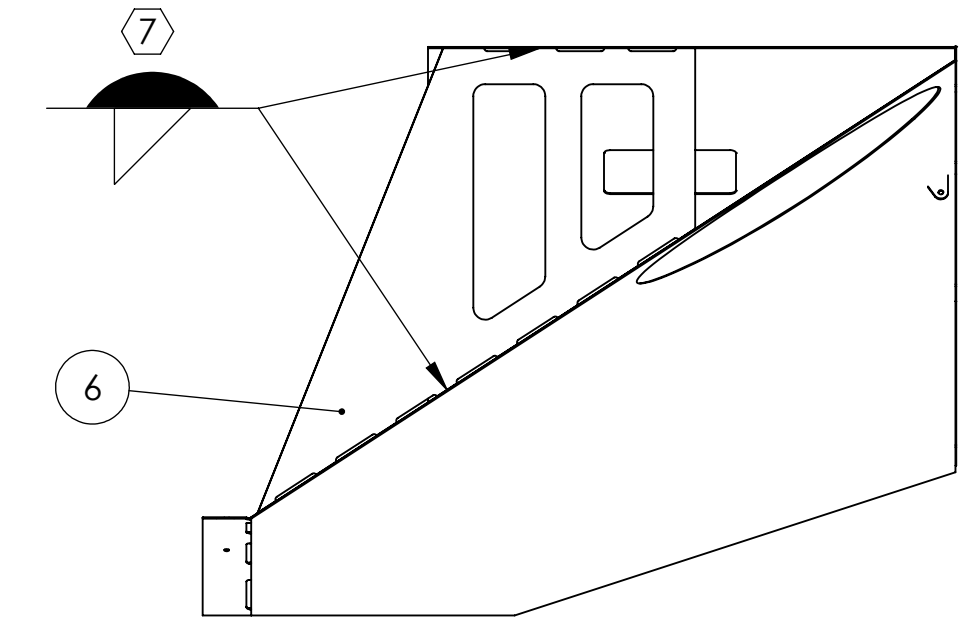
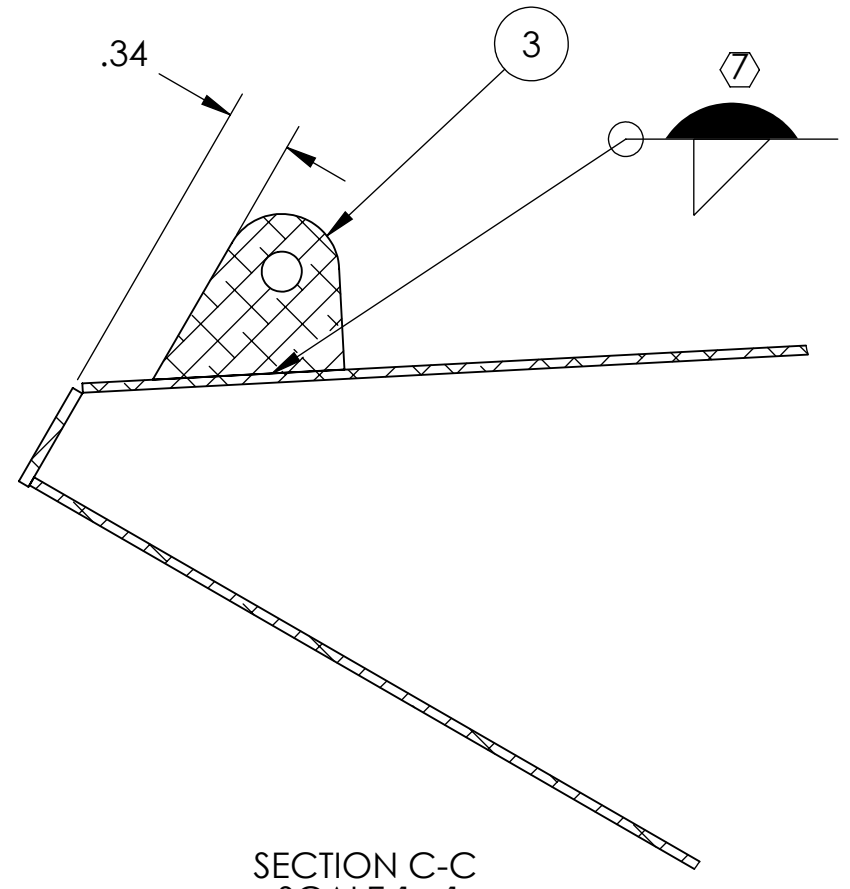
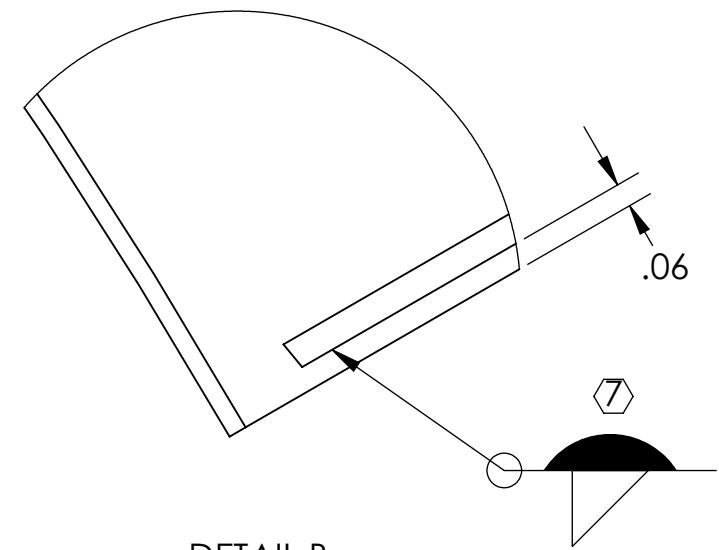
SCALE: 1:8 PROJECTION: SHEET 1 OF 1

D:\0902655 at LIGO_Monfield_Cryo_Baffle_Segment_Subassembly_Weldment_ITM_XY_Bottom_PART_PDM_REV_X090_Drawing_PDM_REV_X034

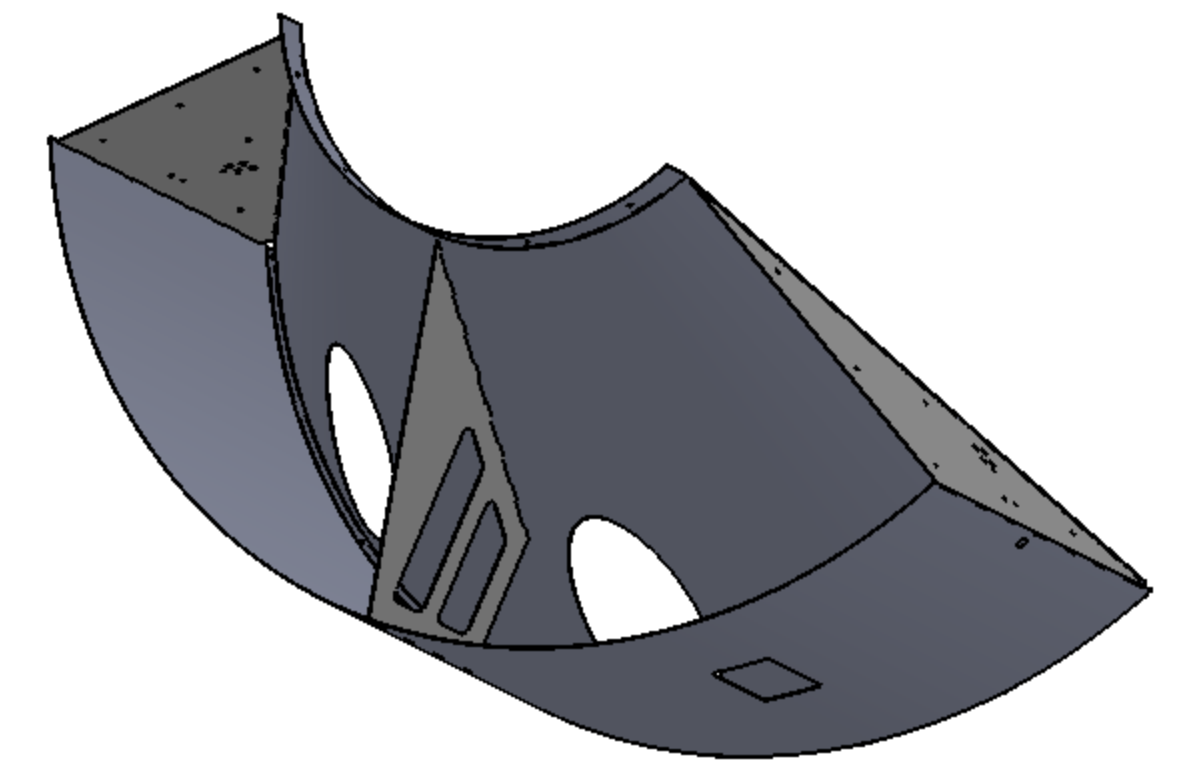
NOTES CONTINUED:
 ⑤ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR TYPE IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE

6. ASSEMBLY TO BE OXIDIZED AFTER WELDMENT IS COMPLETED PER SPECIFICATION E1100842.

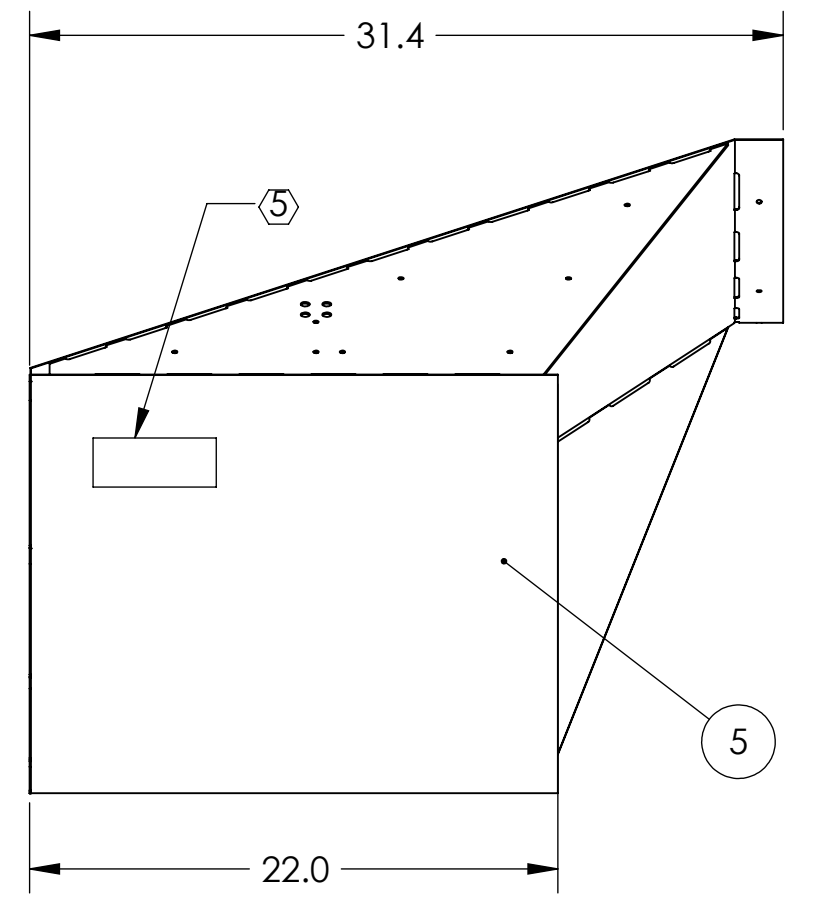
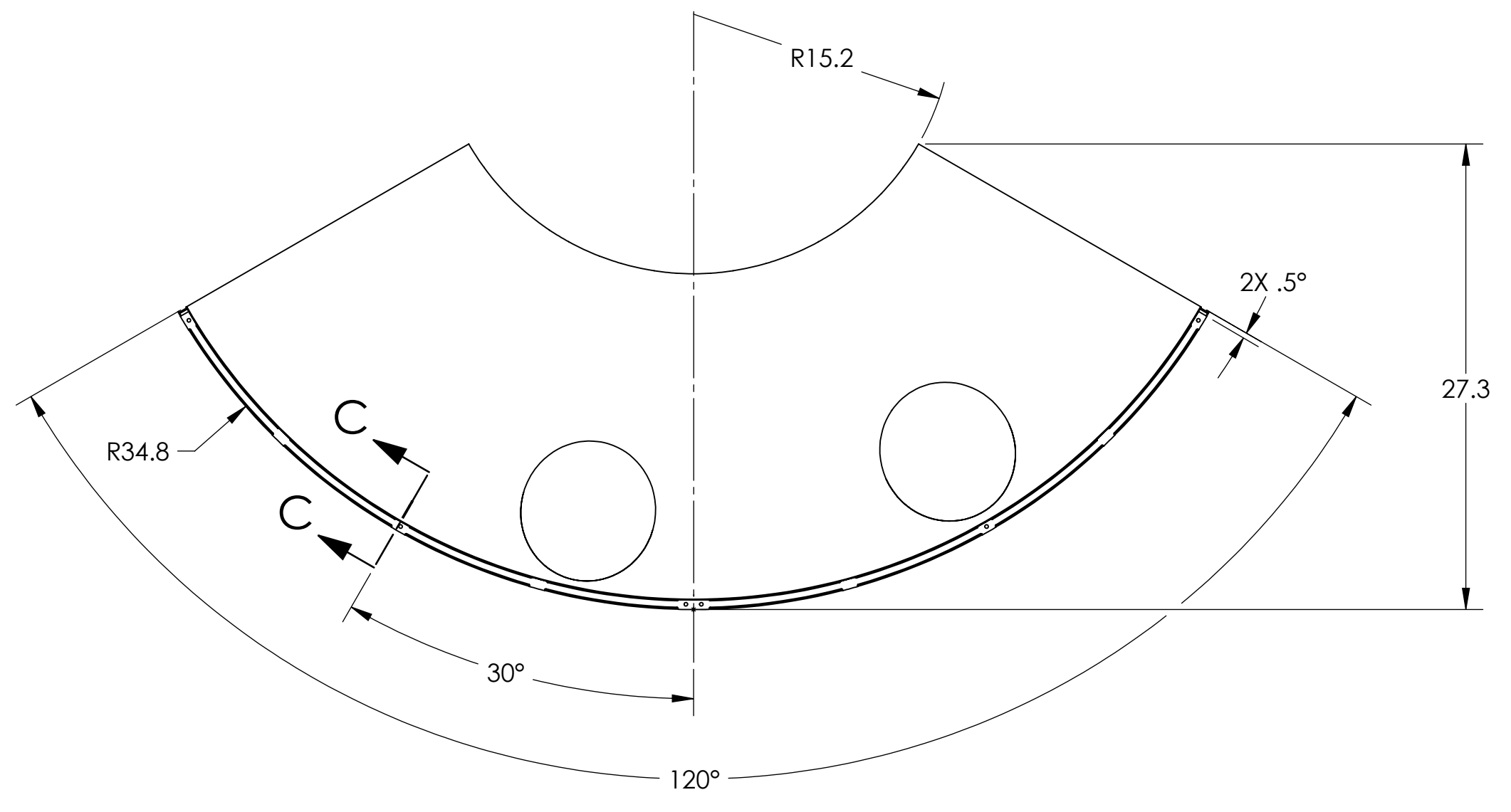
⑦ FILLET WELDS WHERE ITEMS MAKE CONTACT. WELDING MUST BE PER SPECIFICATION E0900048.



GENERAL VIEW FOR REFERENCE ONLY NO SCALE



GENERAL VIEW FOR REFERENCE ONLY NO SCALE



| ITEM NO. | PART NUMBER | DESCRIPTION | MATERIAL | REQ | SPARE | TOTAL |
|----------|-------------|---|-------------------|-----|-------|-------|
| 6 | D1002849 | MANIFOLD CRYO BAFFLE WELDMENT BRACE | 14 GAUGE 304 SSSL | 1 | | 1 |
| 5 | D1000558 | RADIAL SEGMENT, LEFT | 18 GAUGE 304 SSSL | 1 | | 1 |
| 4 | D1001073 | RADIAL ATTACHMENT NUT PLATE | 14 GAUGE 304 SSSL | 1 | | 1 |
| 3 | D1000536 | BAFFLE BRACE BRACKET | 14 GAUGE 304 SSSL | 1 | | 1 |
| 2 | D0902621 | MANIFOLD CRYO BAFFLE BRACKET | 14 GAUGE 304 SSSL | 2 | | 2 |
| 1 | D0902622 | MANIFOLD-CRYO BAFFLE INNER SEGMENT WELDMENT, ITM XY, LEFT | 18 GAUGE 304 SSSL | 1 | | 1 |

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
|--|-----|
| 1. INTERPRET DRAWING PER ASME Y14.5-1994. | |
| 2. REMOVE ALL SHARP EDGES, .005-.015 FOR ALL EDGES AND HOLES. | |
| 3. DO NOT SCALE FROM DRAWING. | |
| 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | |
| DIMENSIONS ARE IN INCHES | |
| TOLERANCES: | |
| .X ± .1 | |
| .XX ± .06 | |
| .XXX ± .010 | |
| ANGULAR ± 1.0° | |
| MATERIAL | N/A |
| FINISH | N/A |

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: **ADVANCED LIGO** SUB-SYSTEM: **AOS**

PART NAME: **MANIFOLD-CRYO BAFFLE SEGMENT SUBASSEMBLY WELDMENT, ITM XY, LEFT**

DESIGNER: H. KELMAN 20 MAY 2010 SIZE: D DWG. NO.: **D0902656** REV.: **v3**

DRAFTER: TQ. NGUYEN 07 SEP 2010

CHECKER: M. SMITH

APPROVAL: D. COYNE

SCALE: 1:8 PROJECTION:

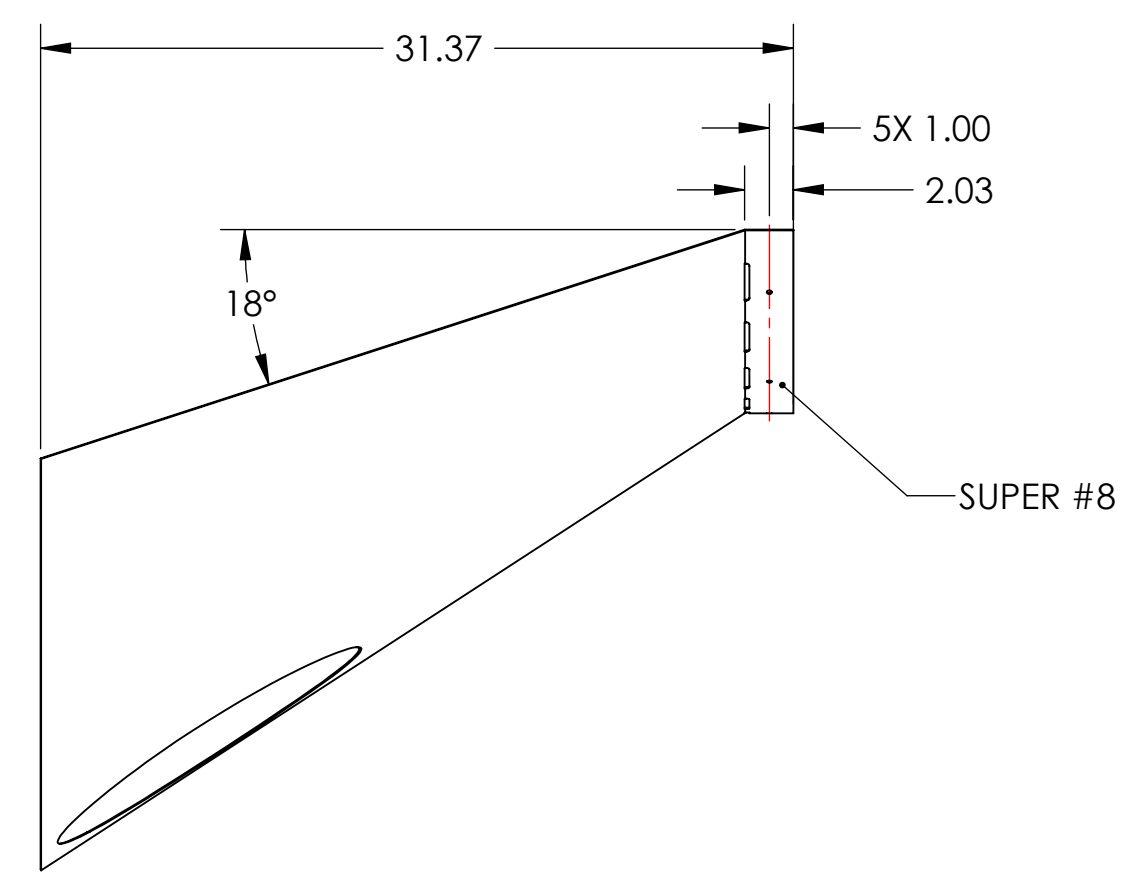
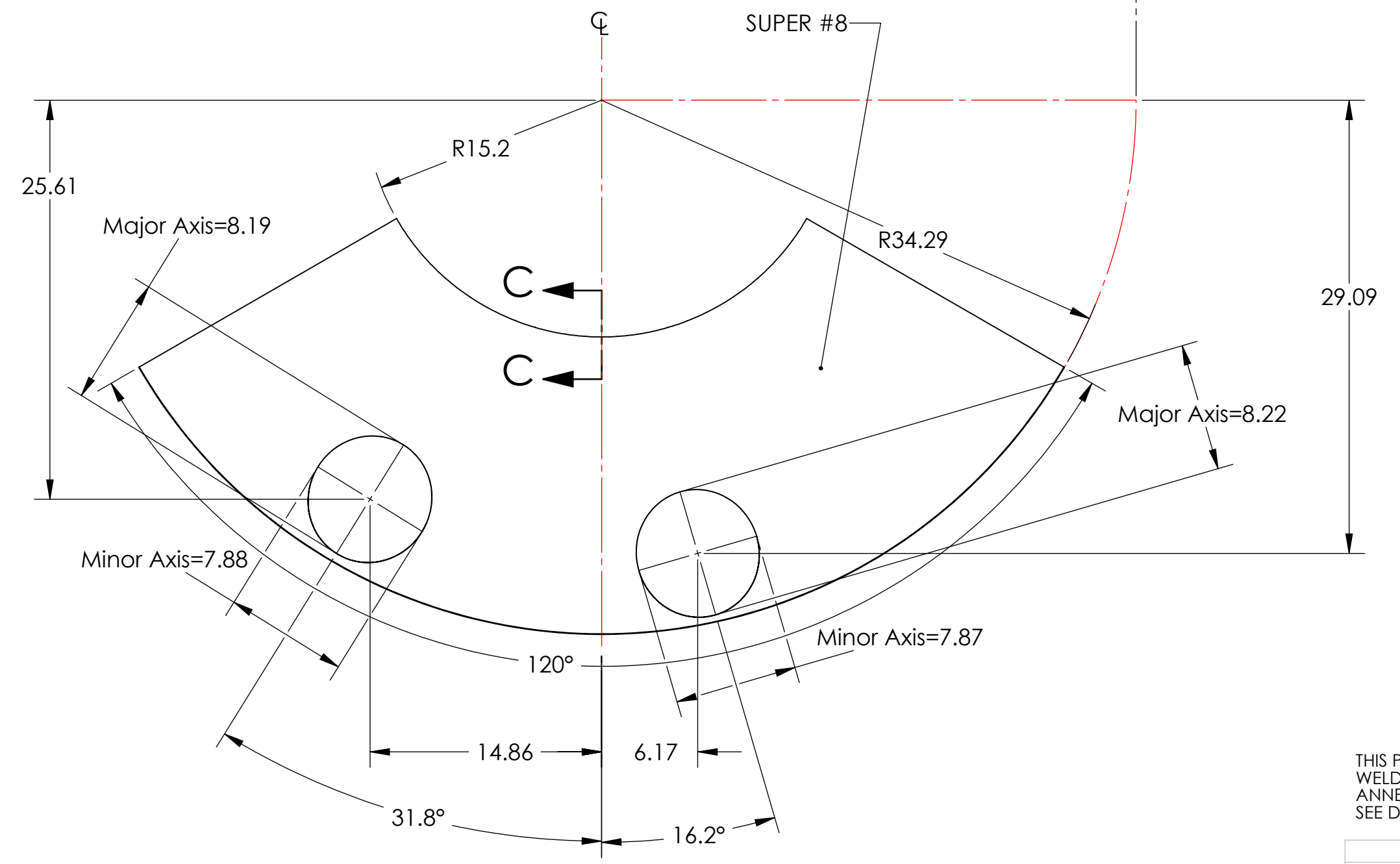
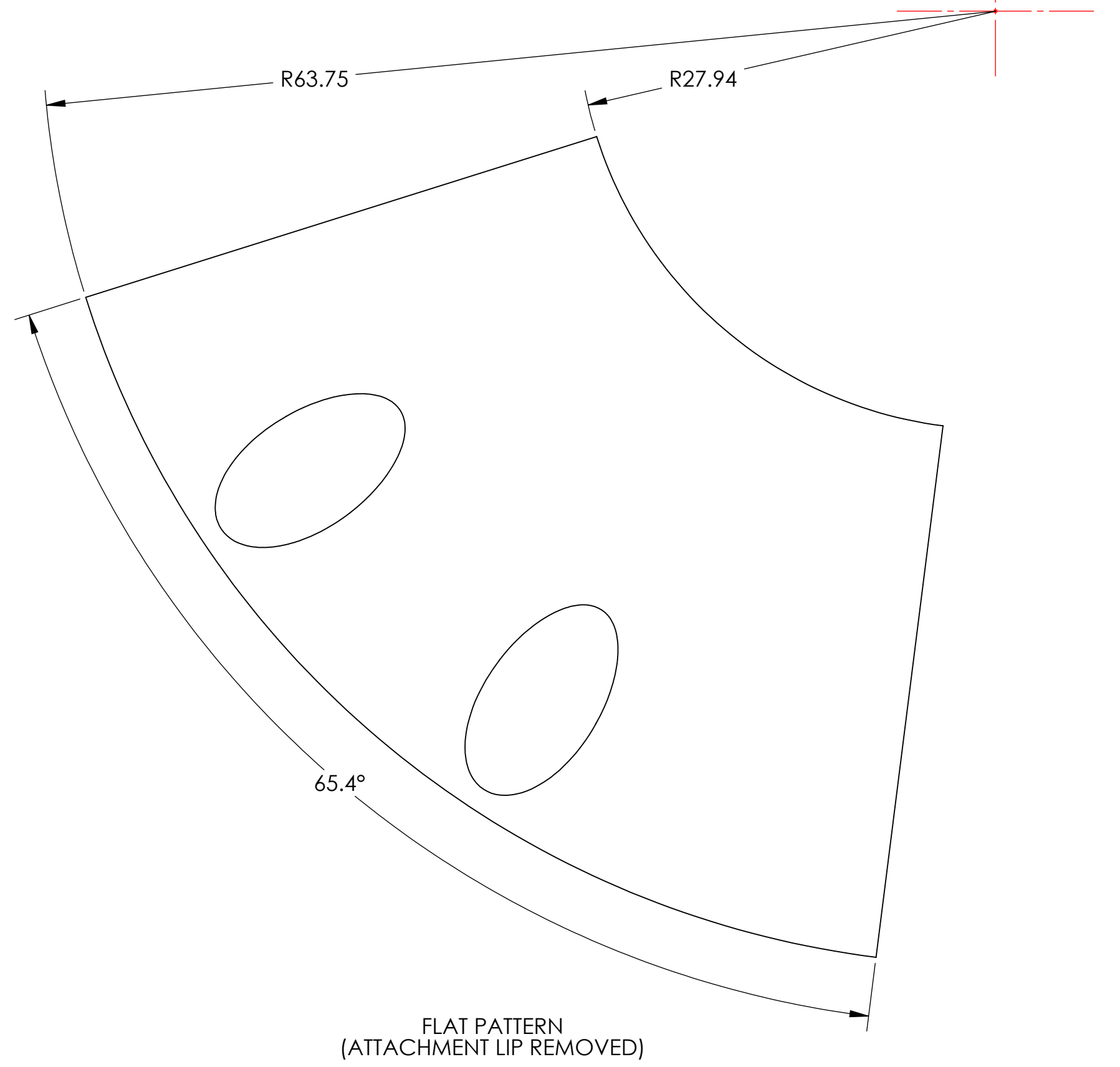
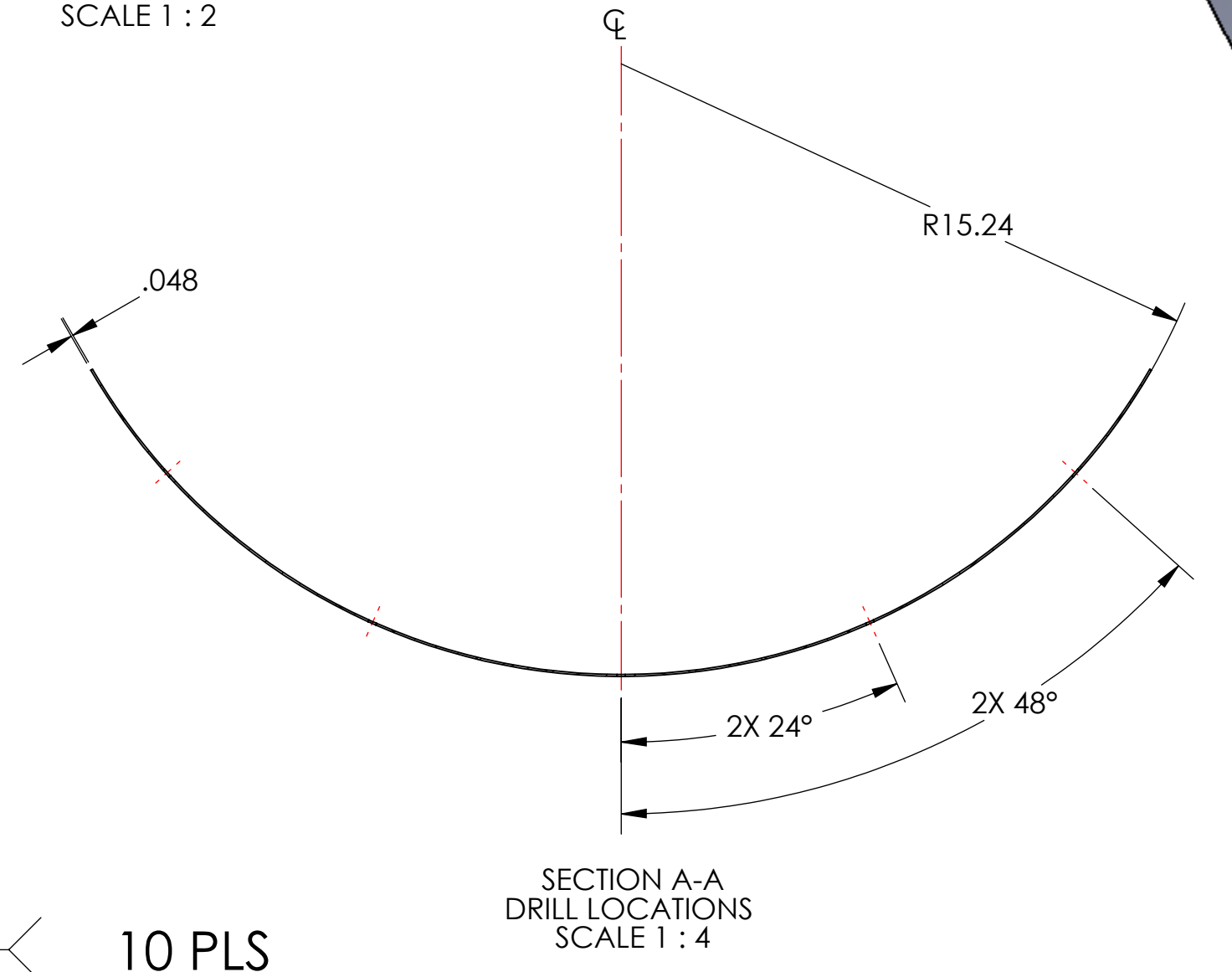
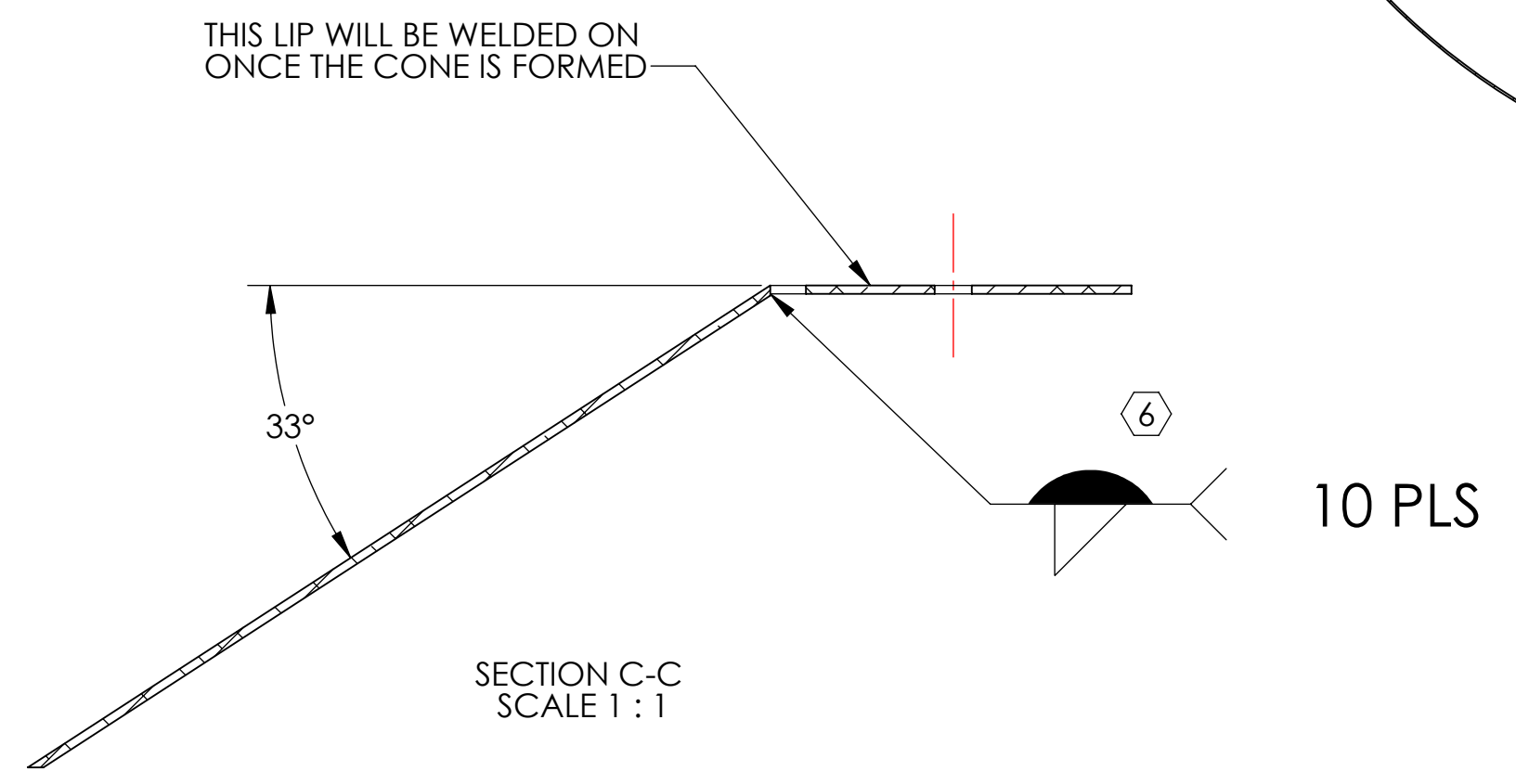
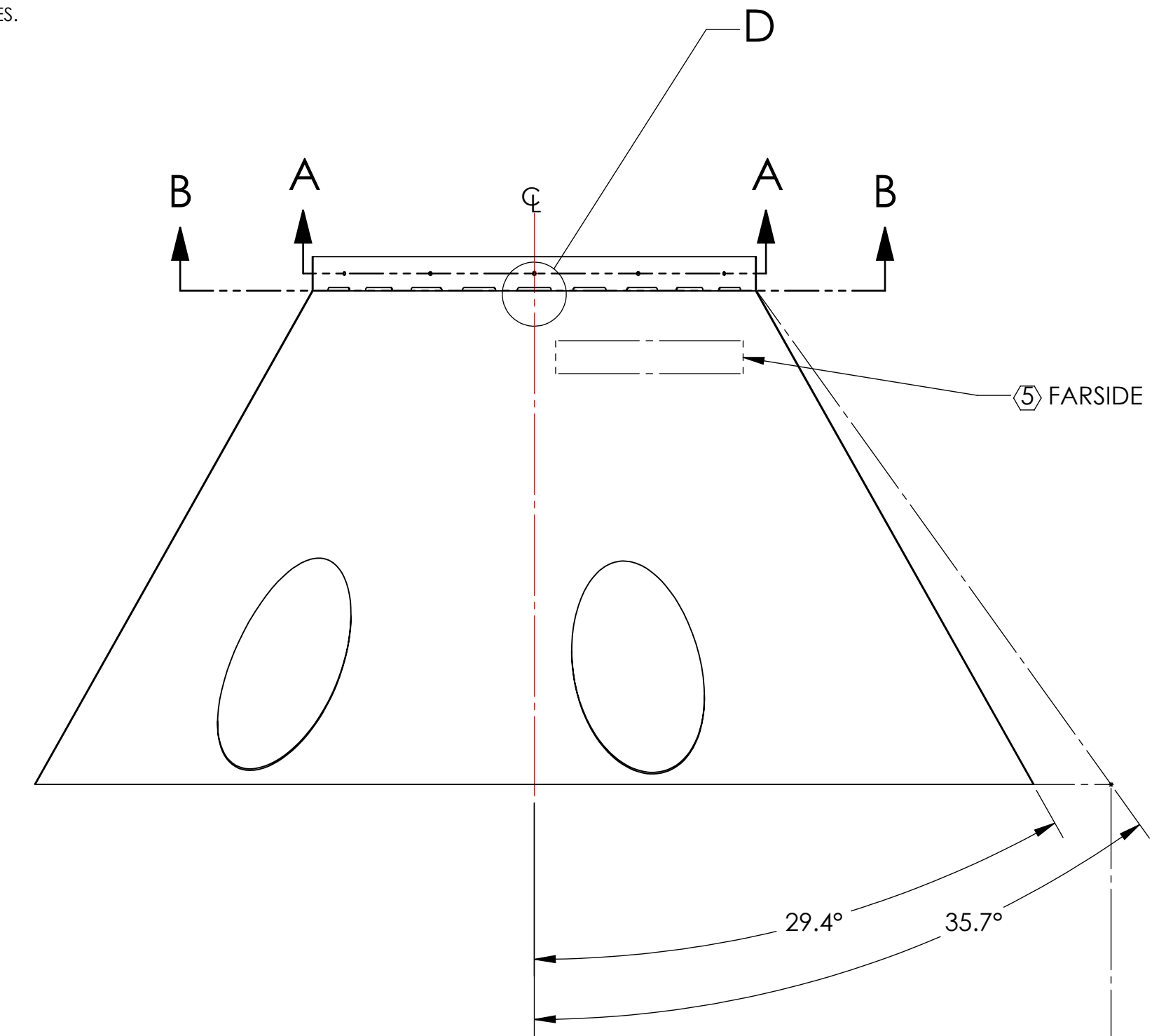
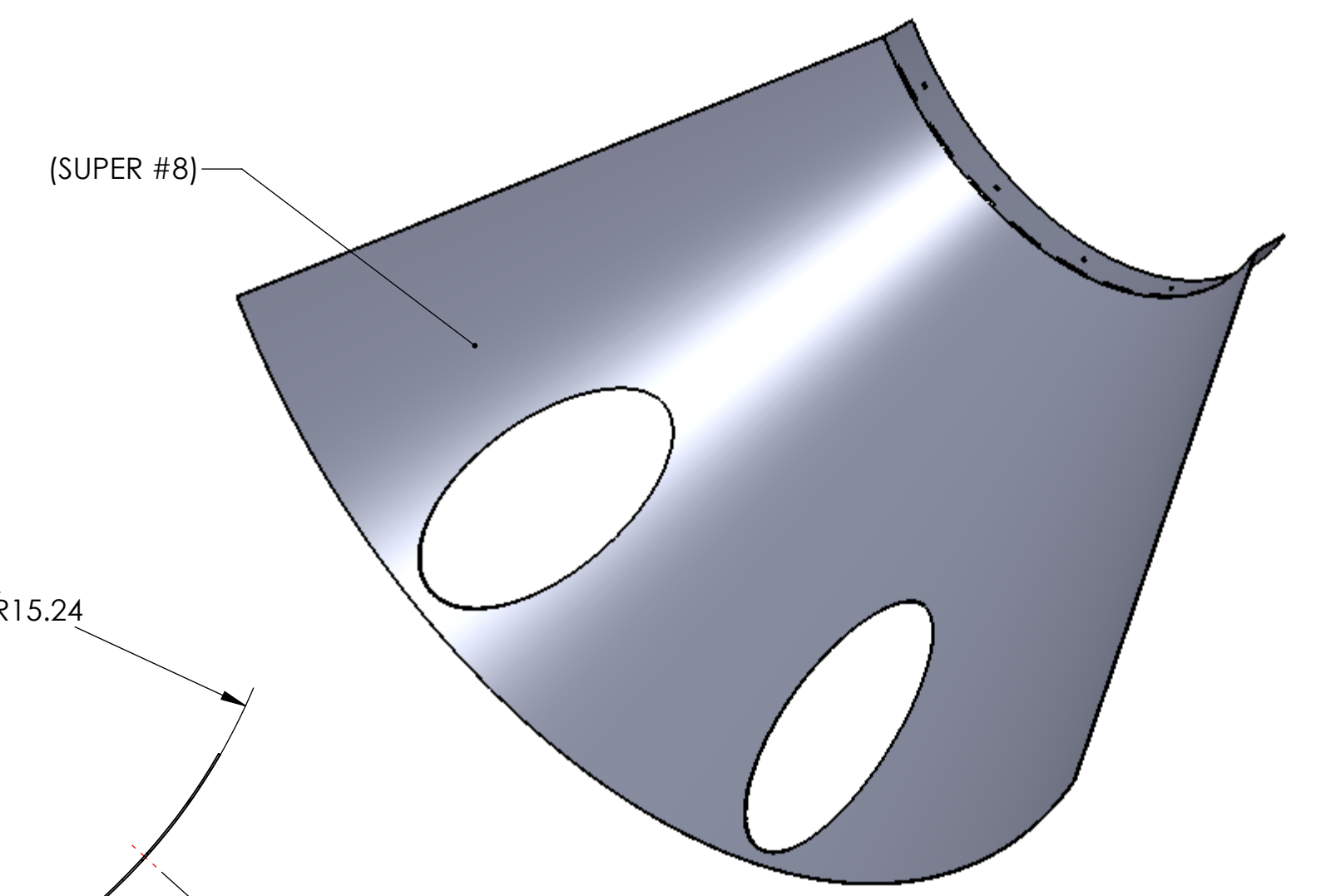
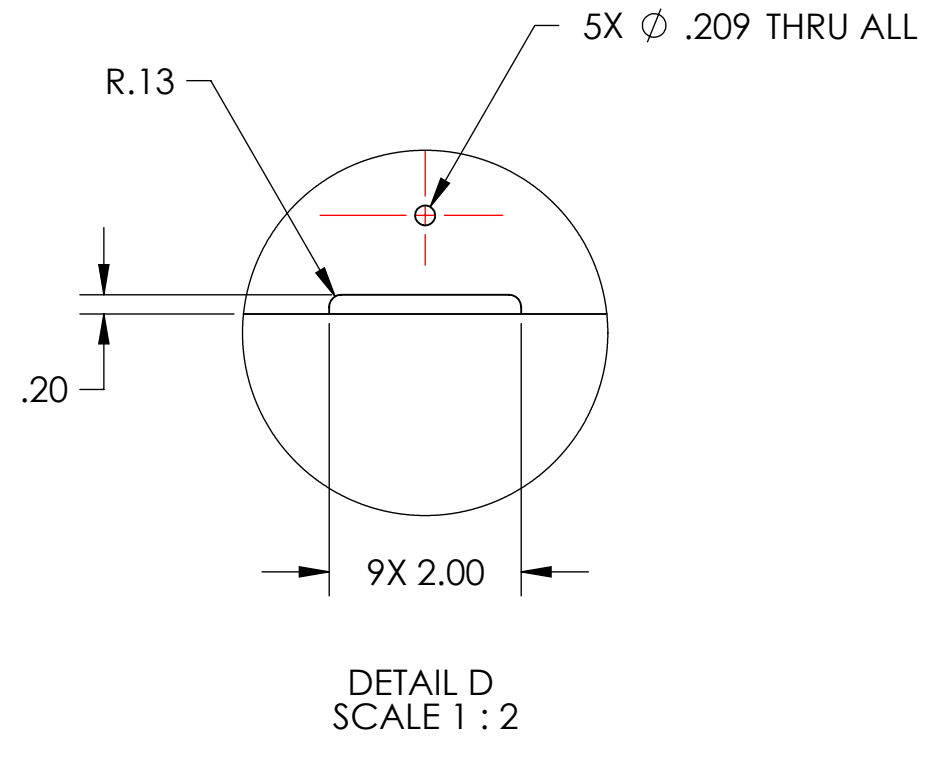
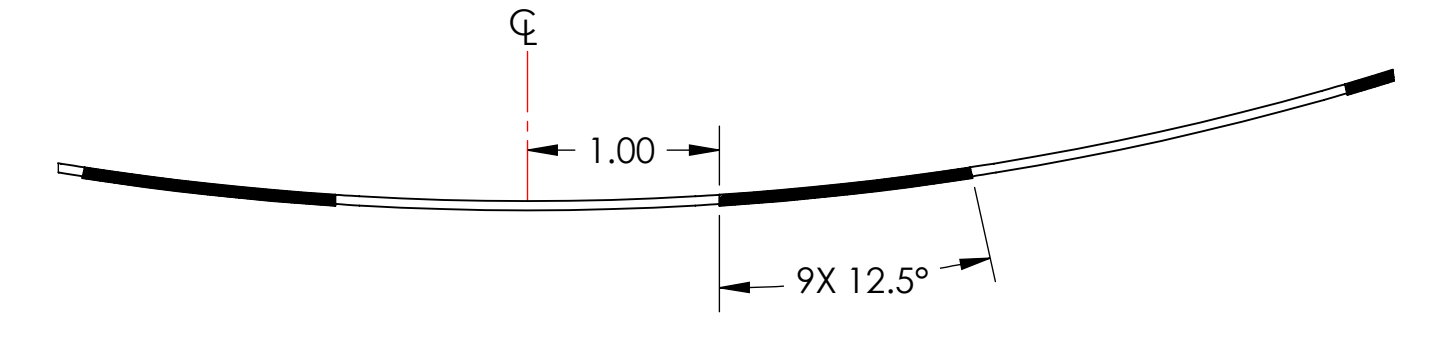
SHEET 1 OF 1

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 20 MAY 2010 | E1000360 | E1000090 |
| v2 | 9 MAY 2011 | E1000360-V2 | - |
| v3 | 6 OCT 2011 | E1000360-V3 | - |

D0902656.dwg; Manifold_Cryo_Baffle_Segment_Weldment; ITM XY, LEFT; PART PDM REV: X064; DRAWING PDM REV: X022

- NOTES CONTINUED:
- 5. SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE
 - 6. CONE AND LIP TO BE WELDED WHERE PIECES MAKE CONTACT. WELDING MUST BE PER SPECIFICATION E0900048.
 - 7. DELETED
 - 8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
 - 9. ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.
 - 10. SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 1 SEP 2010 | E1000360 | E1000091 |
| v2 | 12 MAY 2011 | E1000360-v2 | - |
| v3 | 13 SEP 2011 | E1000360-v3 | - |



THIS PIECE IS PART OF A WELDMENT. DIMENSIONS SHOWN ARE APPROXIMATE; WELD INDUCED SHRINKAGE OR FILL, AND POST WELD ANNEALING AND MACHINING CONSIDERATIONS ARE NOT INCLUDED. SEE D0902654 FOR REQUIRED DIMENSIONS FOR STRUCTURE AFTER WELDMENT.

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
|--|-------------|
| DIMENSIONS ARE IN INCHES | |
| TOLERANCES: .XX ± .06 .XXX ± .010 | |
| ANGULAR ± 0.5° | |
| MATERIAL | FINISH |
| 18 GAUGE 304 SSSL | 10 SUPER #8 |

| | | | |
|---|----------------------------|---|-----------------------------|
| CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME MANIFOLD-CRYO BAFFLE INNER SEGMENT WELDMENT, ITM XY, RIGHT | |
| SYSTEM ADVANCED LIGO | SUB-SYSTEM AOS | DESIGNER H. KELMAN | DATE 12 MAY 2010 |
| CHECKER M. SMITH | DATE 27 SEP 2011 | SIZE D | DWG. NO. D0902619 |
| APPROVAL D. COYNE | SCALE 1:8 | PROJECTION | REV. v3 |
| NEXT ASSY D0902654 | | SHEET 1 OF 1 | |

D0902619.dwg; Manifold_Cryo_Baffle_Inner_Segment; ITM XY, RIGHT; PART PDM; REV: X.041; DRAWING PDM; REV: X.025

NOTES CONTINUED:

⑤ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR TYPE IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXXX. DO NOT APPLY MARK ON SUPER #8 SIDE.

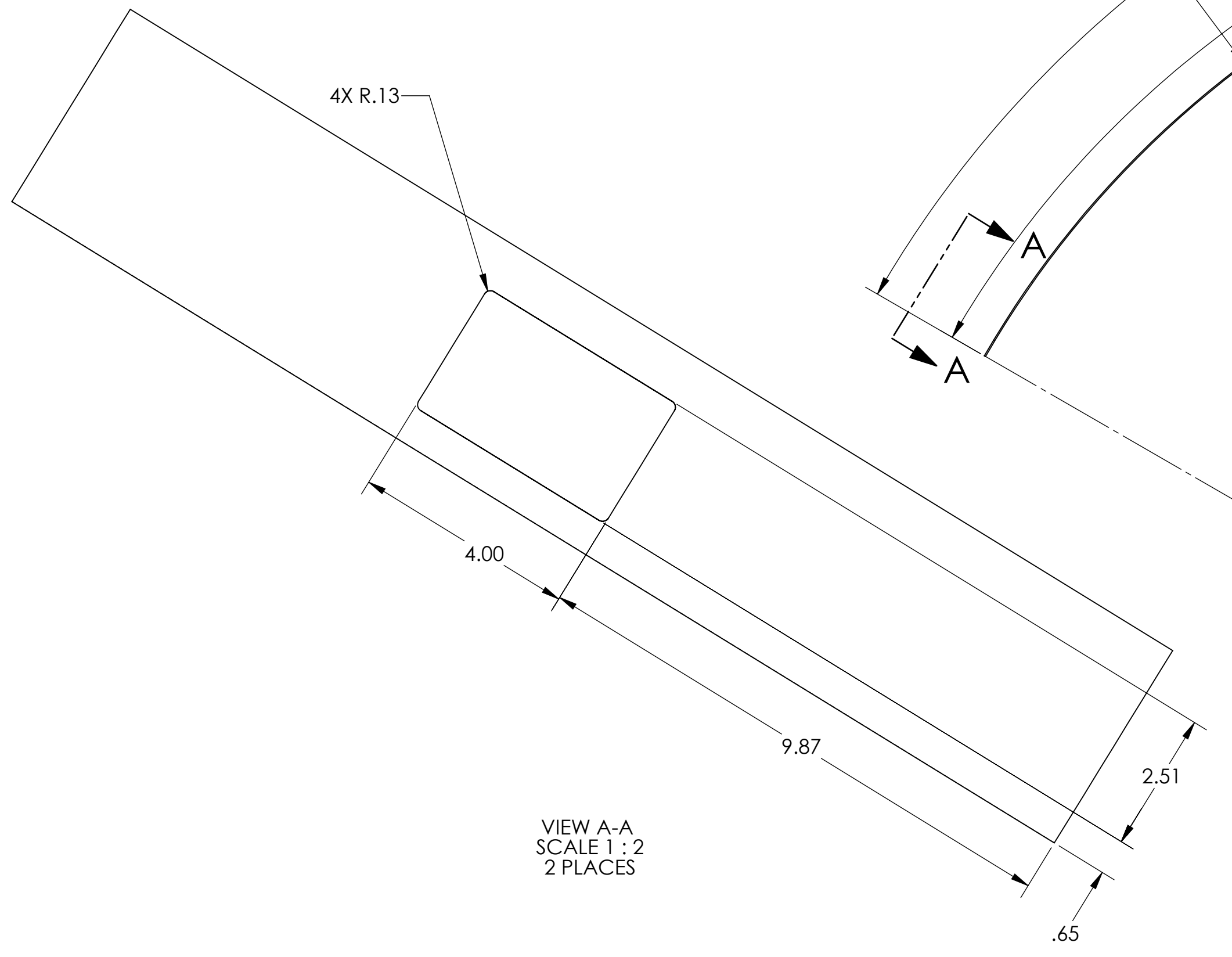
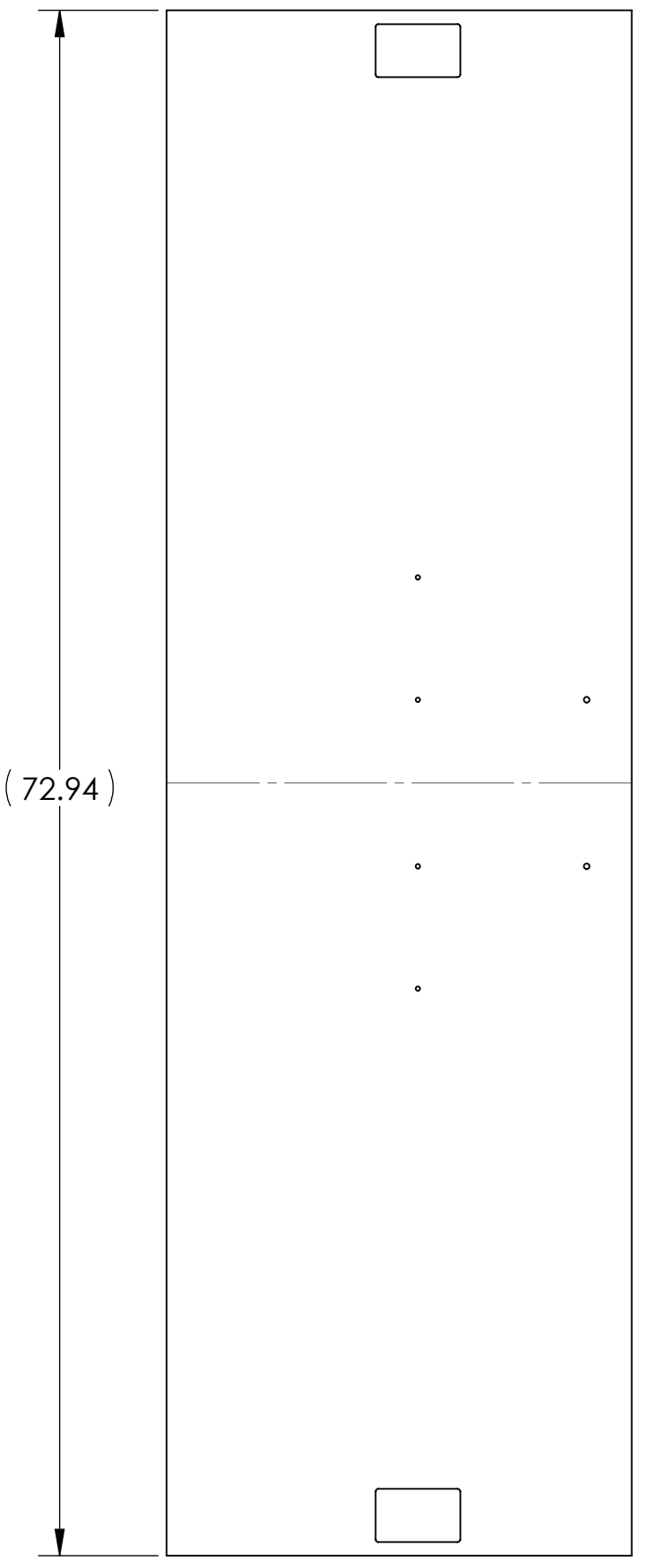
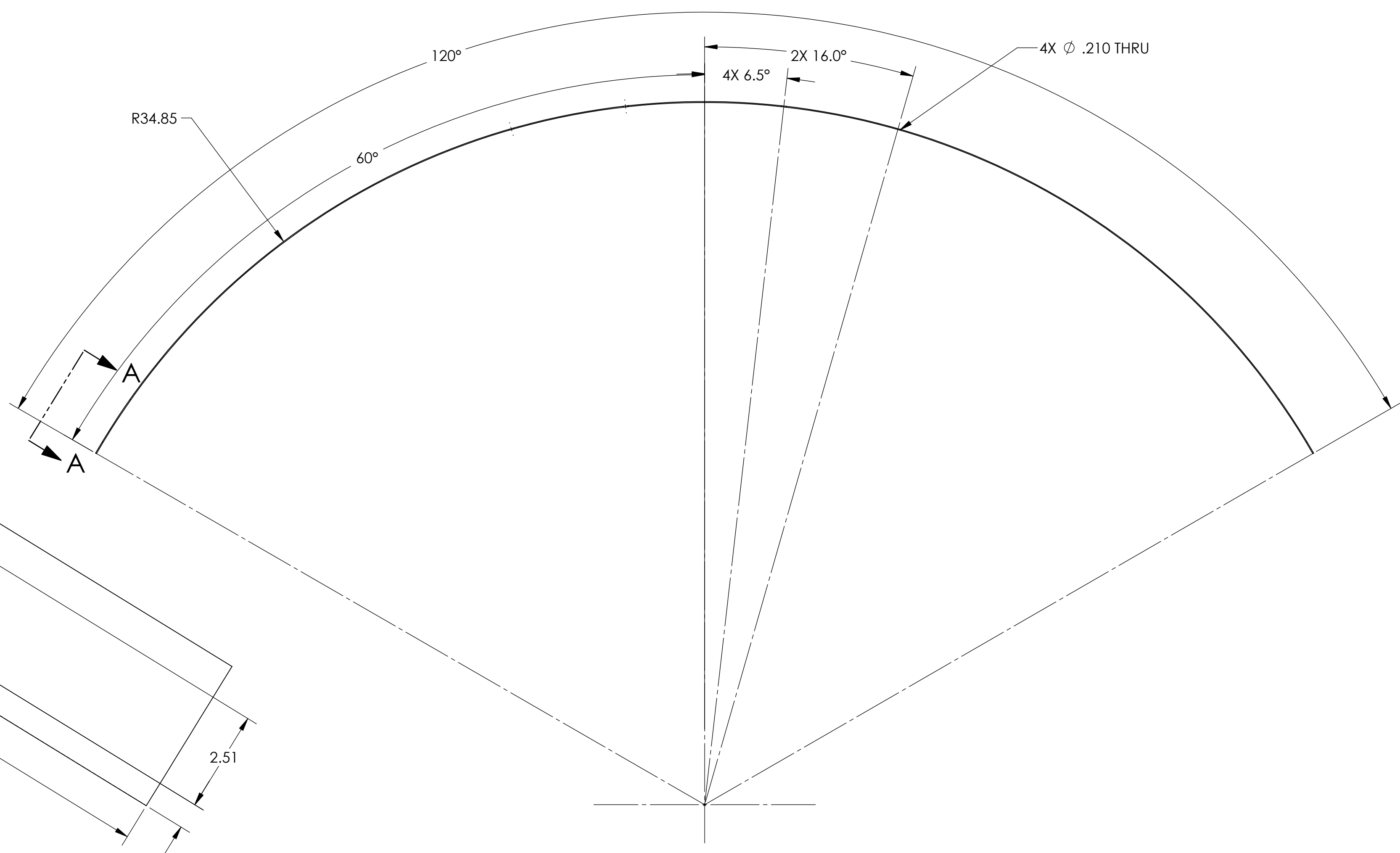
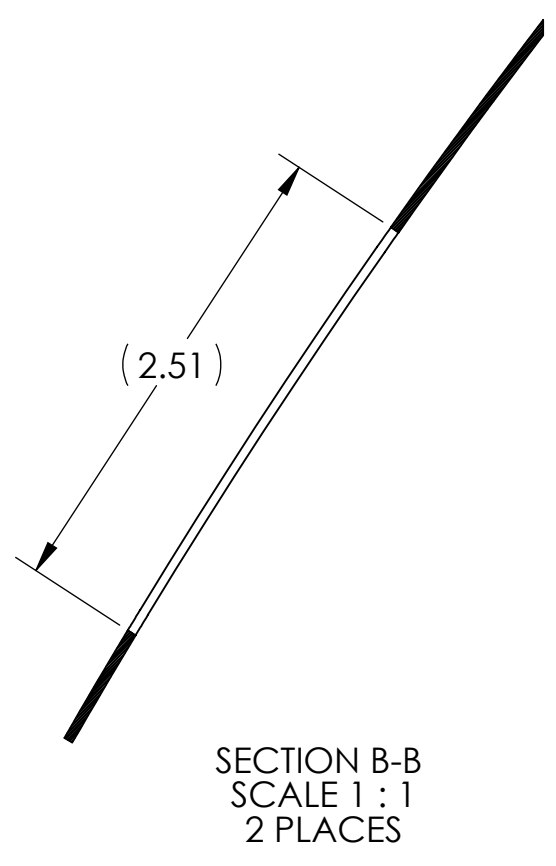
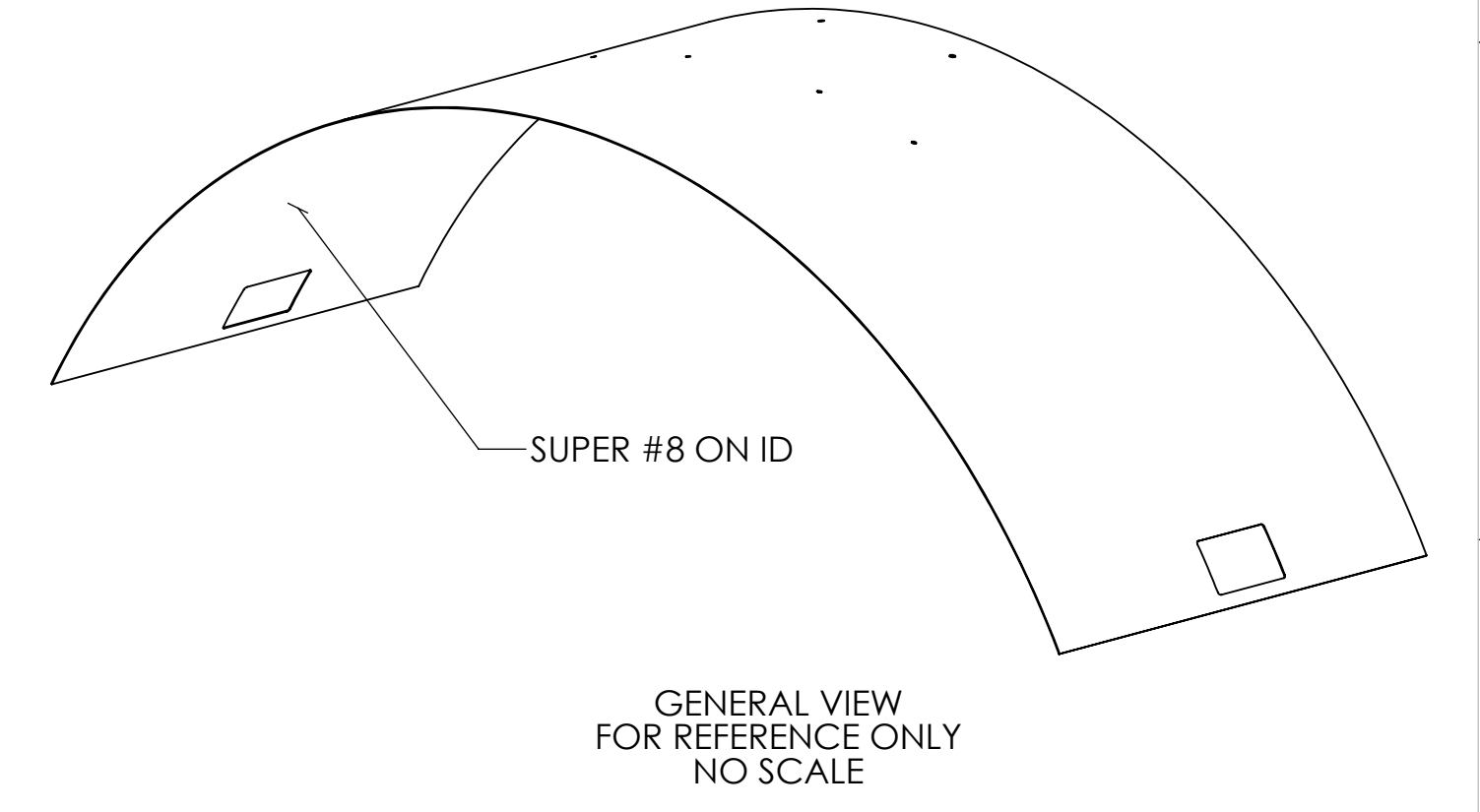
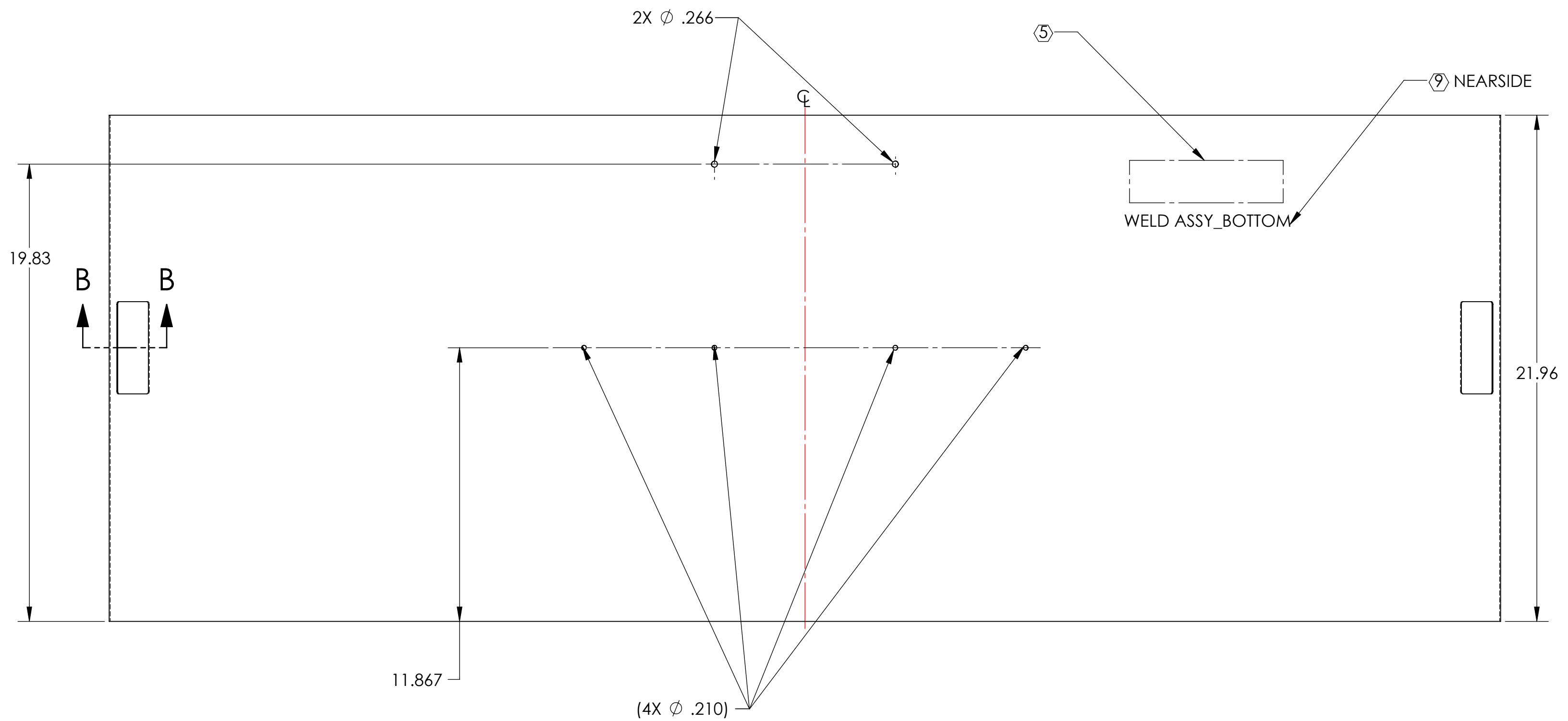
6. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

7. ALL MATERIAL IS TO BE VIRGIN MATERIAL (I.E. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.

⑧ SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.

⑨ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) LETTERS AS SHOWN. DO NOT APPLY MARK ON SUPER #8 SIDE.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 30 SEP 2010 | E1000360 | E1000085 |
| v2 | 9 MAY 2011 | E1000360-v2 | - |
| v3 | 13 SEP 2011 | E1000360-v3 | - |



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

- INTERPRET DRAWING PER ASME Y14.5-1994.
- REMOVE ALL SHARP EDGES .005-.015 ON ALL EDGES AND HOLES.
- DO NOT SCALE FROM DRAWING.
- ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .03
.XXX ± .010

ANGULAR ± 0.1°

| | | | |
|-----------------|-------------------|---------------|------------|
| MATERIAL | 18 GAUGE 304 SSSL | FINISH | ⑧ SUPER #8 |
|-----------------|-------------------|---------------|------------|

| | | | |
|------------------------------|--|-------------------|--|
| SYSTEM | | SUB-SYSTEM | |
| ADVANCED LIGO | | AOS | |
| NEXT ASSY | | | |
| D0902655, D1003229, D1003184 | | | |

| | | | | | | | |
|------------------|------------|--------------|-------------------|-------------------------------|--------------|-------------|----|
| PART NAME | | | | RADIAL SEGMENT, BOTTOM | | | |
| DESIGNER | H. Kellman | 28 SEPT 2010 | SIZE | DWG. NO. | D | REV. | v3 |
| DRAFTER | TG. NGUYEN | 16 AUG 2010 | | D0902620 | | | |
| CHECKER | M. SMITH | 27 JUL 2011 | | | | | |
| APPROVAL | D. COYNE | | SCALE: 1:4 | PROJECTION: | SHEET 1 OF 1 | | |

D:\0902620.dwg_MonField_Coyne_Radial_Segment1 Bottom_PART PDM_REV: X.003_DRAWING PDM_REV: X.028

NOTES CONTINUED:

5. SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX

6. CASTELLATION ON MATERIAL EDGES ARE FOR WELD PURPOSES IN ASSEMBLIES (D0902654, D0902655, D0902656).

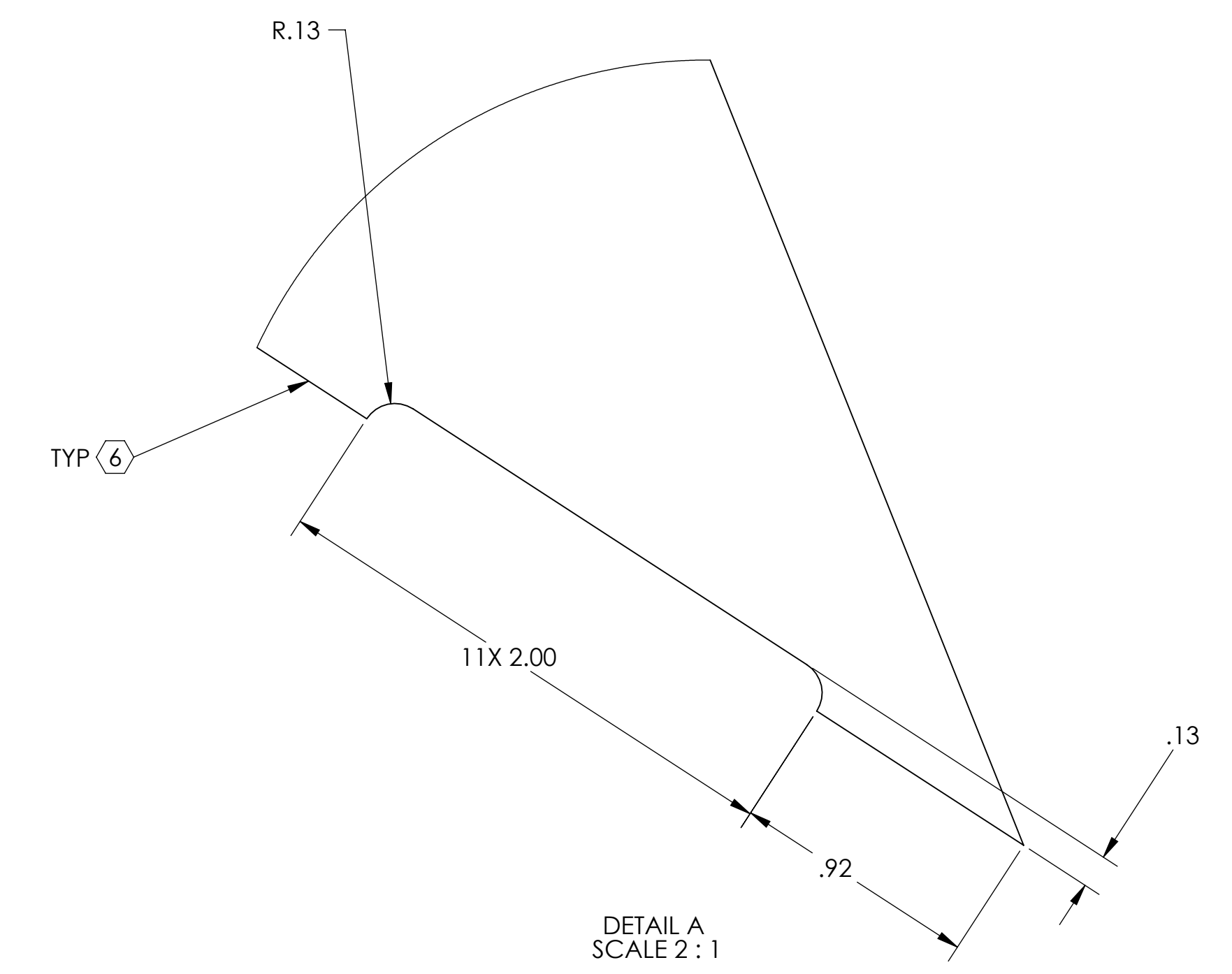
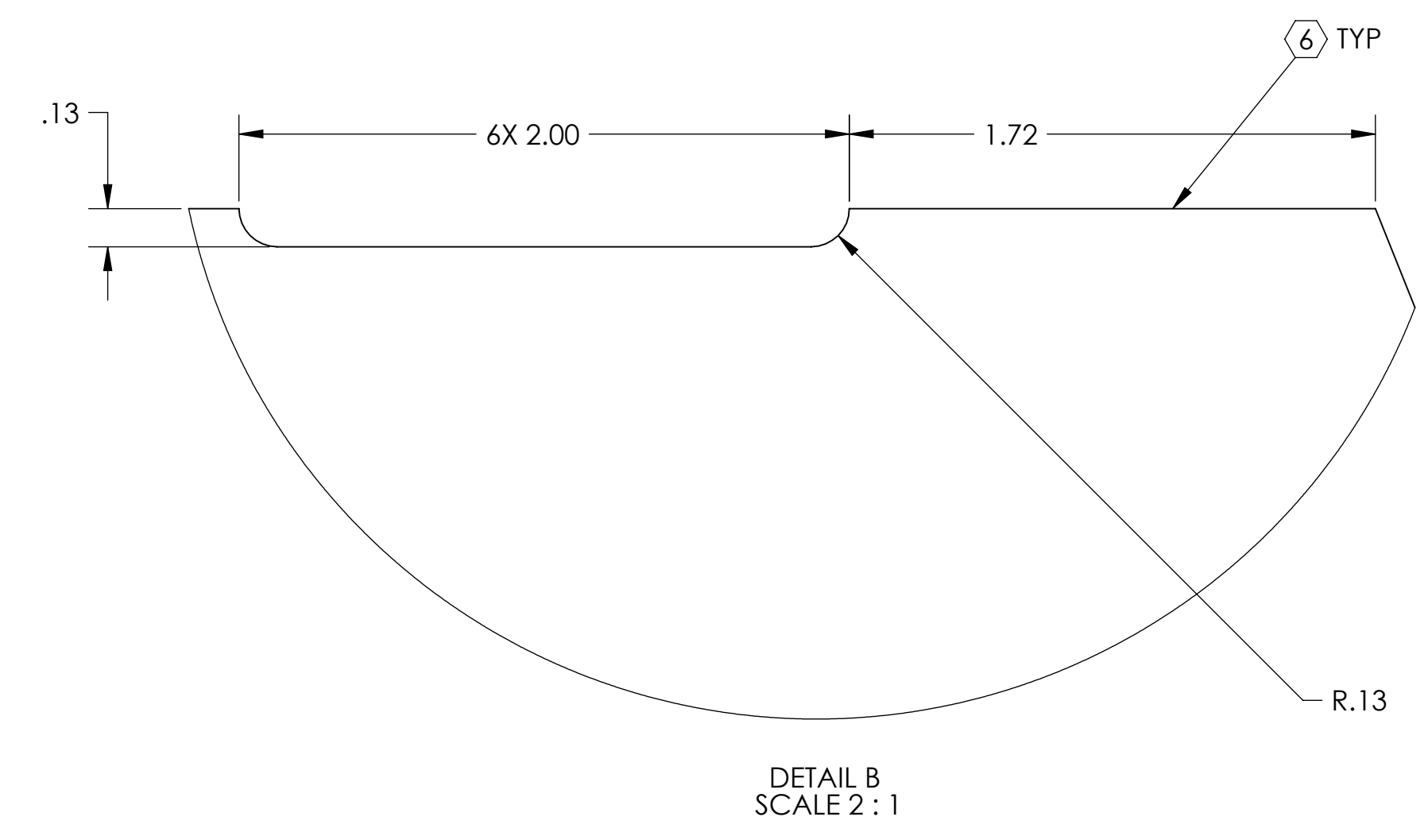
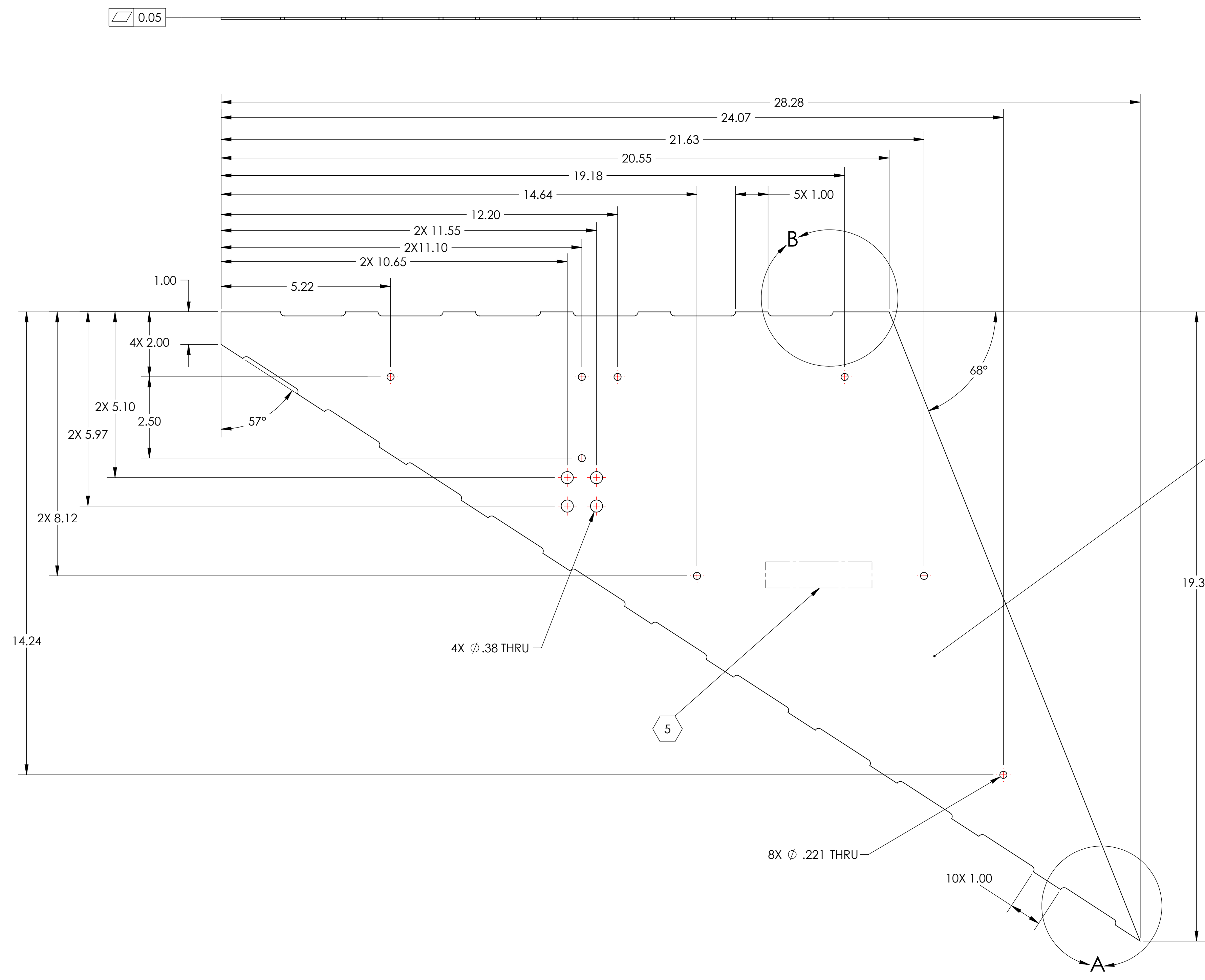
7. DELETED

8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

9. ALL MATERIAL IS TO BE VIRGIN MATERIAL (I.E. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.

10. SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 17 MAR 2010 | E1000360 | E1000085-v1 |
| v2 | 12 MAY 2011 | E1000360-v2 | E1000090-v1 |
| v3 | 4 OCT 2011 | E1000360-v3 | E1000091-v1 |



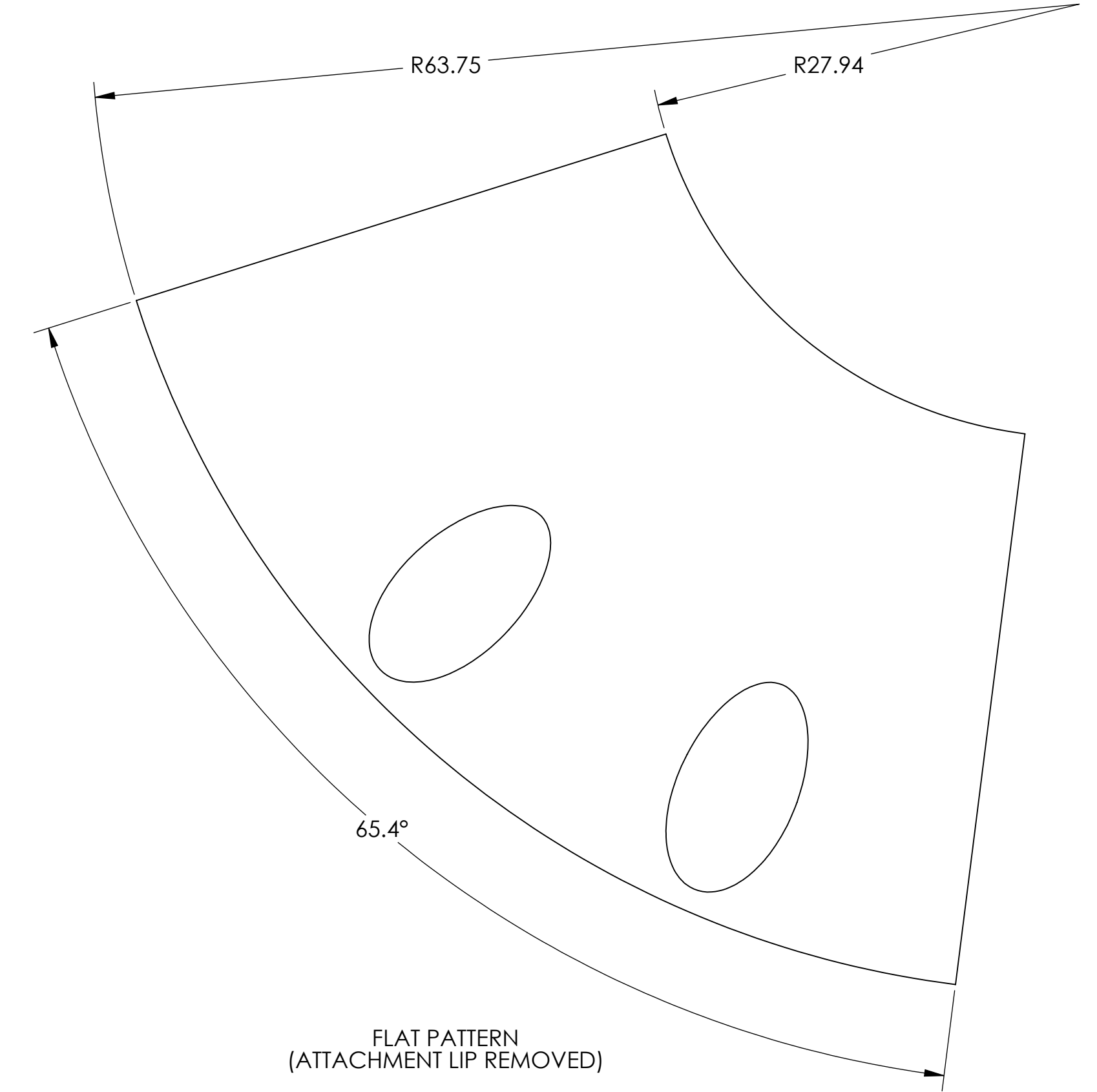
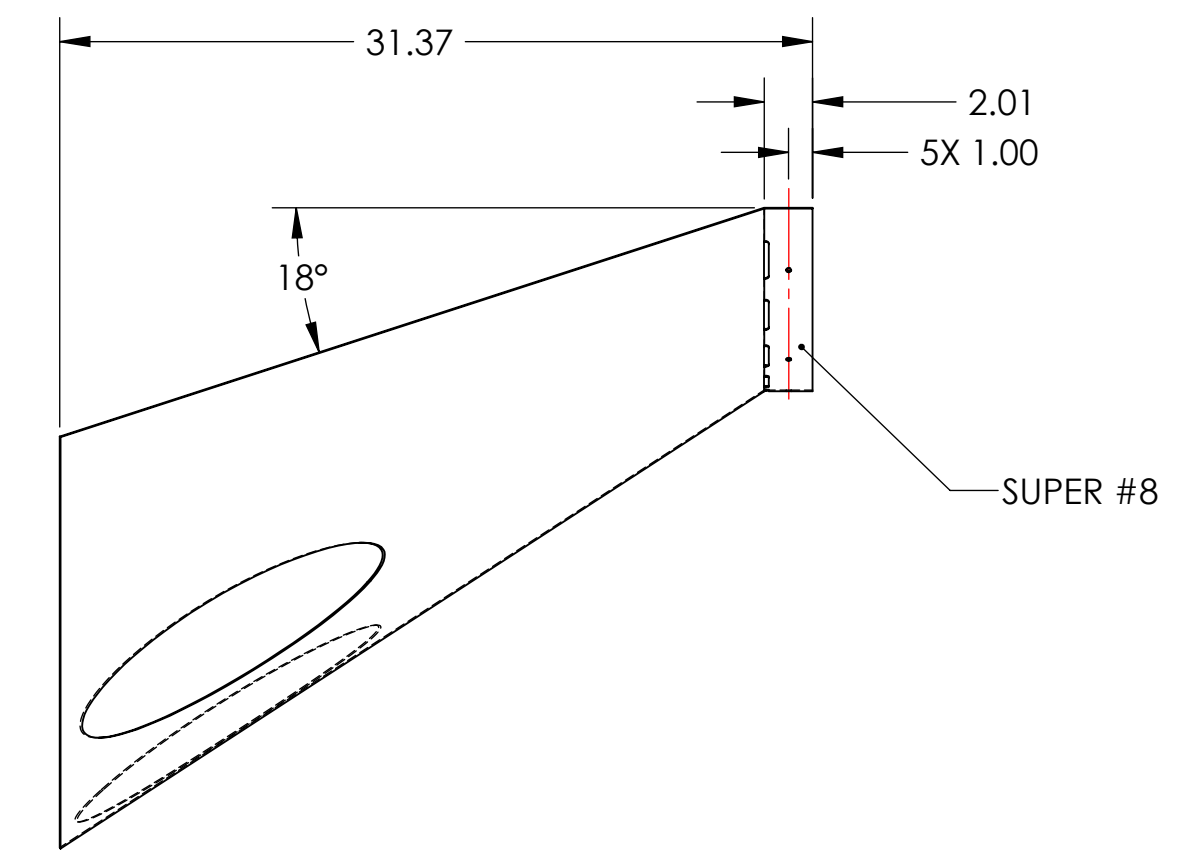
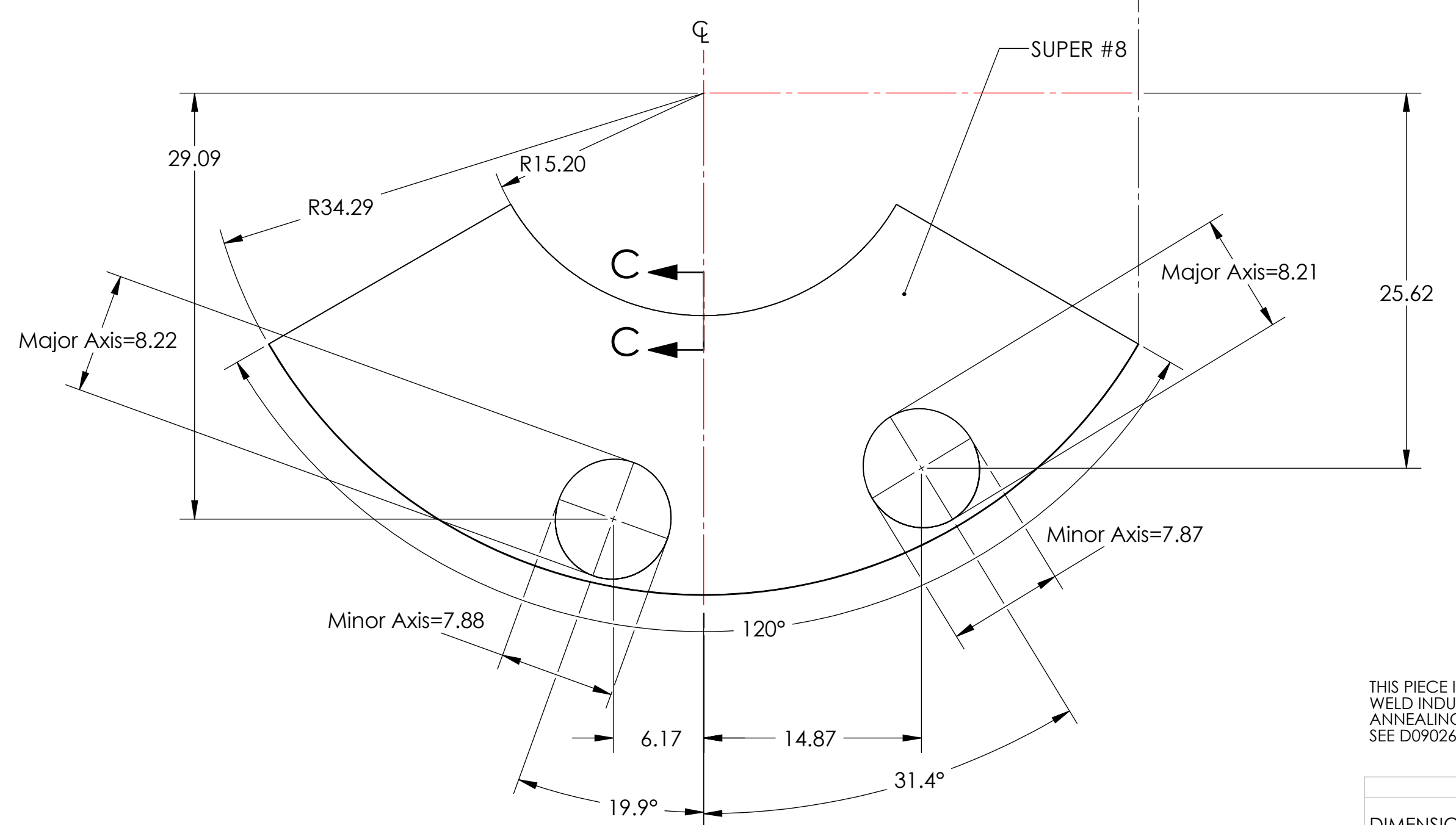
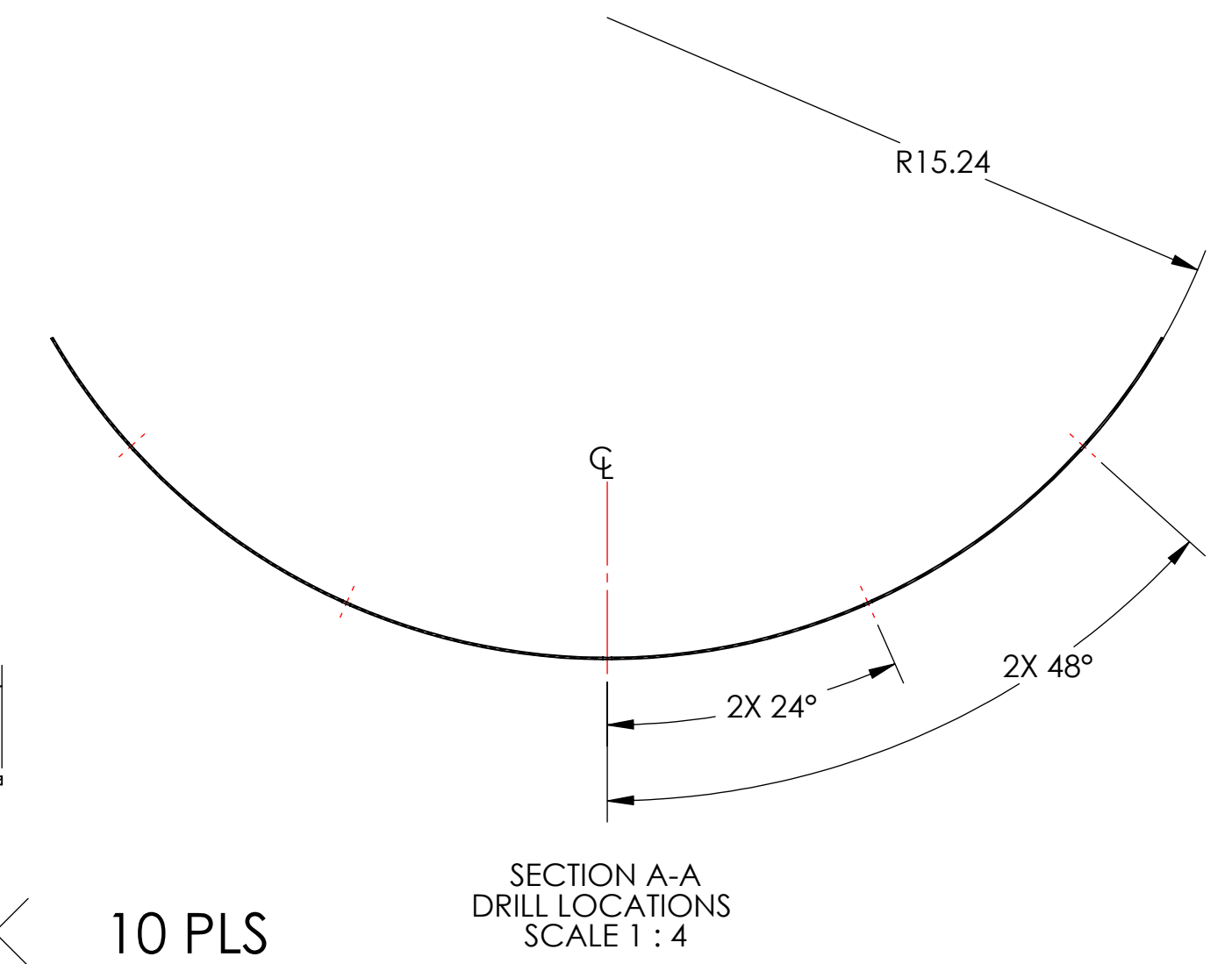
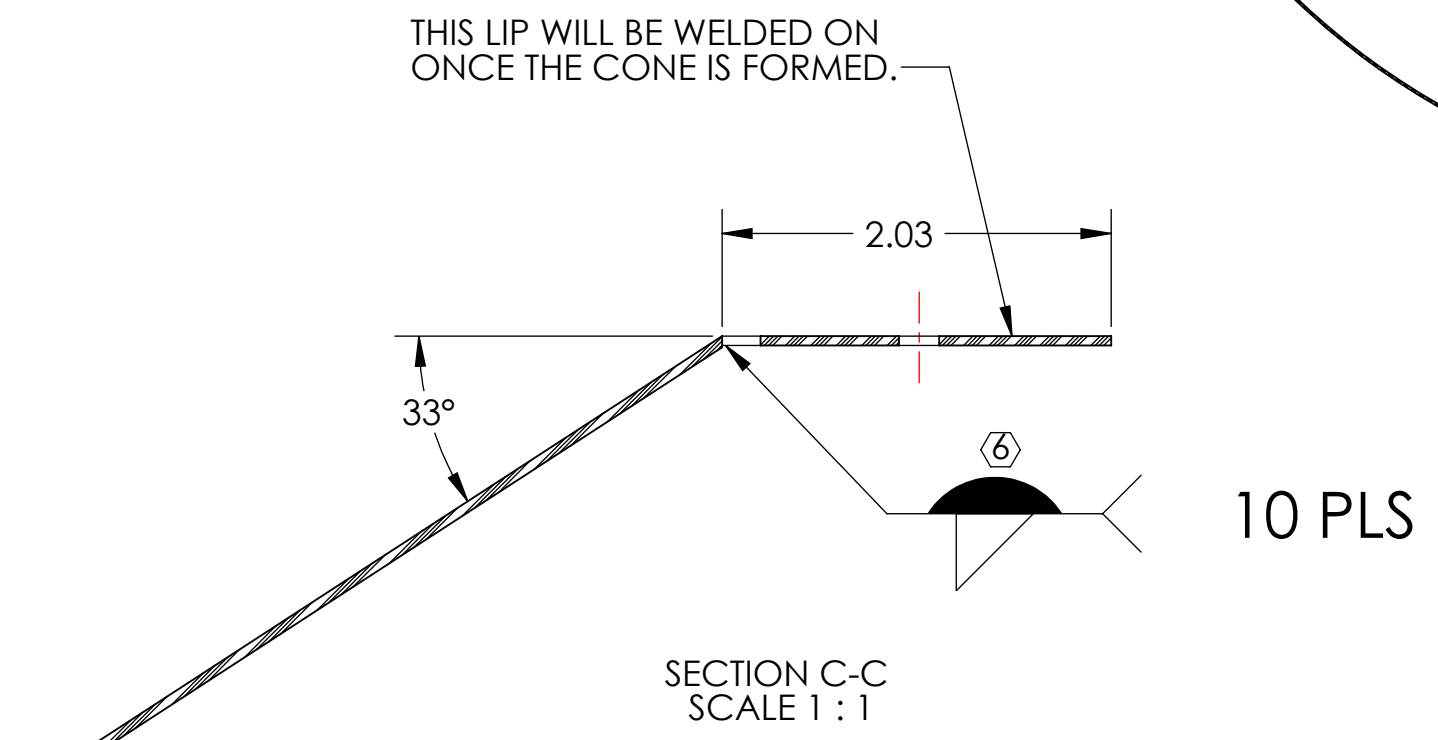
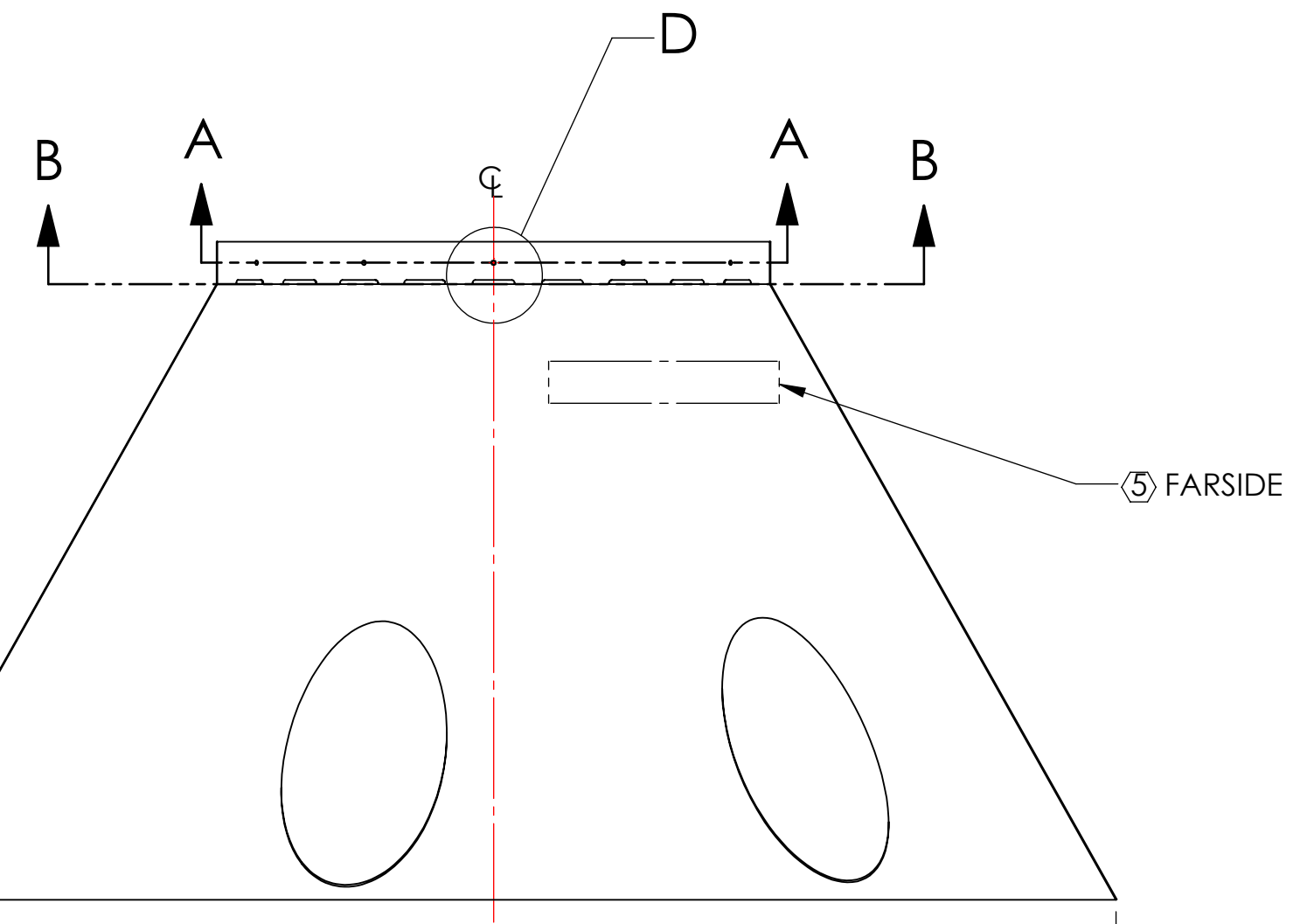
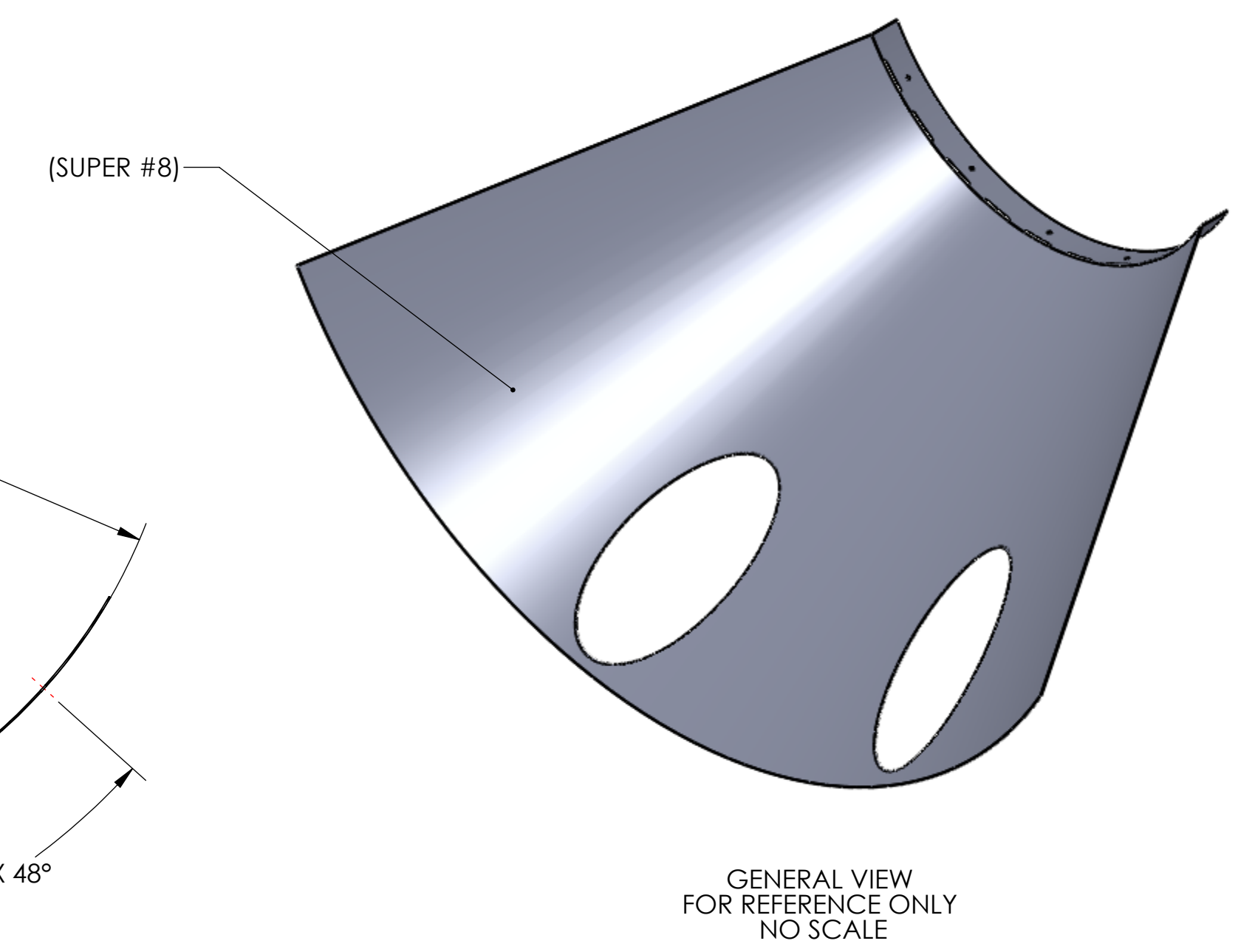
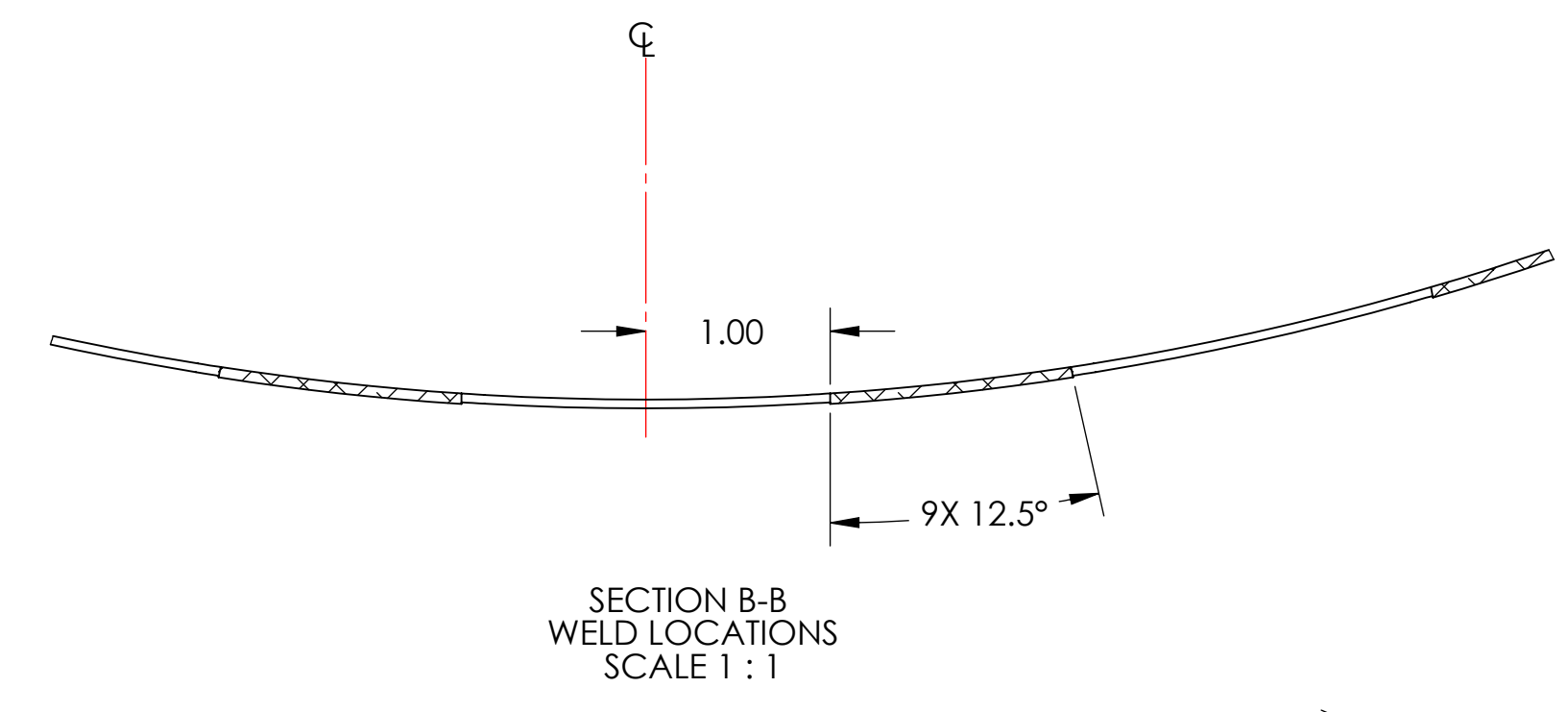
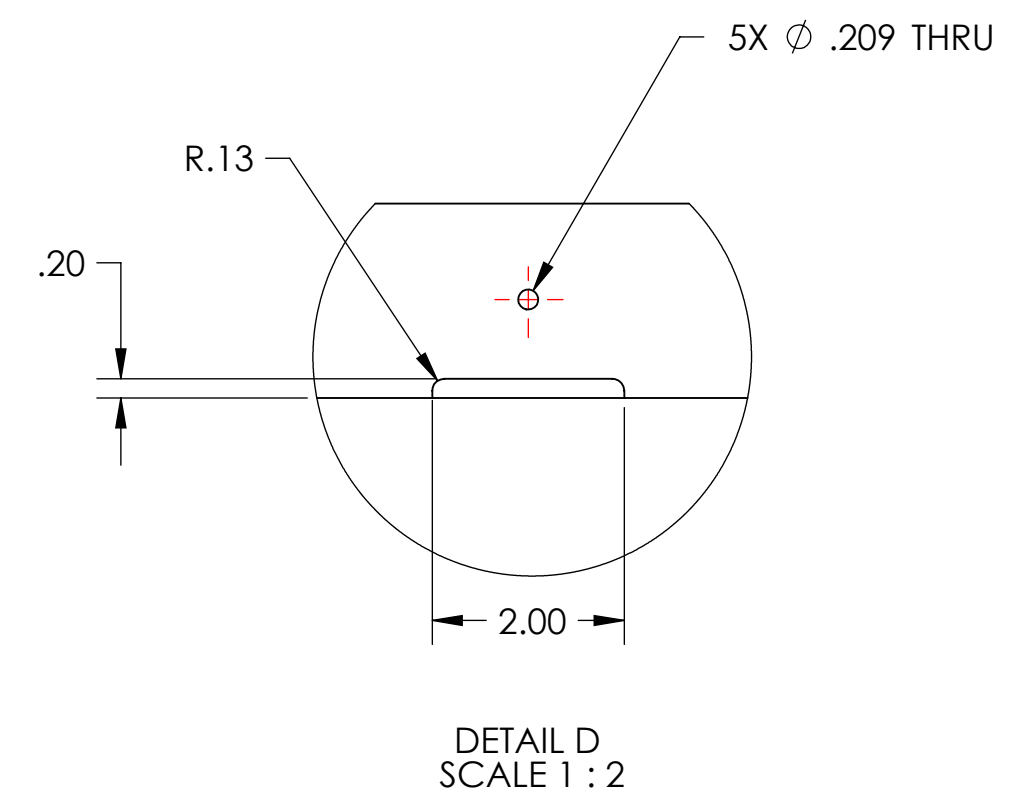
THIS PIECE IS PART OF A WELDMENT. DIMENSIONS SHOWN ARE APPROXIMATE; WELD INDUCED SHRINKAGE OR FILL, AND POST WELD ANNEALING AND MACHINING CONSIDERATIONS ARE NOT INCLUDED. SEE NEXT ASSEMBLY FOR REQUIRED DIMENSIONS FOR STRUCTURE AFTER WELDING.

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | | LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | | |
|---|--|---|--|-------------------------------------|--------------|-------------|
| DIMENSIONS ARE IN INCHES | | ADVANCED LIGO AOS | | MANIFOLD CRYO BAFFLE BRACKET | | |
| TOLERANCES: .XX ± .06 .XXX ± .010 ANGULAR ± 1.0° | | | | | | |
| MATERIAL | | NEXT ASSY | | DESIGNER | DATE | SIZE |
| 14 GAUGE 304 SSSL | | VARIOUS | | DRAFTER | 16 AUG 2010 | DWG. NO. |
| FINISH | | | | CHECKER | 27 SEPT 2011 | REV. |
| (10) | | | | APPROVAL | | v3 |
| | | | | SCALE: 1:8 | | PROJECTION: |
| | | | | SHEET 1 OF 1 | | |

D0902621.dwg; Manifold_Cryo_Baffle_Bracket; PART PDM REV: X.067; DRAWING PDM REV: X.035

- NOTES CONTINUED:**
- ⑤ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR TYPE IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE
 - ⑥ CONE AND LIP TO BE WELDED WHERE PIECES MAKE CONTACT. WELDING MUST BE PER SPECIFICATION E0900048.
 - 7. DELETED
 - 8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
 - 9. ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL), NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY.
 - ⑩ SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 07 SEP 2010 | E1000360 | E1000090 |
| v2 | 11 MAY 2011 | E1000360-v2 | - |
| v3 | 13 SEP 2011 | E1000360-v3 | - |

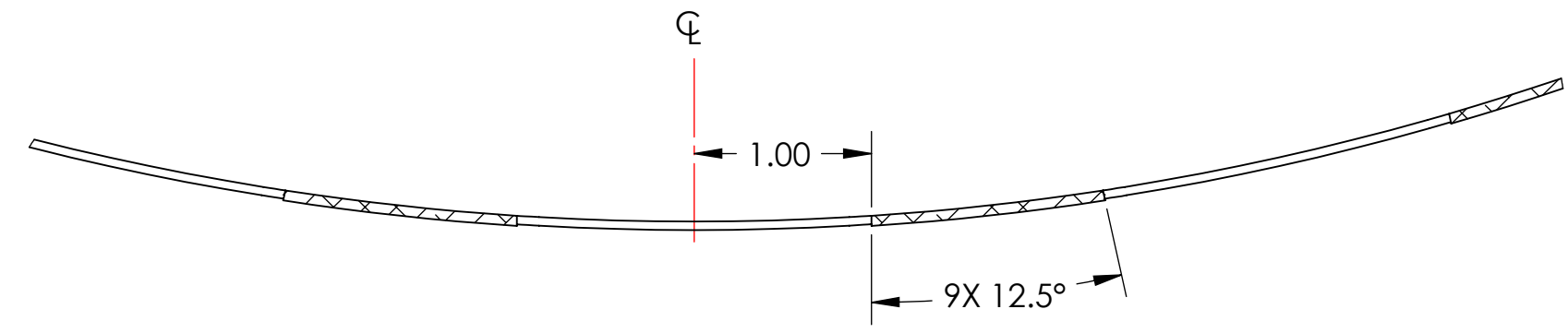


THIS PIECE IS PART OF A WELDMENT. DIMENSIONS SHOWN ARE APPROXIMATE; WELD INDUCED SHRINKAGE OR FILL, AND POST WELD ANNEALING AND MACHINING CONSIDERATIONS ARE NOT INCLUDED. SEE D0902654 FOR REQUIRED DIMENSIONS FOR STRUCTURE AFTER WELDMENT.

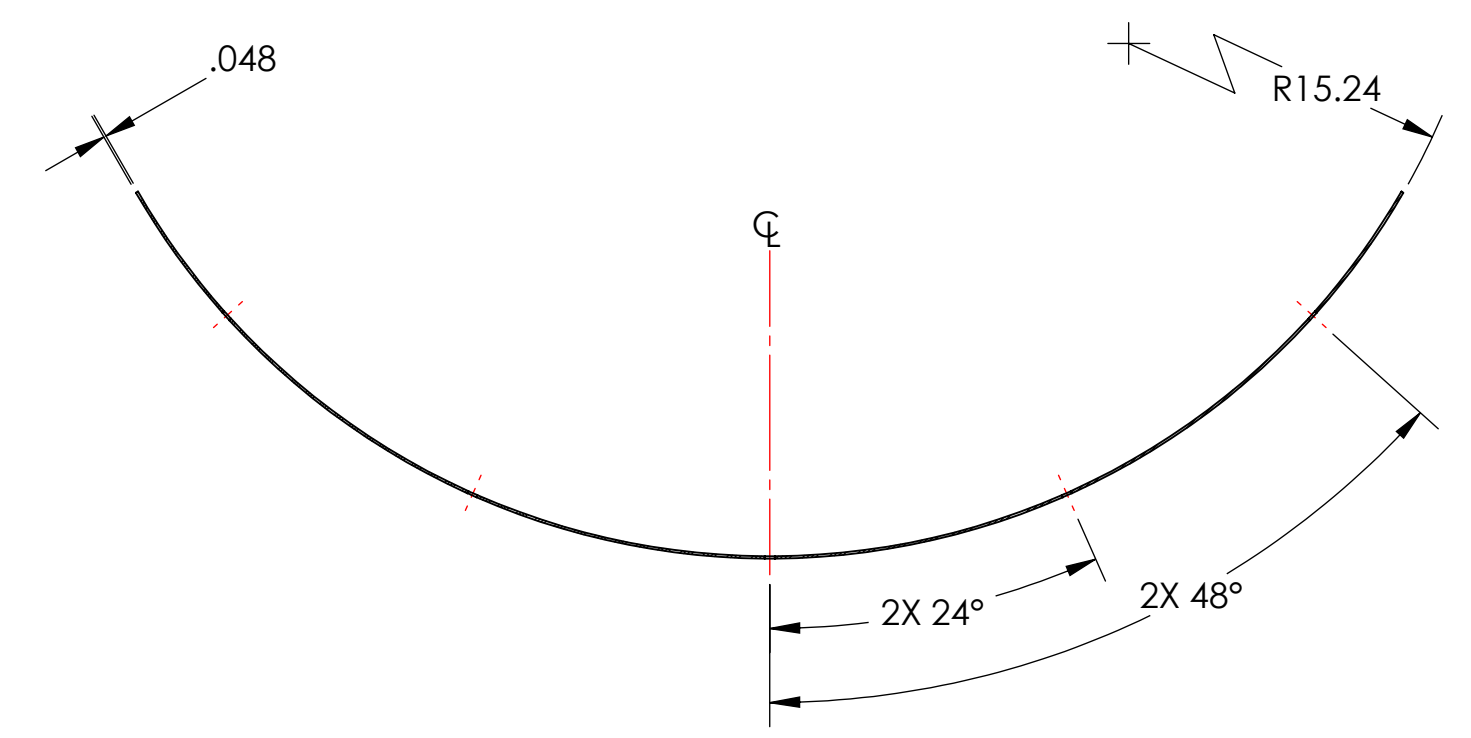
| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
|--|------------|
| DIMENSIONS ARE IN INCHES | |
| TOLERANCES: .XX ± .03 .XXX ± .010 | |
| ANGULAR ± 1.0° | |
| MATERIAL | FINISH |
| 18 GAUGE 304 SSSL | ⑩ SUPER #8 |

| | | | |
|---|-----------------------|---|---|
| CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME MANIFOLD-CRYO BAFFLE INNER SEGMENT WELDMENT, ITM XY, LEFT | |
| SYSTEM ADVANCED LIGO NEXT ASSY D0902656 | SUB-SYSTEM AOS | DESIGNER H. KELMAN 12 MAY 2010 DRAFTER TQ. NGUYEN 17 AUG 2010 CHECKER M. SMITH 27 SEP 2010 APPROVAL D. COYNE | SIZE DWG. NO. D DWG. NO. D0902622 SCALE: 1:8 PROJECTION: |
| | | REV. v3 | SHEET 1 OF 1 |

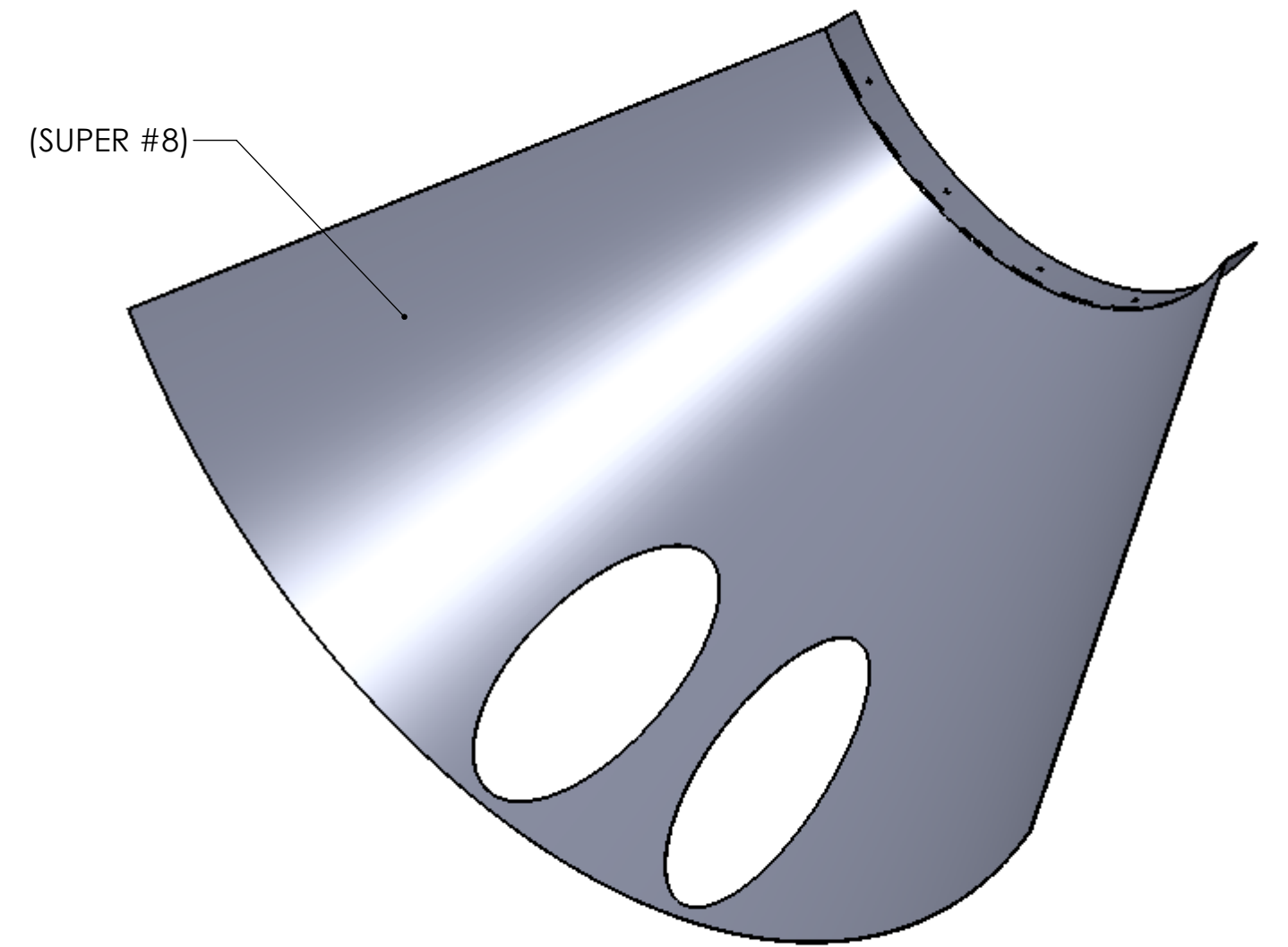
- NOTES CONTINUED:**
- ⑤ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE
 - ⑥ CONE AND LIP TO BE WELDED WHERE PIECES MAKE CONTACT. WELDING MUST BE PER SPECIFICATION E0900048.
 - 7. DELETED
 - 8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
 - 9. ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL); NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.
 - ⑩ SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.



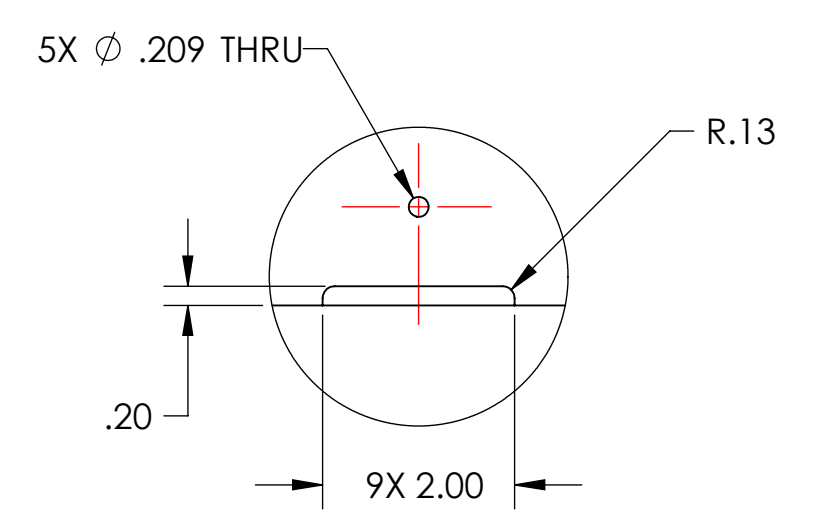
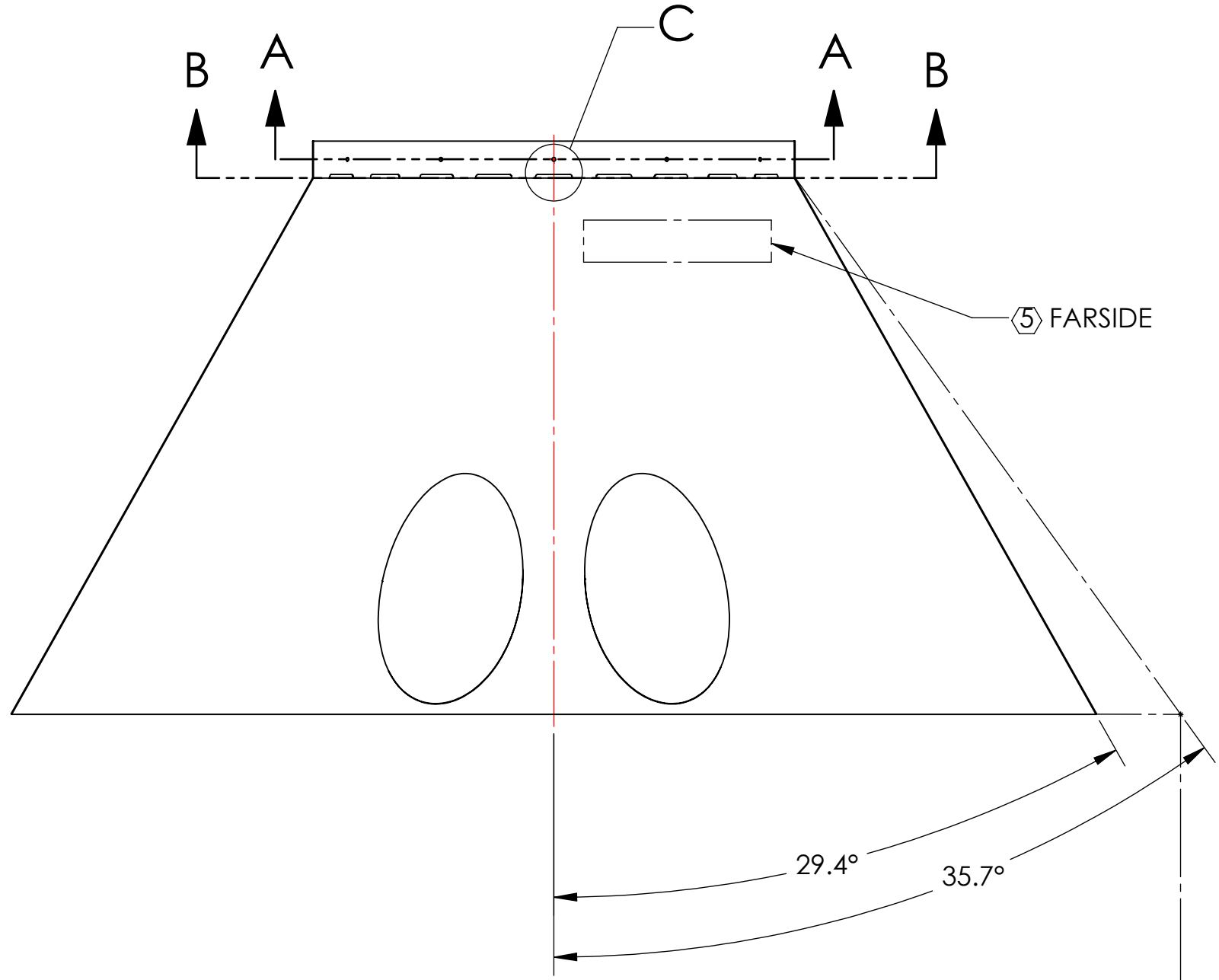
SECTION B-B
WELD LOCATIONS
SCALE 1 : 1



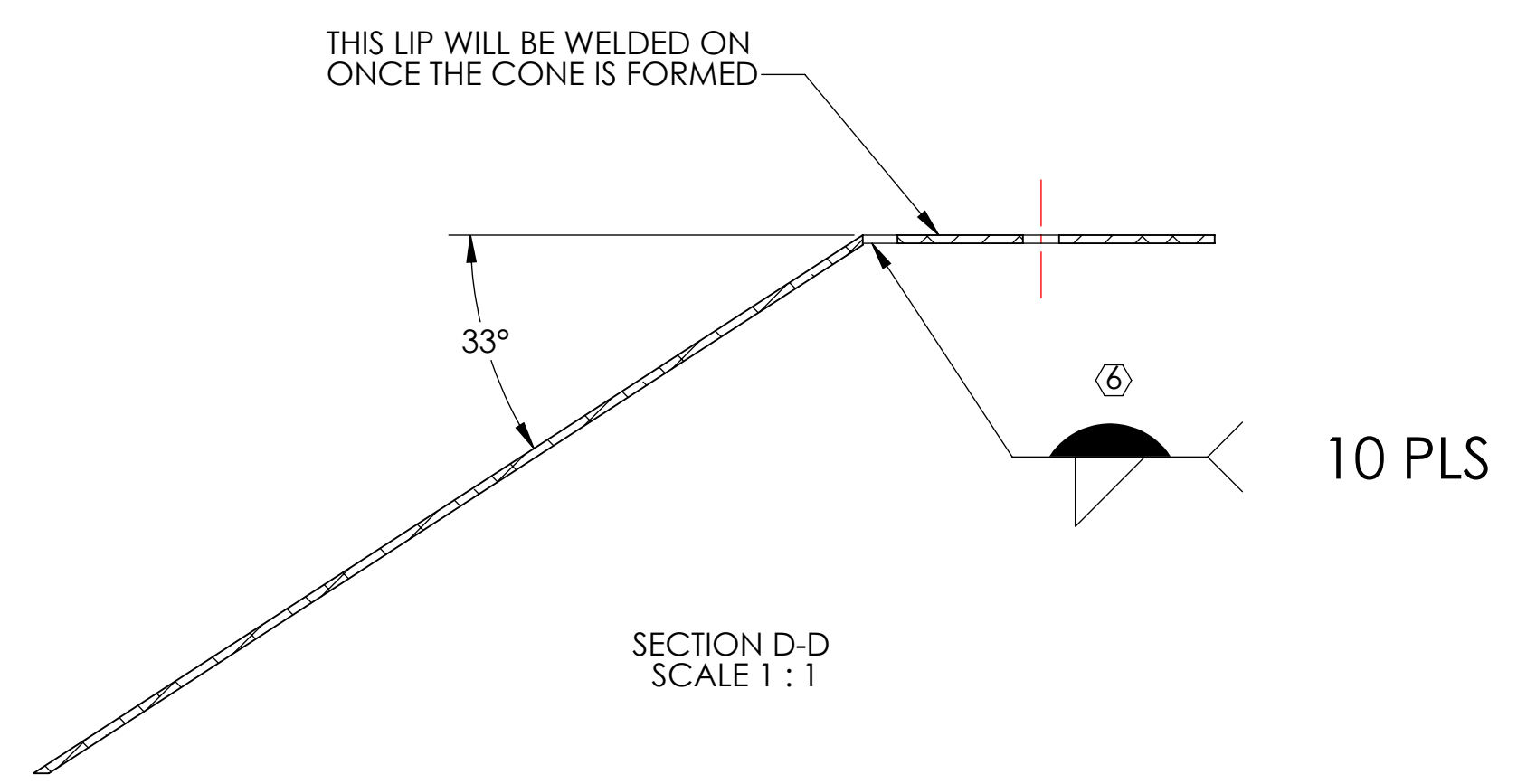
SECTION A-A
DRILL LOCATIONS
SCALE 1 : 4



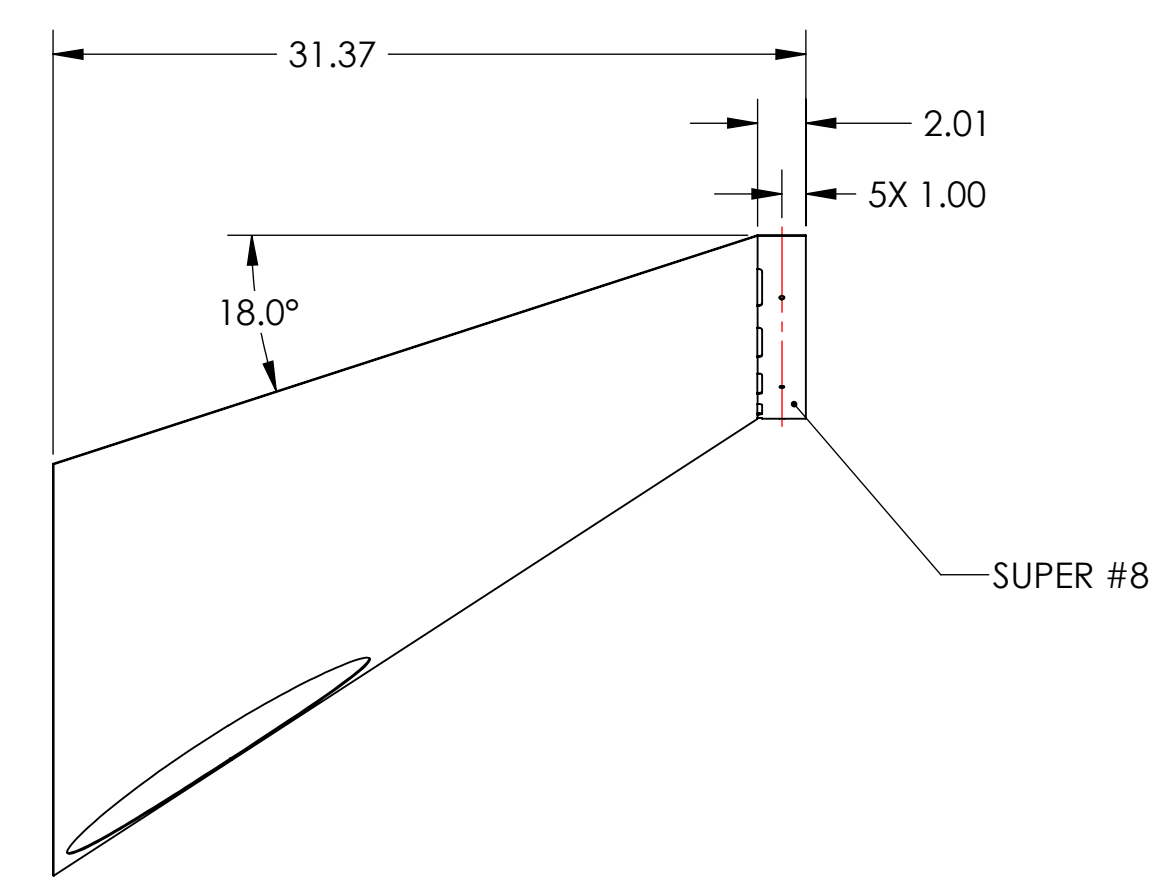
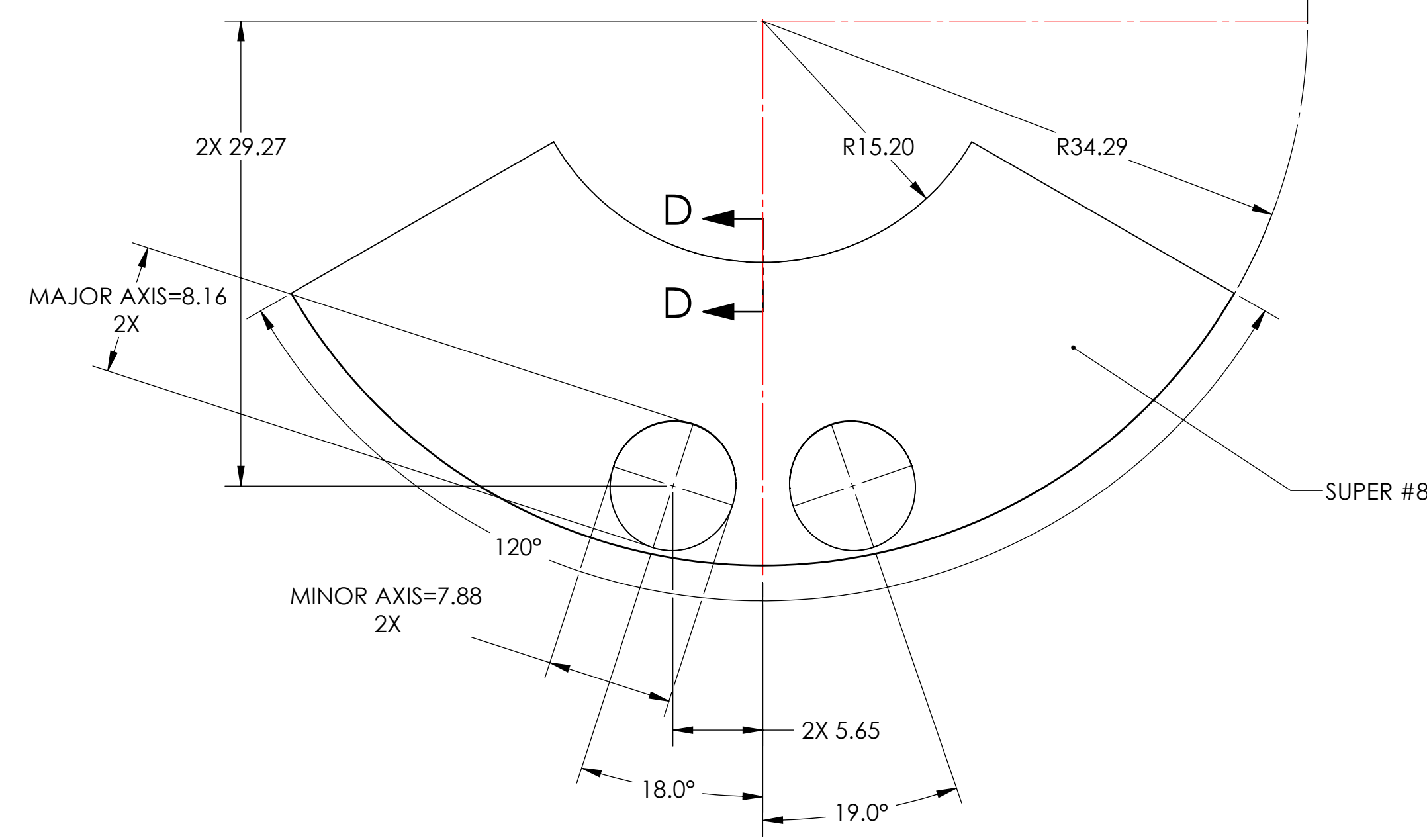
GENERAL VIEW
FOR REFERENCE ONLY
NO SCALE



DETAIL C
SCALE 1 : 2



SECTION D-D
SCALE 1 : 1



THIS PIECE IS PART OF A WELDMENT. DIMENSIONS SHOWN ARE APPROXIMATE; WELD INDUCED SHRINKAGE OR FILL, AND POST WELD ANNEALING AND MACHINING CONSIDERATIONS ARE NOT INCLUDED. SEE D0902654 FOR REQUIRED DIMENSIONS FOR STRUCTURE AFTER WELDMENT.

| | | | |
|---|------------|---|--|
| DIMENSIONS ARE IN INCHES | | NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
| TOLERANCES: .XX ± .03 .XXX ± .010 | | 1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES .005-.015 ON ALL EDGES AND HOLES. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | |
| MATERIAL | FINISH | NEXT ASSY | |
| 18 GAUGE 304 SSSL | ⑩ SUPER #8 | D0902655 | |

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO SUB-SYSTEM: AOS

| | | | |
|-----------|------------|--|---------------|
| PART NAME | | MANIFOLD-CRYO BAFFLE INNER SEGMENT, ITM XY, BOTTOM | |
| DESIGNER | TQ. NGUYEN | 16 DEC 2010 | SIZE DWG. NO. |
| DRAFTER | TQ. NGUYEN | 17 AUG 2010 | D D0902623 |
| CHECKER | M. SMITH | 27 JUL 2010 | REV. v3 |
| APPROVAL | D. COYNE | SCALE: 1:8 | PROJECTION: |

8

7

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5

4

3

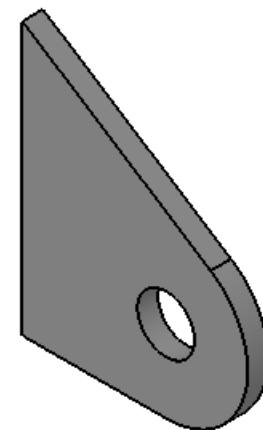
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1

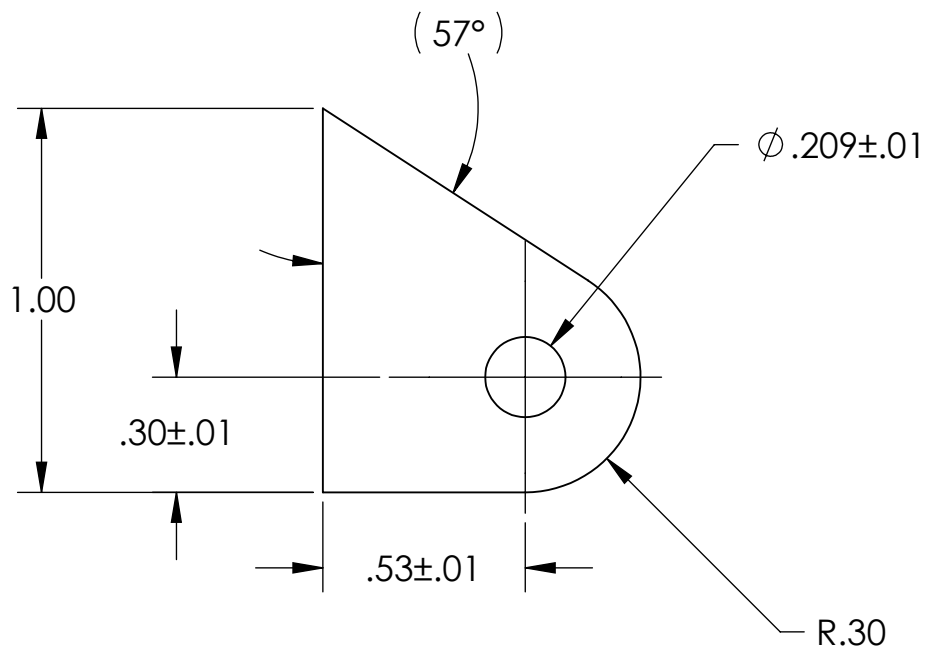
NOTES CONTINUED:

- 5. BAG AND TAG WITH DRAWING PART NUMBER AND REVISION FOLLOWED BY A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. EXAMPLE: DXXXXXX-VY, S/N 001.
- 6. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
- 7. SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.
- 8. ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 17 MAR 2010 | E1000360 | - |
| v2 | 12 MAY 2011 | E1000360-v2 | - |
| v3 | 13 SEP 2011 | E1000360-v3 | - |



GENERAL VIEW
FOR REFERENCE ONLY
NO SCALE



THIS PIECE IS PART OF A WELDMENT. DIMENSIONS SHOWN ARE APPROXIMATE; WELD INDUCED SHRINKAGE OR FILL, AND POST WELD ANNEALING AND MACHINING CONSIDERATIONS ARE NOT INCLUDED. SEE NEXT ASSEMBLY FOR REQUIRED DIMENSIONS FOR STRUCTURE AFTER WELDING.

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
|--|--------|
| DIMENSIONS ARE IN INCHES | |
| TOLERANCES: .XX ± .06 .XXX ± .010 | |
| ANGULAR ±1.0° | |
| 1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, .005-.015 ON ALL EDGES AND HOLES. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | |
| MATERIAL | FINISH |
| 14 GAUGE 304 SSSL | 7 |

| | | | |
|---|--|--------------------------|--|
| CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | |
| SYSTEM ADVANCED LIGO | | SUB-SYSTEM AOS | |
| NEXT ASSY | | VARIOUS | |

| | | | | | | | | | | | |
|----------|--|------------|--|-------------|--|------------|--|-------------|--|--------------|--|
| DESIGNER | | H. Keltman | | 17 MAR 2010 | | SIZE | | DWG. NO. | | REV. | |
| DRAFTER | | TQ. NGUYEN | | 18 AUG 2011 | | B | | D1000536 | | v3 | |
| CHECKER | | M. SMITH | | 27 SEP 2010 | | SCALE: 2:1 | | PROJECTION: | | SHEET 1 OF 1 | |
| APPROVAL | | D. COYNE | | | | | | | | | |

D1000536_dLIGO_Manifold_Cryo_Baffle_Brace_Brkt, PART PDM REV: X-036, DRAWING PDM REV: X-021

8

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3

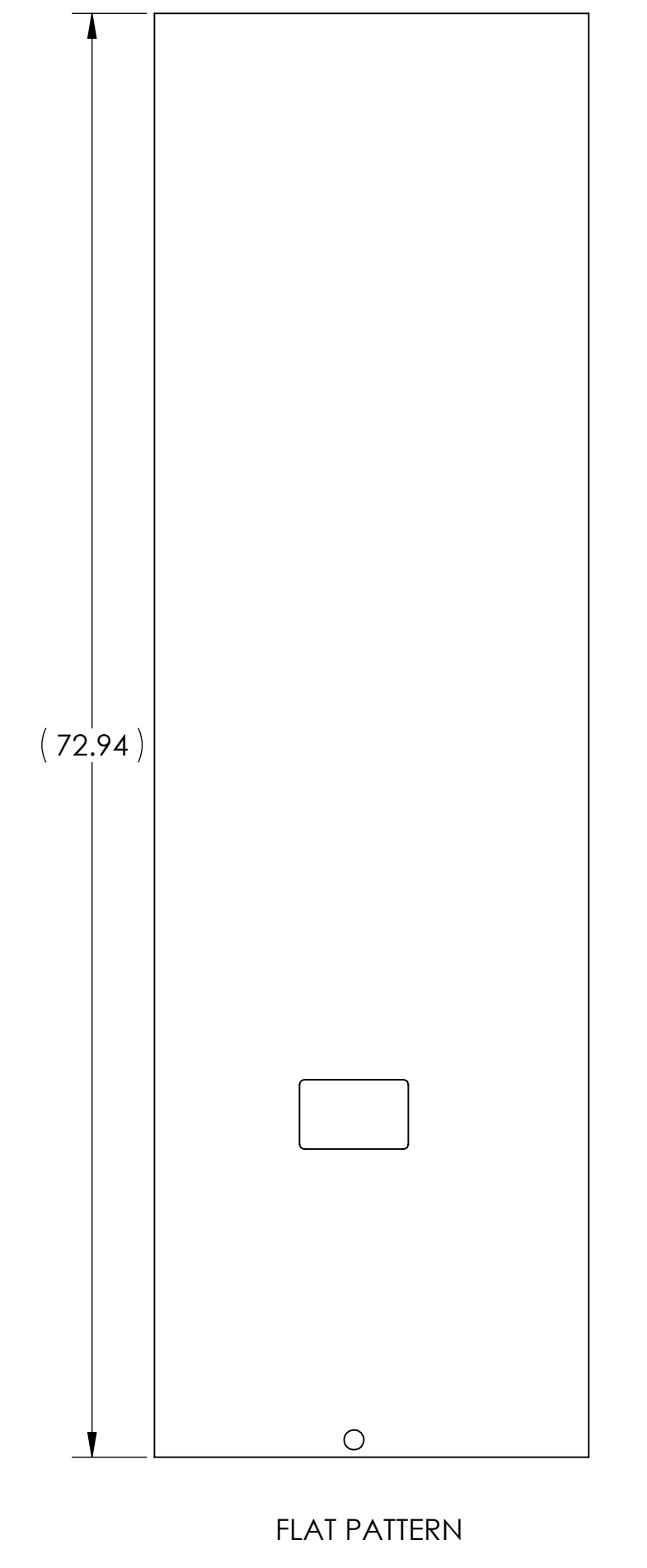
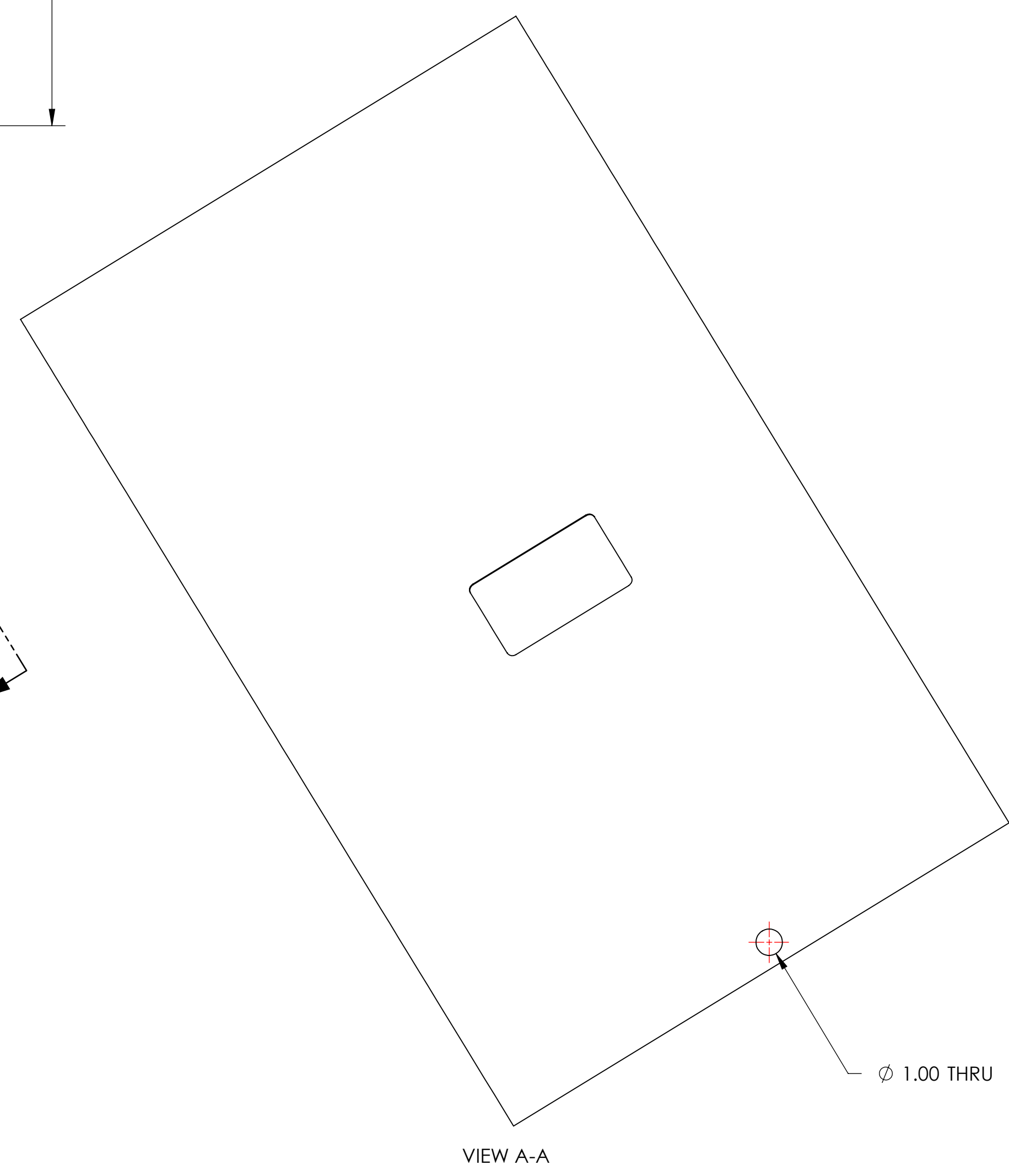
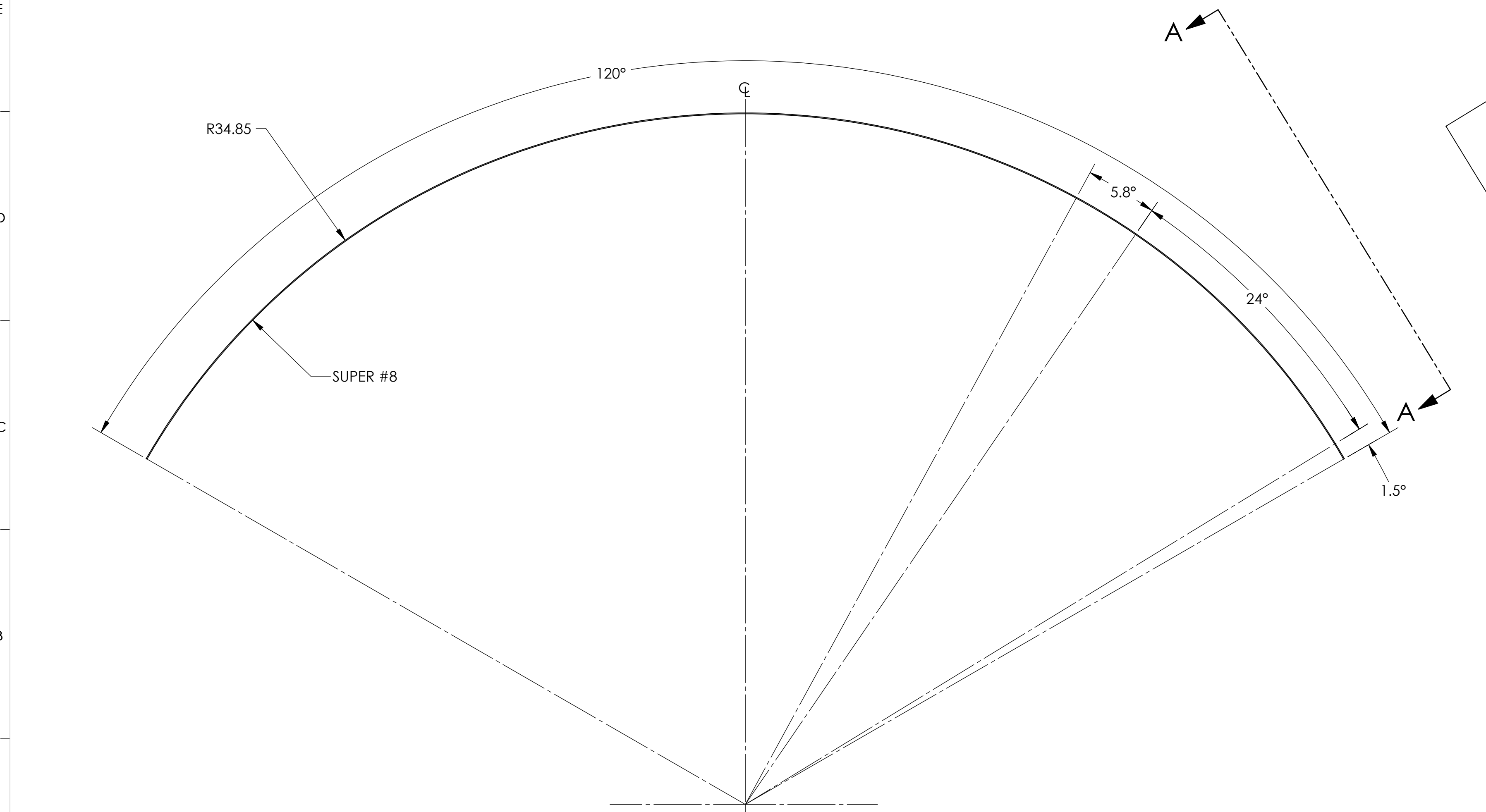
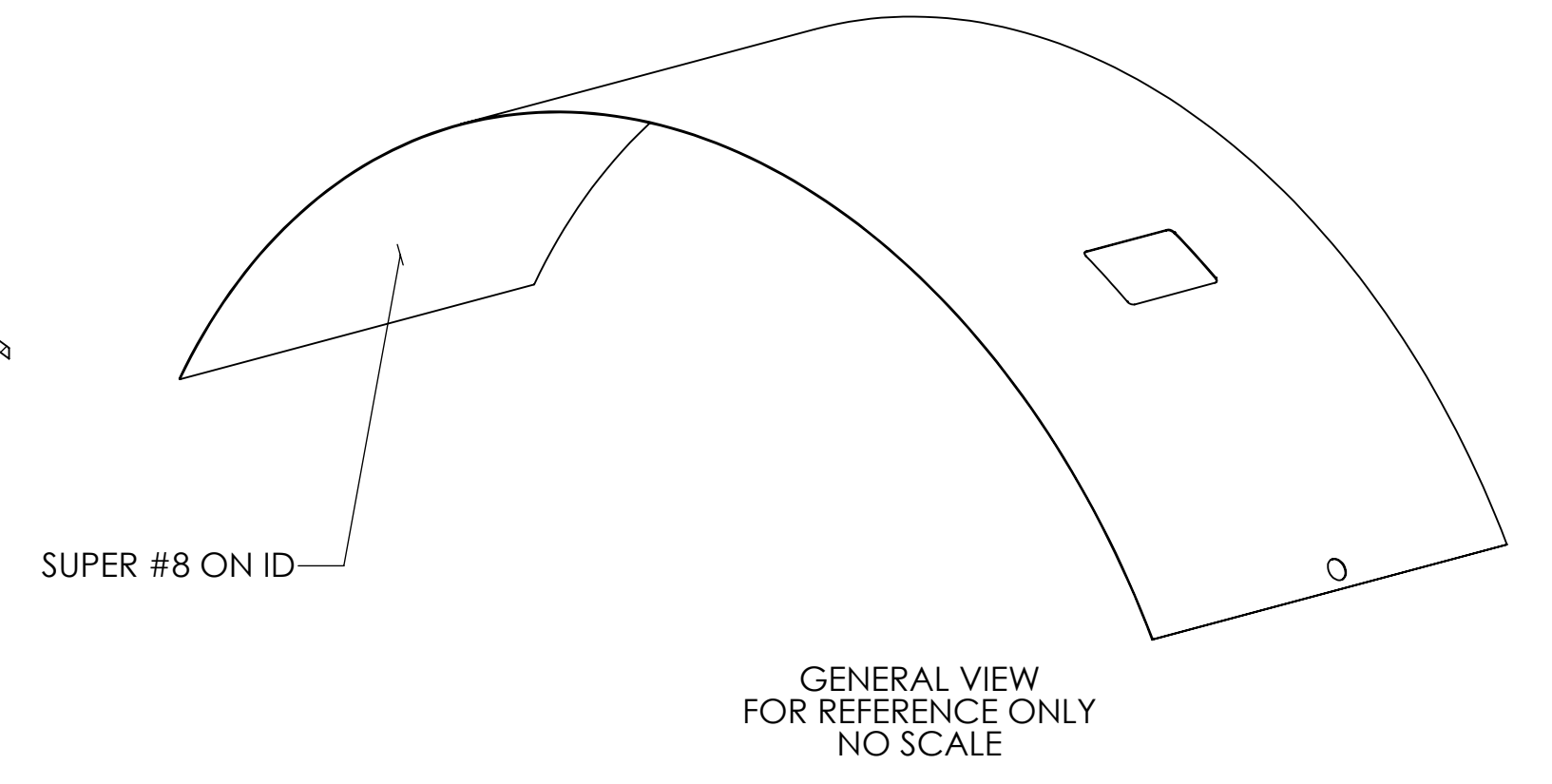
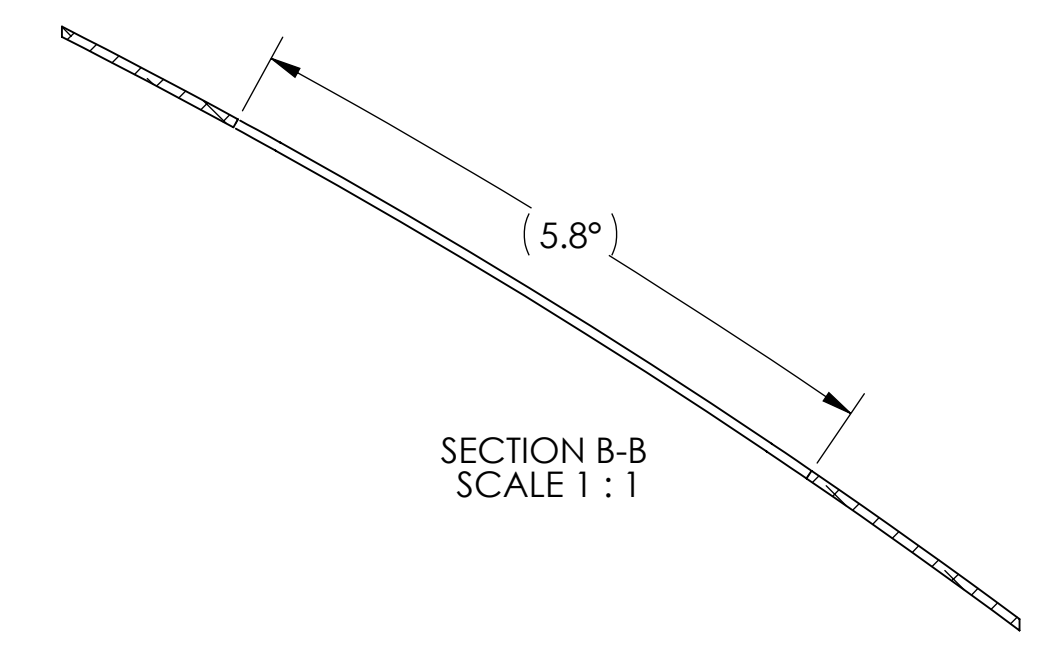
2

1

NOTES CONTINUED:
 ⑤ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE

6. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
 ⑦ SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.
 ⑧. SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) LETTERS AS SHOWN. DO NOT APPLY MARK ON SUPER #8 SIDE

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 07 SEP 2010 | E1000360 | E1000090 |
| v2 | 11 MAY 2011 | E1000360-v2 | - |
| v3 | 13 SEP 2011 | E1000360-v3 | - |



| | | | |
|---|------------|---|----------------------------|
| DIMENSIONS ARE IN INCHES | | NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
| TOLERANCES: .XX ± .03 .XXX ± .010 | | 1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES .005-.015 ON ALL EDGES AND HOLES. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | |
| MATERIAL | FINISH | SYSTEM | NEXT ASSY |
| 18 GAUGE 304 SSSL | ⑦ SUPER #8 | ADVANCED LIGO | D0902656 D1003188 D1003233 |

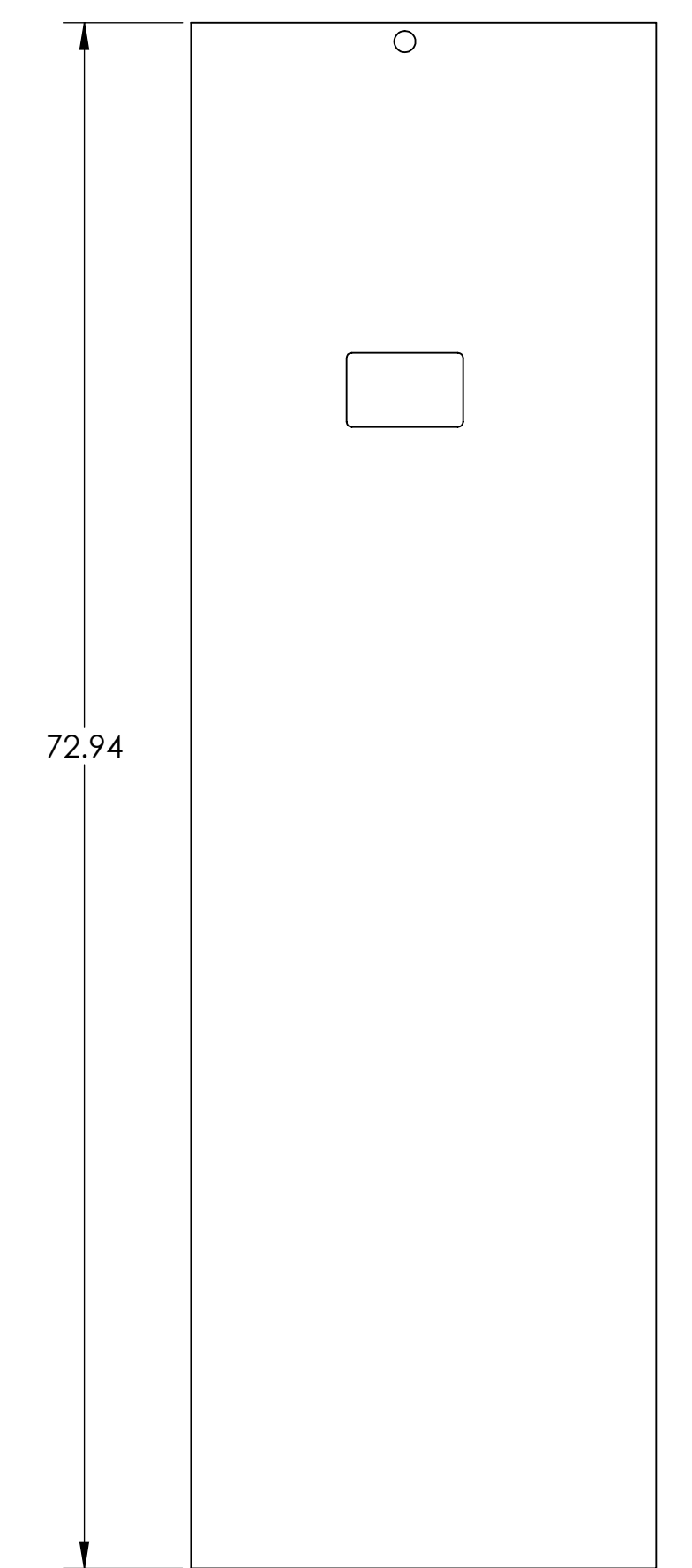
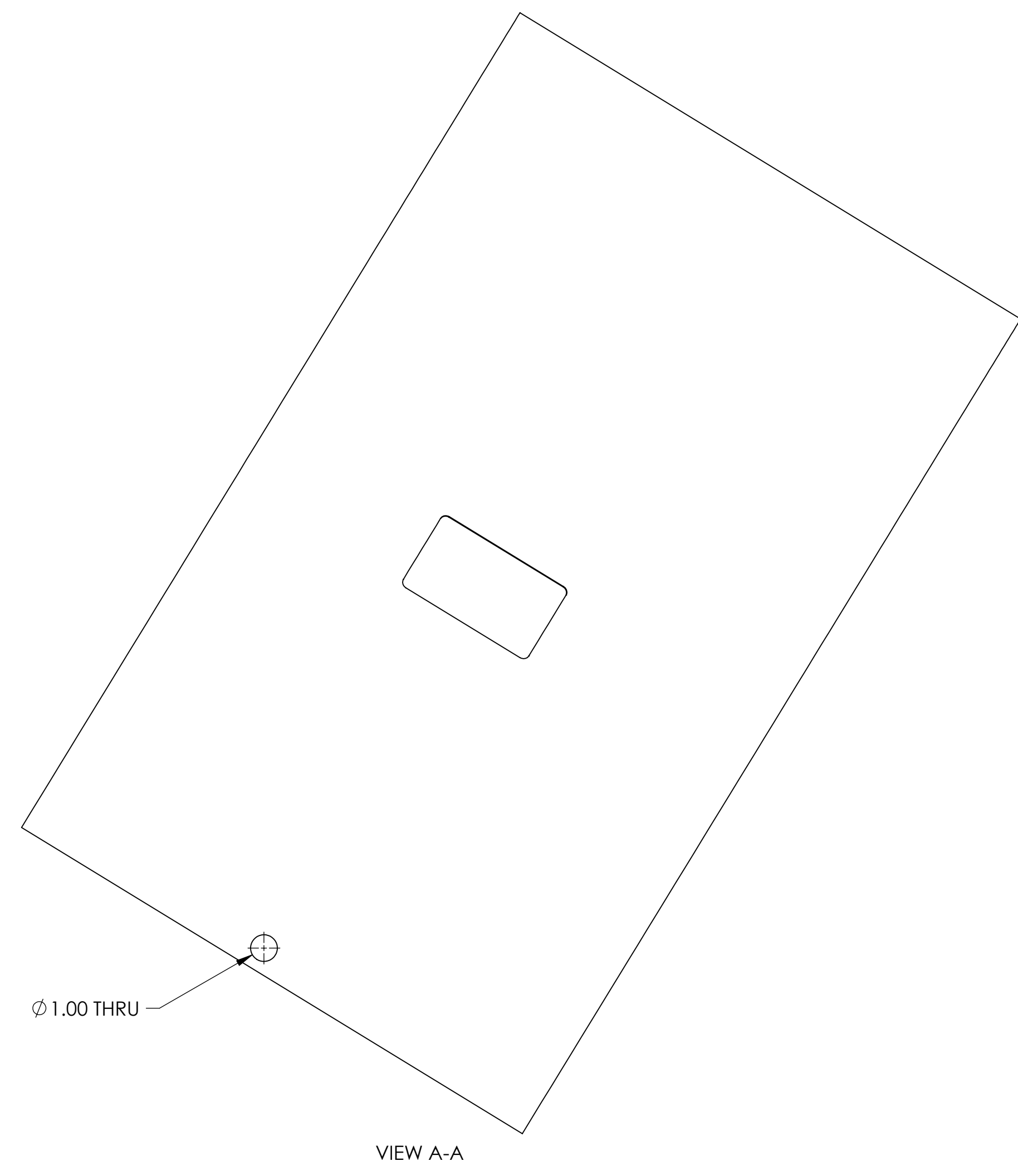
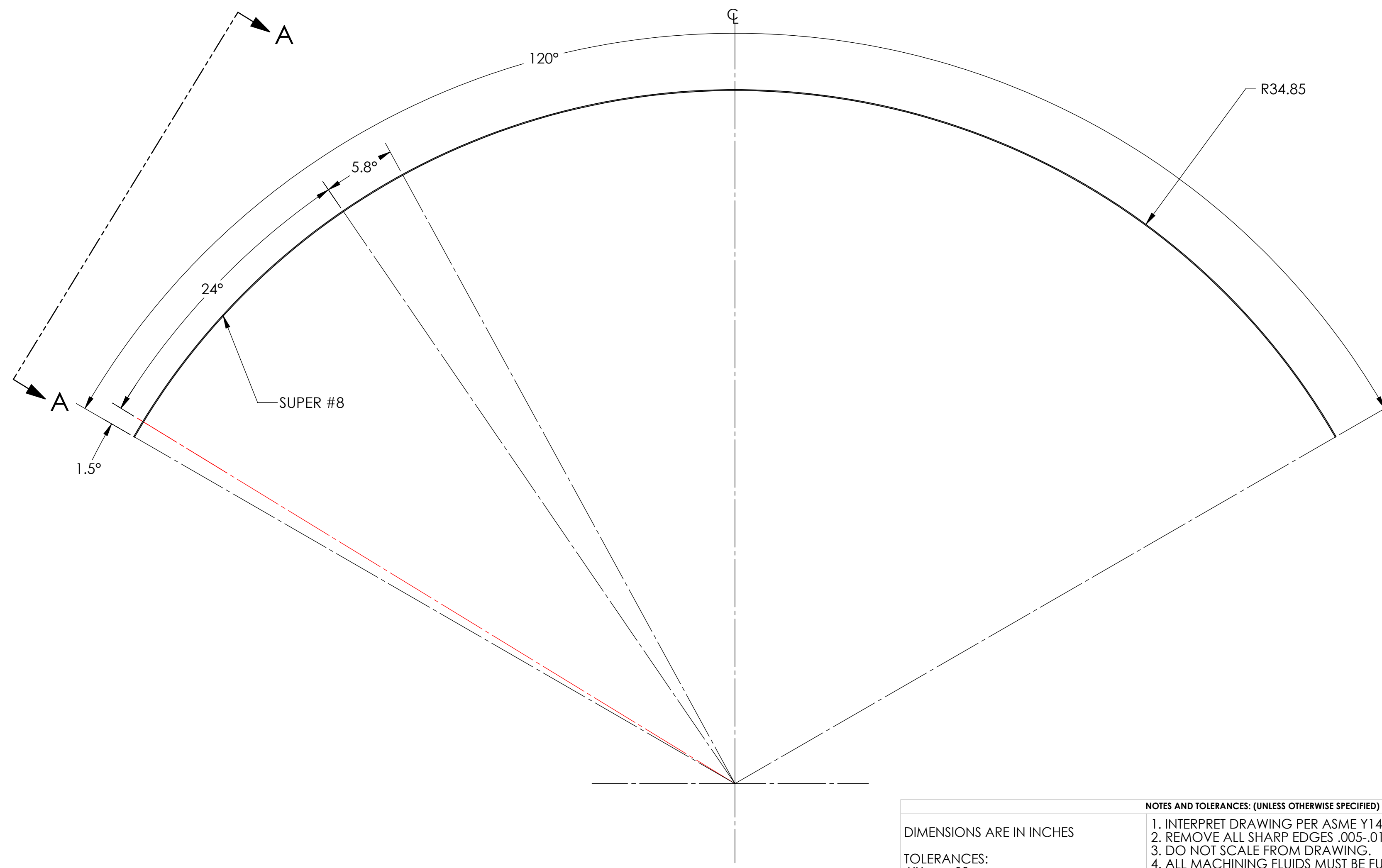
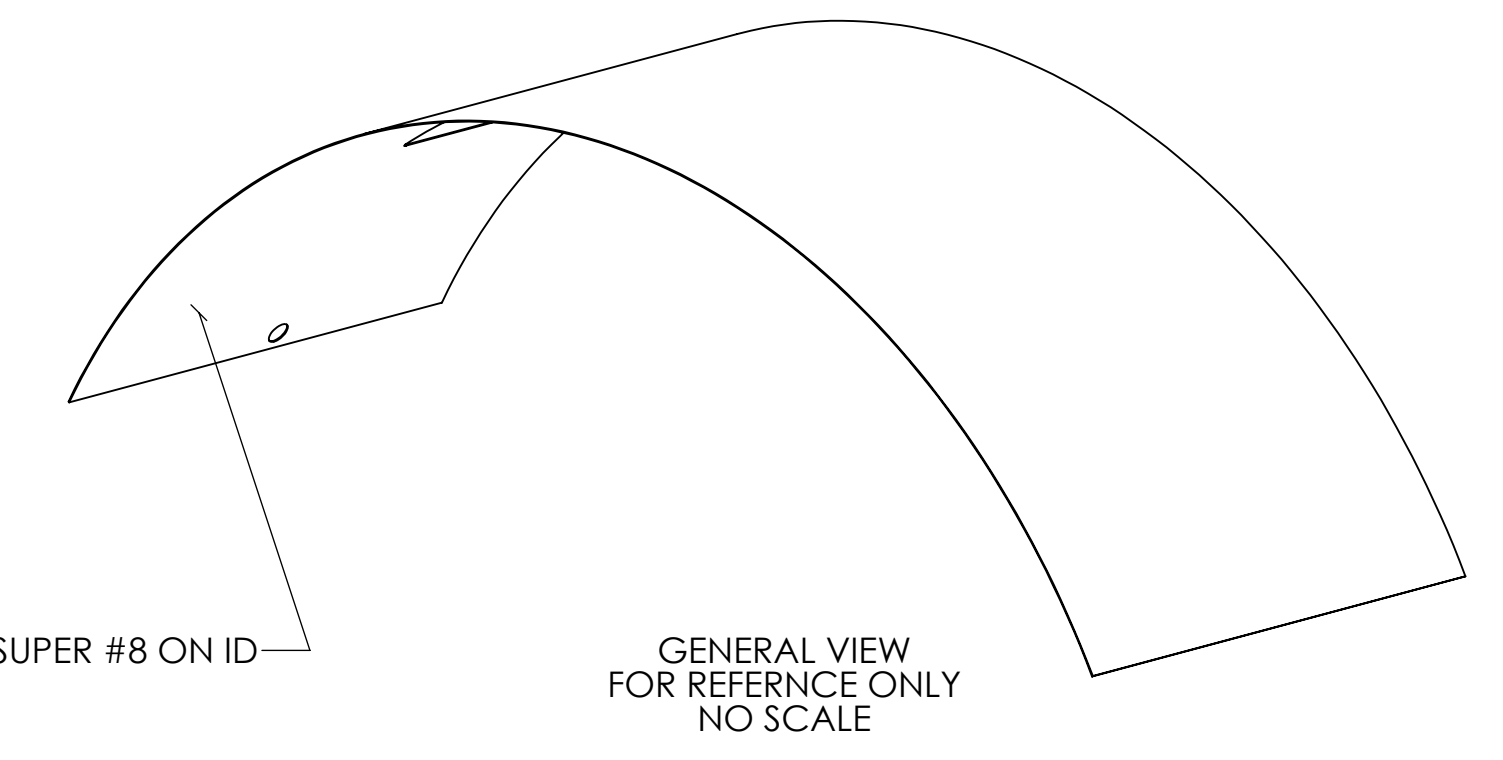
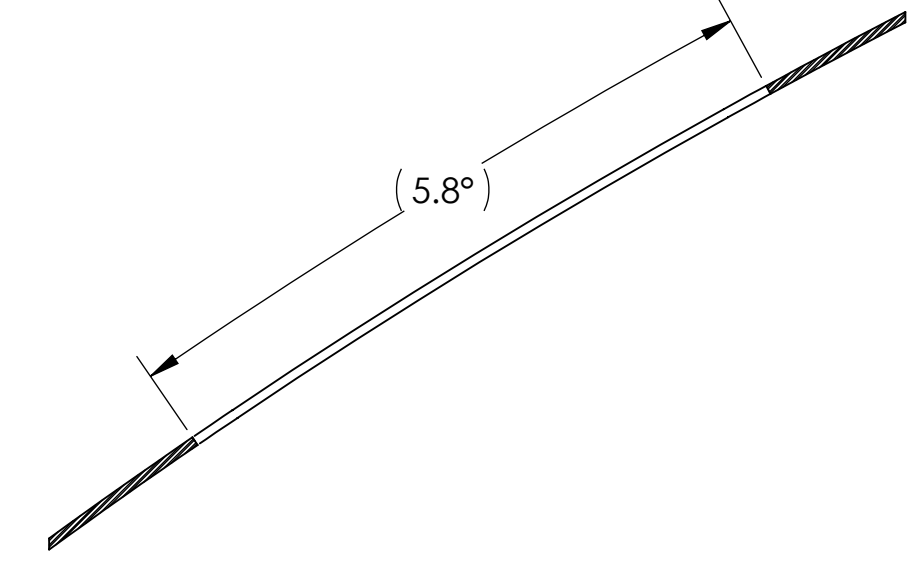
| | | | | | |
|---|------------|-------------|------------|----------------------|--------------|
| CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | | RADIAL SEGMENT, LEFT | |
| DESIGNER | H. KELMAN | 17 MAR 2010 | SIZE | DWG. NO. | REV. |
| DRAFTER | TG. NGUYEN | 16 AUG 2010 | D | D1000558 | v3 |
| CHECKER | M. SMITH | 27 JUL 2012 | SCALE: 1:4 | PROJECTION: | SHEET 1 OF 1 |
| APPROVAL | D. COYNE | | | | |

D:\000558.dwg_MonField_Cryo_Baffle_Radial Segment Left_PART PDM_REV: X-025_DRAWING PDM_REV: X-023

NOTES CONTINUED:
 ⑤ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR 'TYPE' IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE

- 6. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
- ⑦ SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.
- 8. ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.
- ⑧ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) LETTERS AS SHOWN. DO NOT APPLY MARK ON SUPER #8 SIDE.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 3 SEPT 2010 | E1000360 | E1000090 |
| v2 | 11 MAY 2011 | E1000360-v2 | - |
| v3 | 13 SEP 2011 | E1000360-v3 | - |



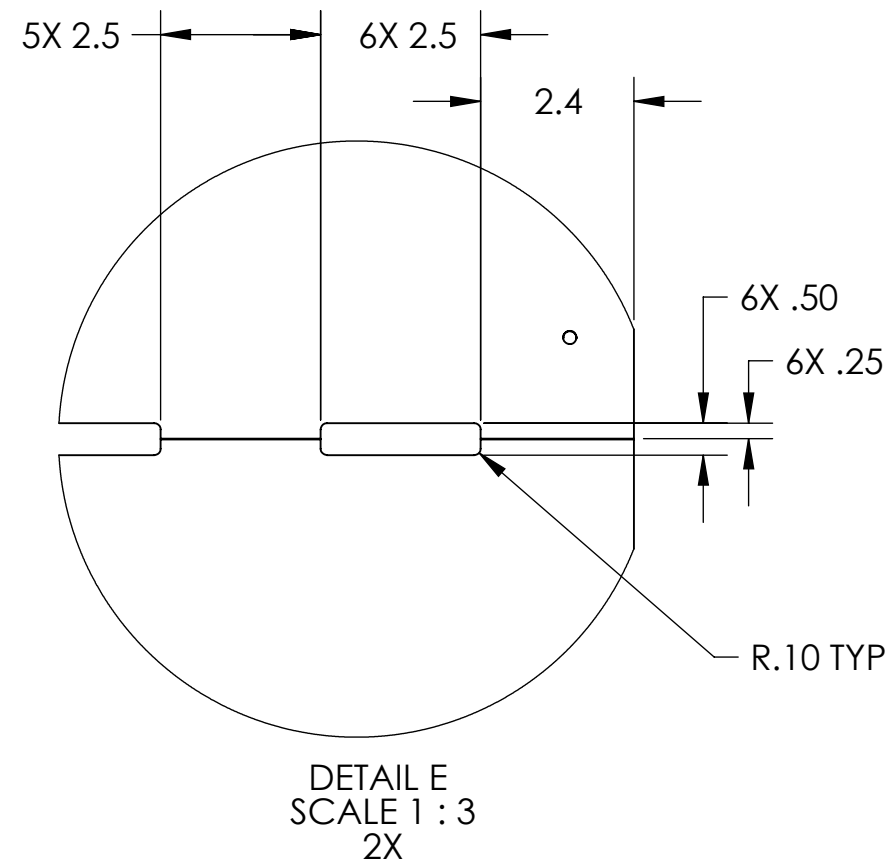
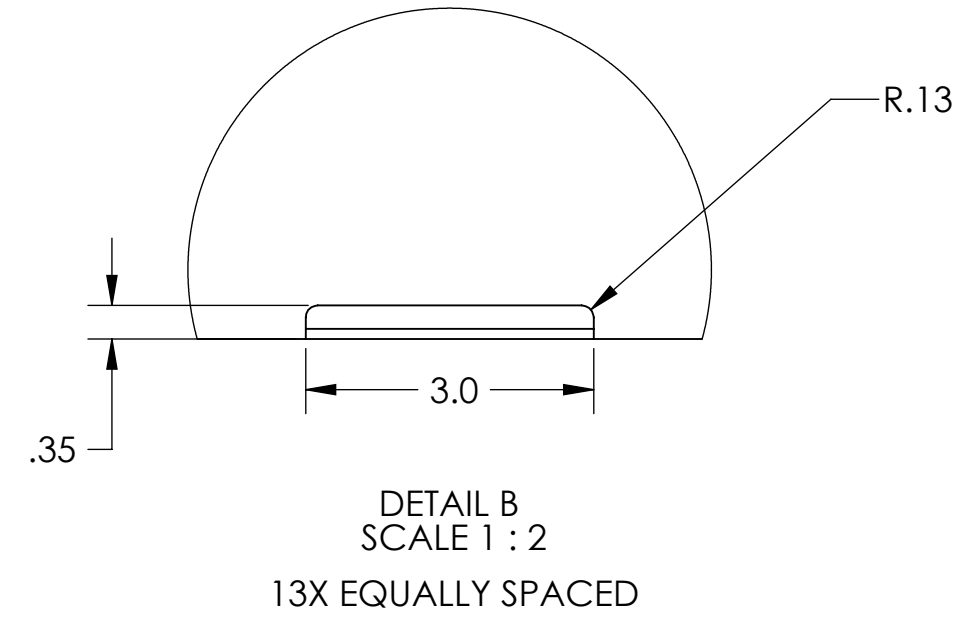
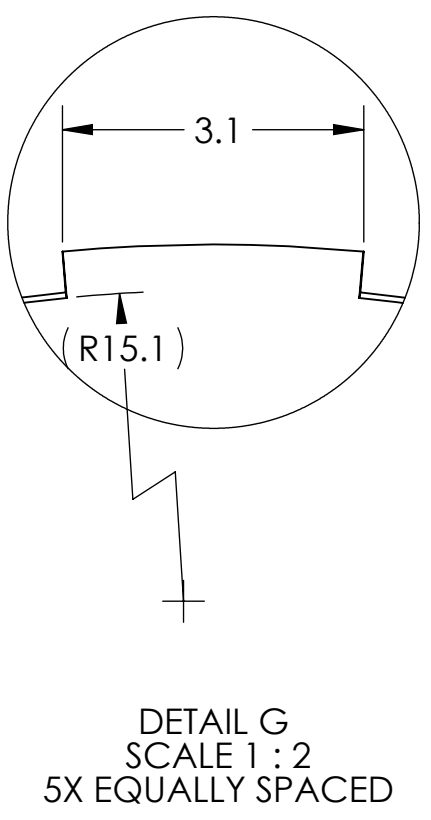
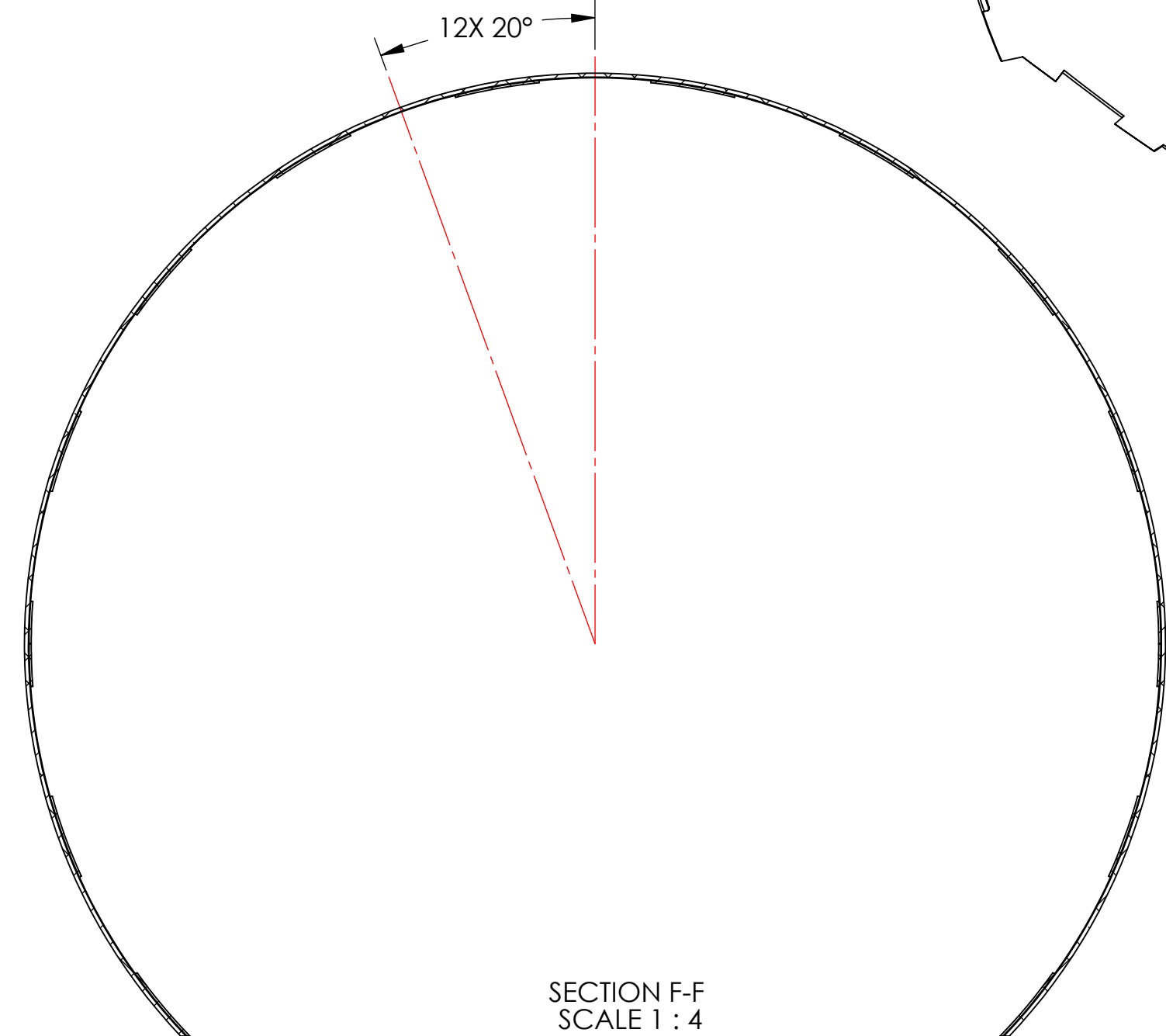
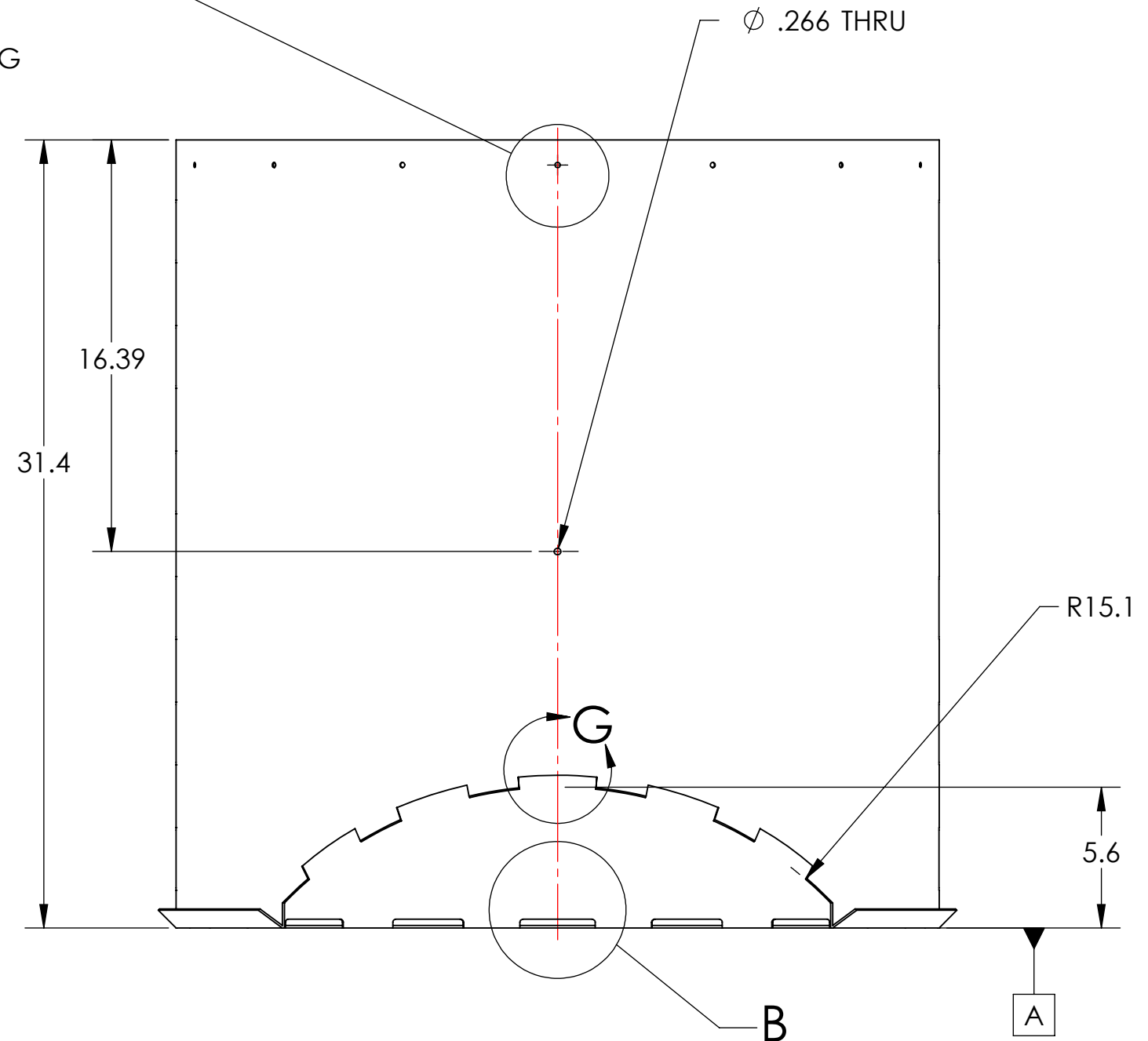
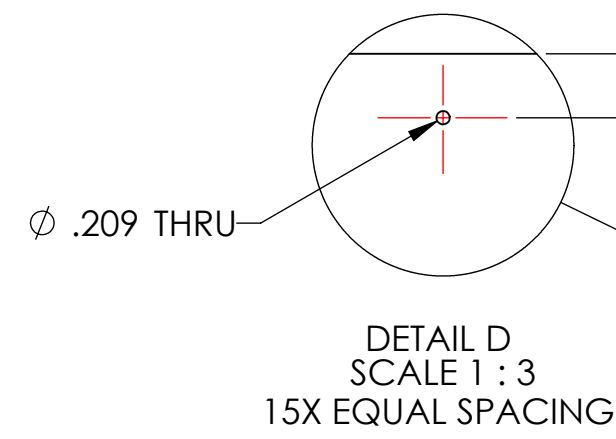
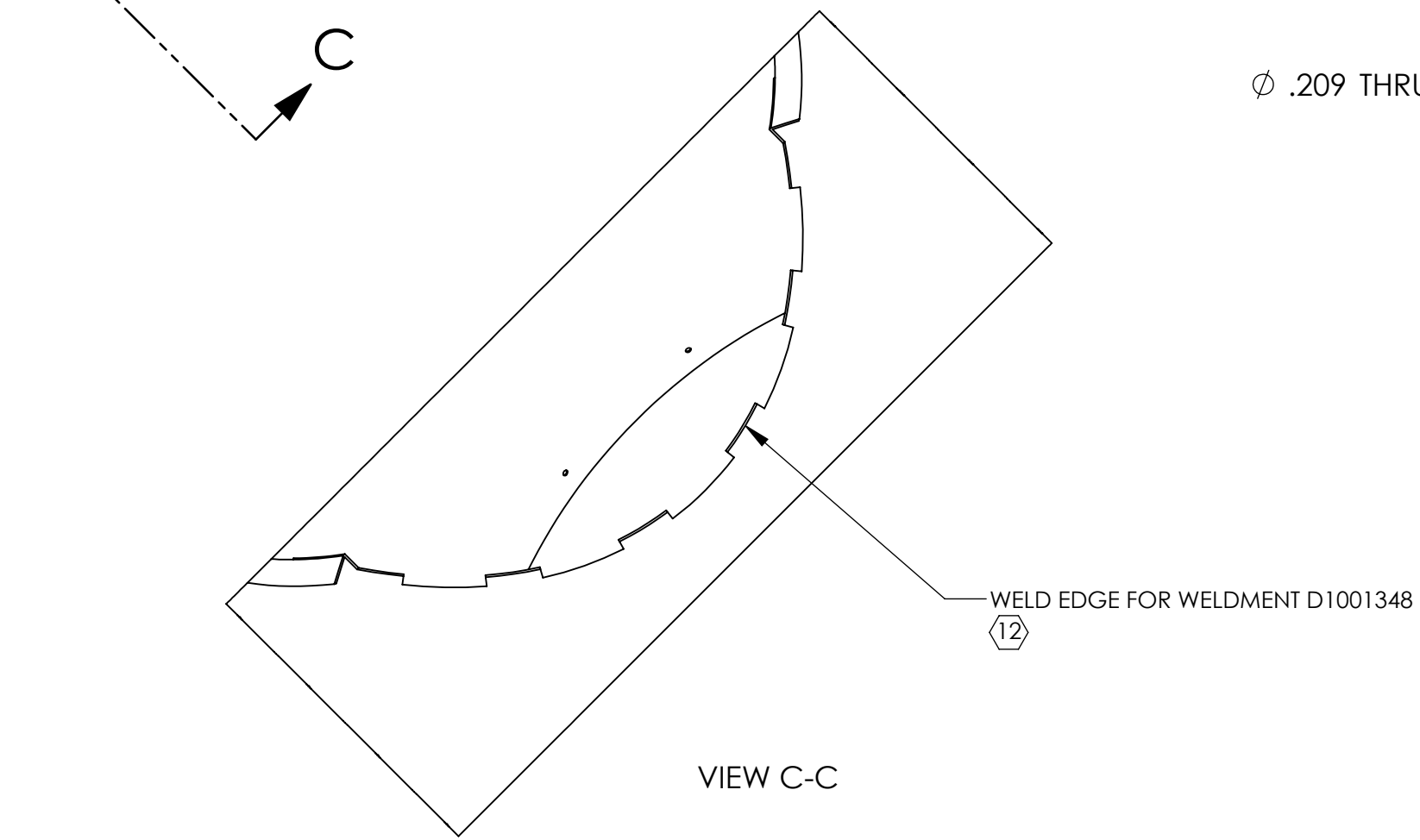
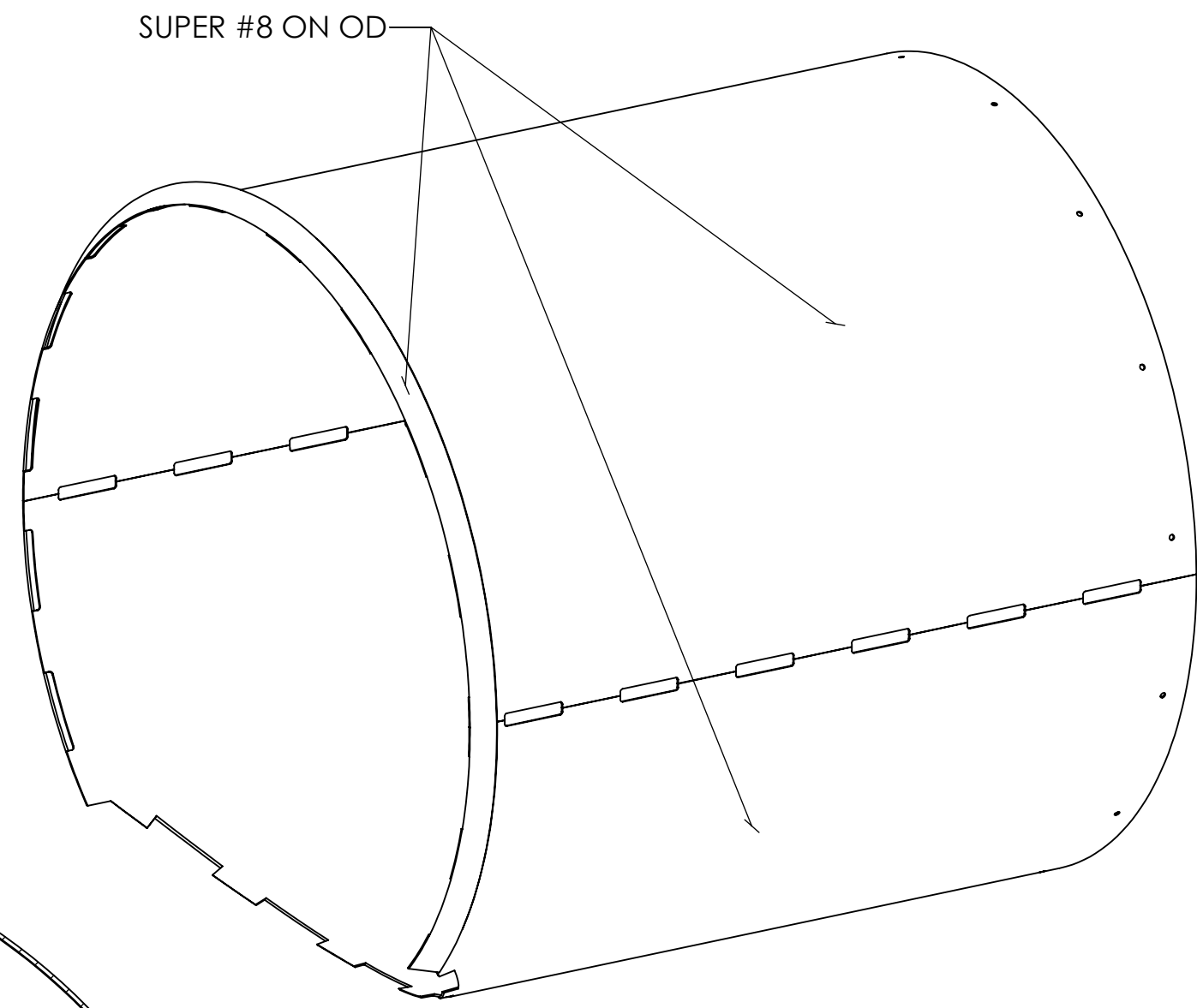
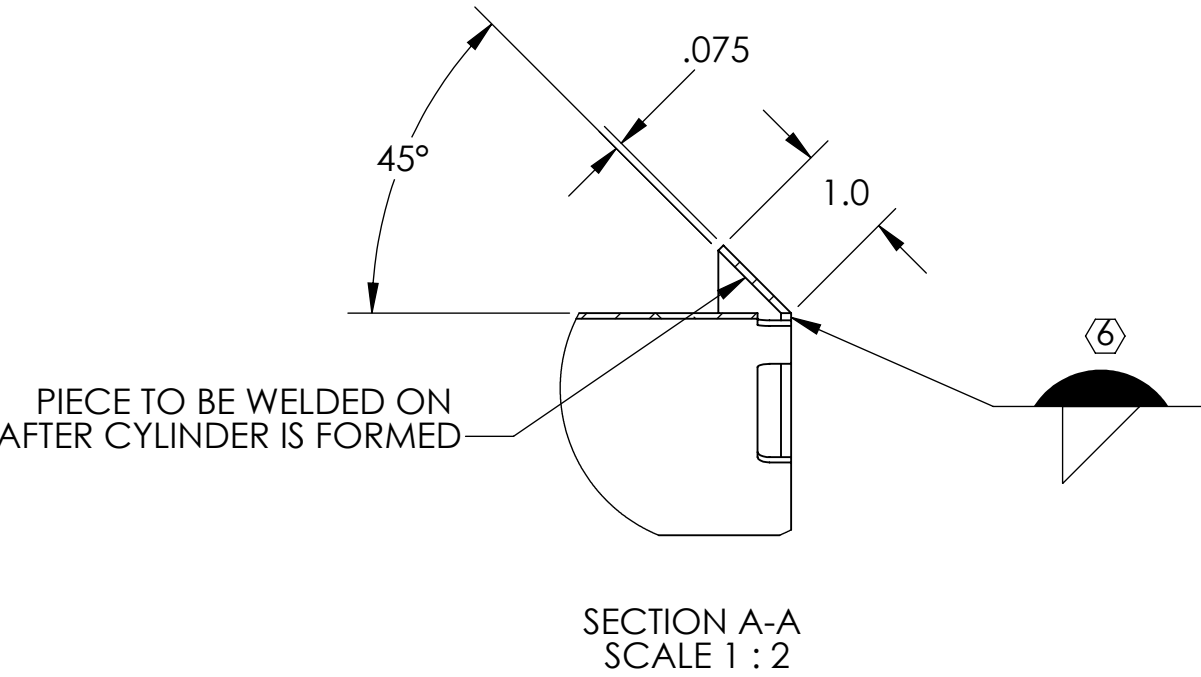
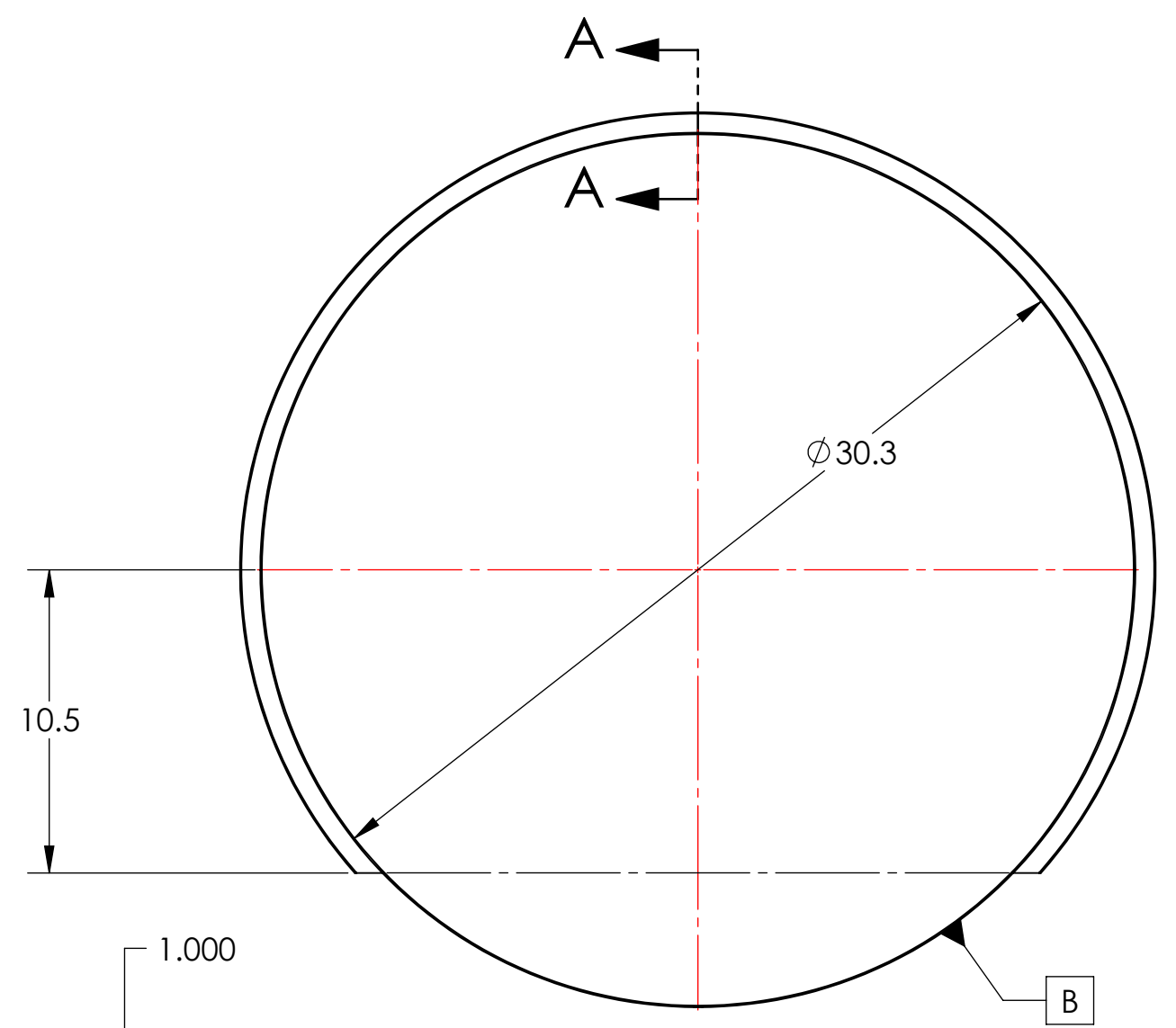
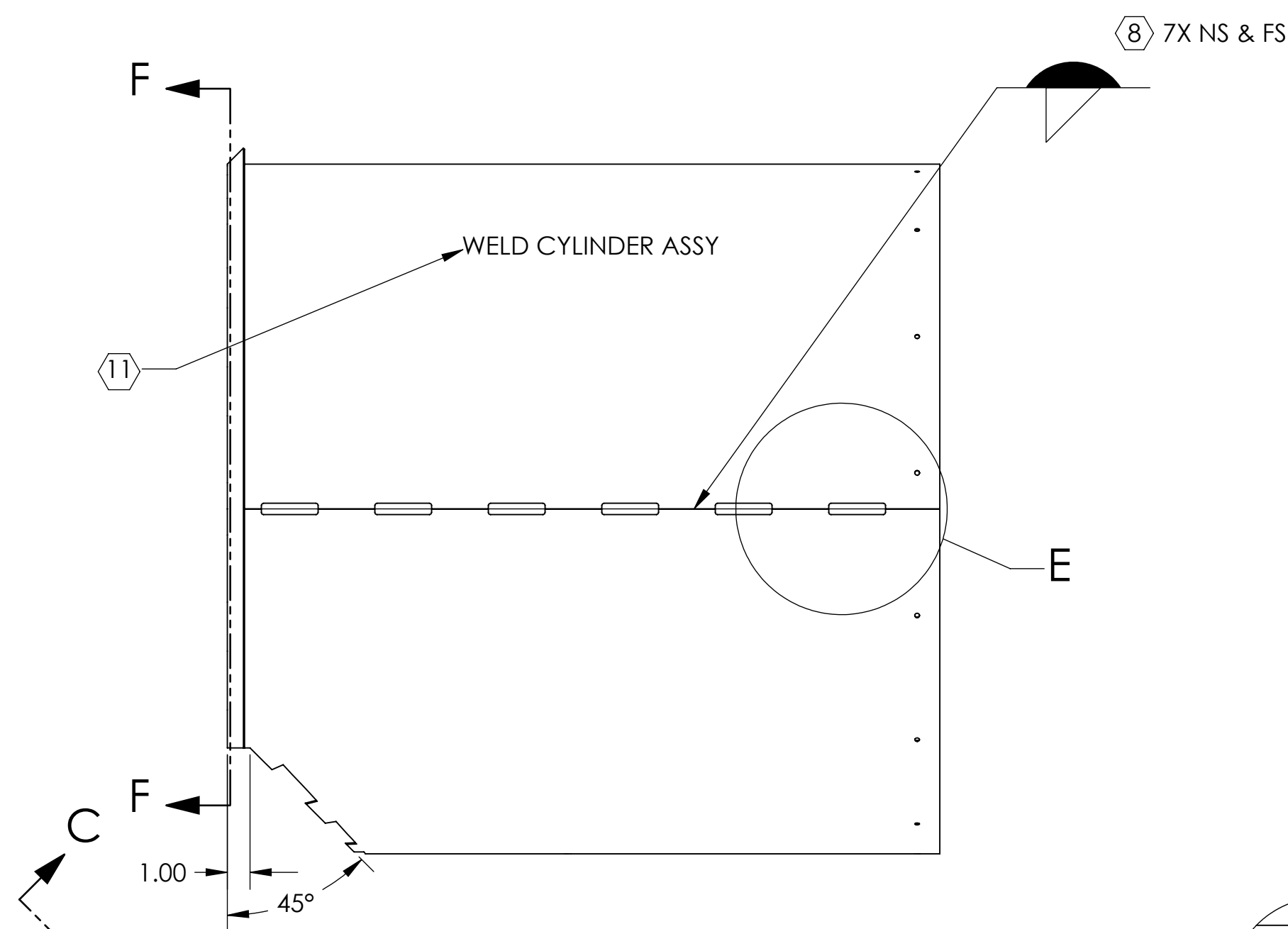
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|---|--|---|--|---|--|---|--|
| DIMENSIONS ARE IN INCHES | | NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | | CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | |
| TOLERANCES: .XX ± .03 .XXX ± .010 | | 1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES .005-.015 ON ALL EDGES AND HOLES. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | | SYSTEM ADVANCED LIGO SUB-SYSTEM AOS | | RADIAL SEGMENT, RIGHT | |
| ANGULAR ± 1.0° | | MATERIAL 18 GAUGE 304 SSSL | | FINISH ⑦ SUPER #8 | | NEXT ASSY D0902654, D1003186, D1003231 | |
| | | | | | | DESIGNER H. KELMAN 17 MAR 2010 DRAFTER TQ. NGUYEN 16 AUG 2010 CHECKER M. SMITH 27 SEP 2010 APPROVAL D. COYNE | |
| | | | | SIZE DWG. NO. D D1000559 SCALE: 1:4 PROJECTION: | | REV. v3 SHEET 1 OF 1 | |

D:\000559.dwg_Monfield_Coyne_Radial Segment Right.PART.PDM.REV.X-029.DRAWING.PDM.REV.X-025

- NOTES CONTINUED:**
- 5 SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE
 - 6 FILLET WELD WHERE RING AND CYLINDER MAKE CONTACT. WELDING MUST BE PER SPECIFICATION E0900048
 - 7 SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.

- 8 SEAM WELD CYLINDER PER SPECIFICATION E0900048.
- 9 ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
- 10 ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.
- 11 SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) LETTERS AS SHOWN.
- 12 VENDOR RESPONSIBLE FOR EDGE WELD PREP, IF REQUIRED.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| V1 | 07 SEP 2010 | E1000360 | E1000367 |
| V2 | 11 MAY 2011 | E1000360-v2 | |
| V3 | 13 SEP 2011 | E1000360-v3 | |



THIS PIECE IS PART OF A WELDMENT. DIMENSIONS SHOWN ARE APPROXIMATE; WELD INDUCED SHRINKAGE OR FILL, AND POST WELD ANNEALING AND MACHINING CONSIDERATIONS ARE NOT INCLUDED. SEE D0902654 FOR REQUIRED DIMENSIONS FOR STRUCTURE AFTER WELDMENT.

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
|--|------------|
| DIMENSIONS ARE IN INCHES | |
| TOLERANCES: .X ± .1 .XX ± .06 .XXX ± .010 | |
| ANGULAR ± 1.0° | |
| MATERIAL | FINISH |
| 18 GAUGE 304 SSSL | ⑦ SUPER #8 |

| | |
|---|------------|
| LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | |
| SYSTEM | SUB-SYSTEM |
| ADVANCED LIGO | AOS |
| NEXT ASSY | |
| D1001348 | |

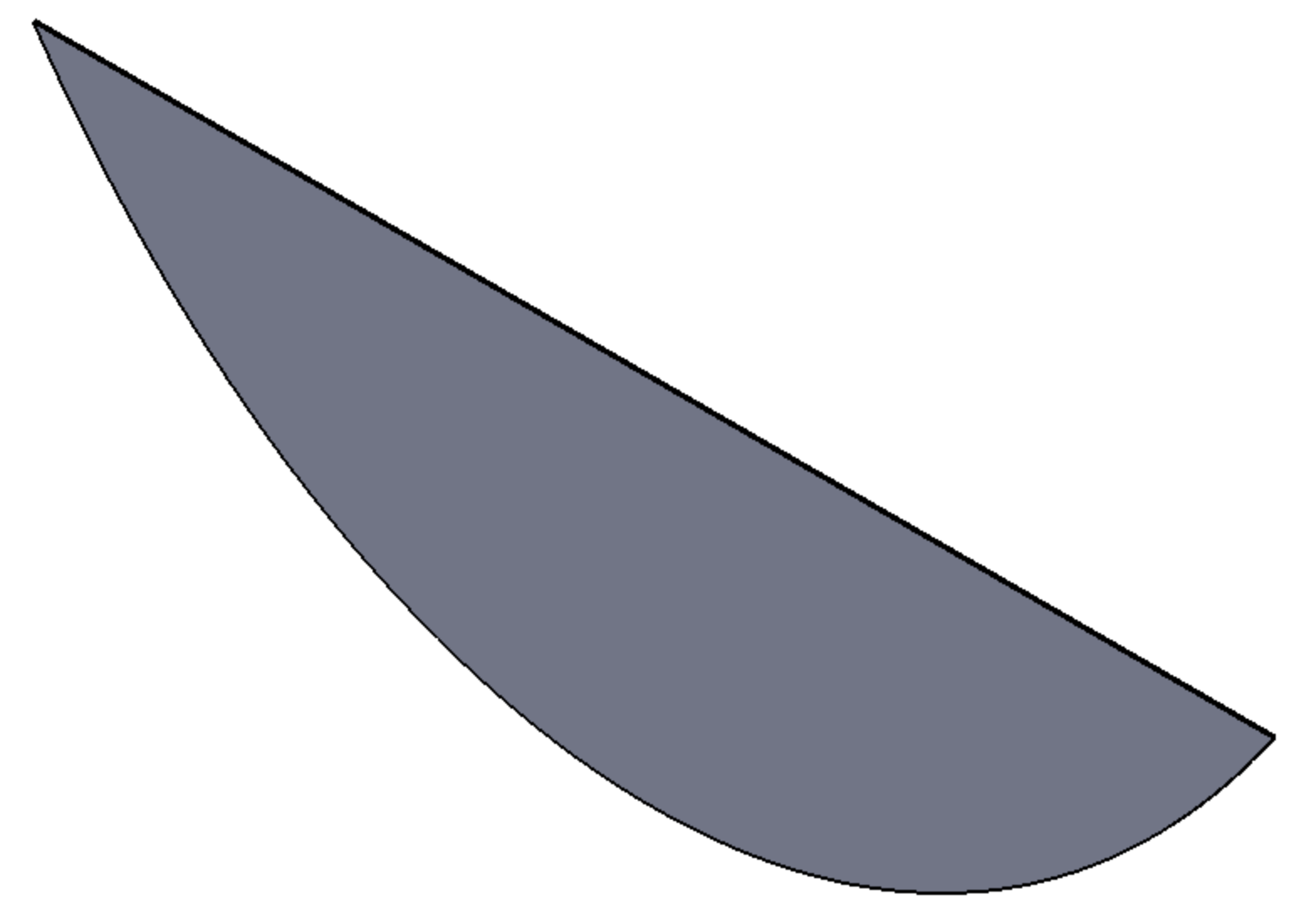
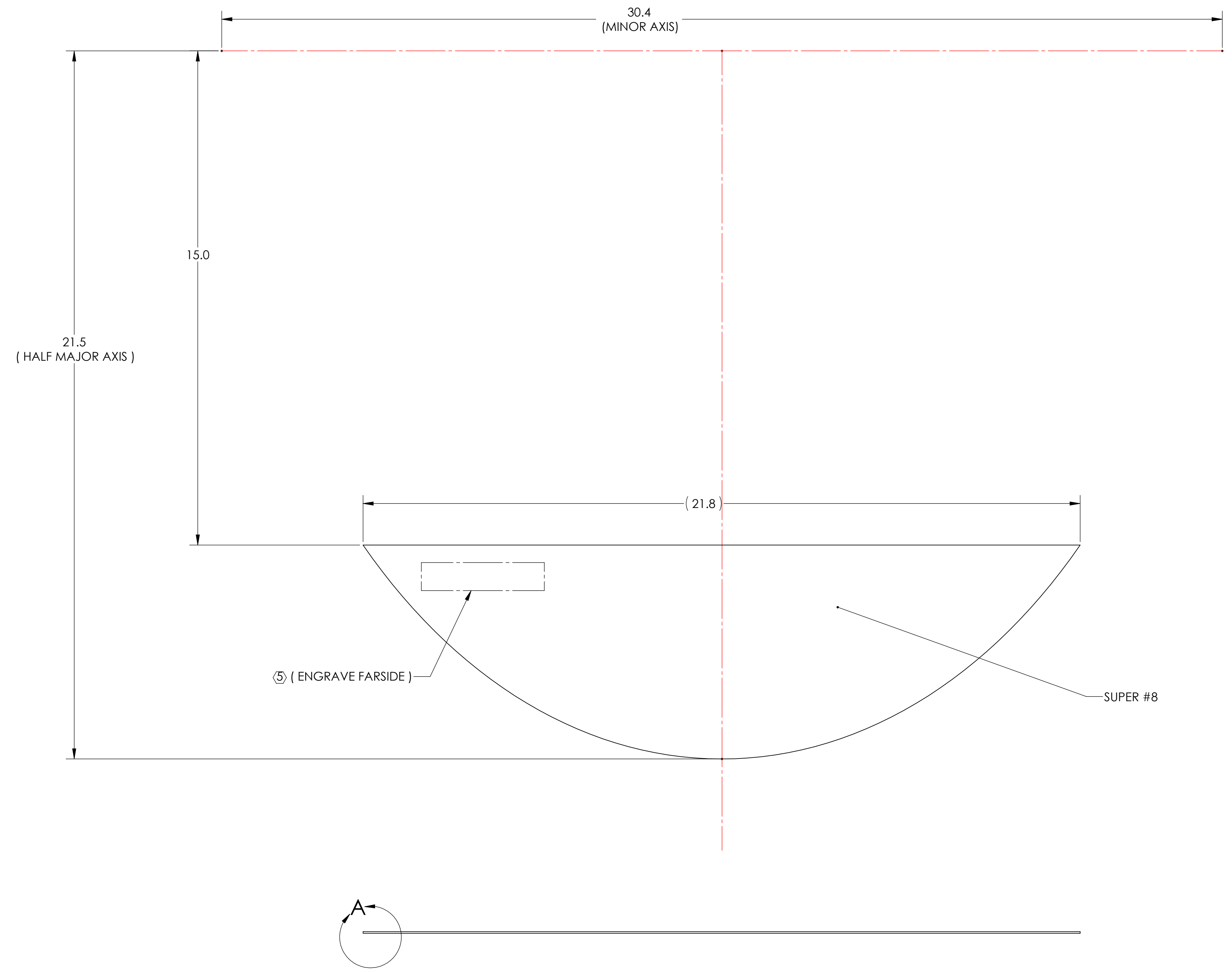
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|-------------------------------|------------|-------------|------------------------|
| PART NAME | | | |
| MANIFOLD-CRYO BAFFLE CYLINDER | | | |
| DESIGNER | H. KELMAN | 5 APR 2010 | SIZE DWG. NO. |
| DRAFTER | TQ. NGUYEN | 07 SEP 2010 | D |
| CHECKER | M. SMITH | 27 JUL 2012 | D1000570 |
| APPROVAL | D. COYNE | | SCALE: 1:6 PROJECTION: |
| | | | SHEET 1 OF 1 |

REV. v3

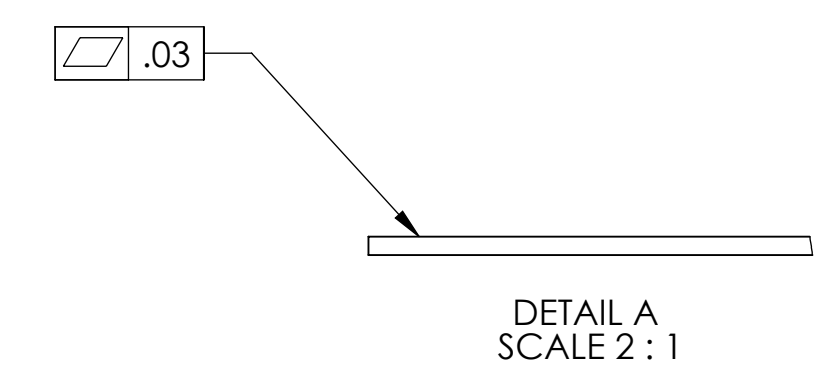
NOTES CONTINUED:
 ⑤ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE
 ⑥ SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.

7. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
 8. ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 08 SEP 2010 | E1000360 | E1000367 |
| v2 | 12 MAY 2011 | E1000360-v2 | - |
| v3 | 13 SEP 2011 | E1000360-v3 | - |



GENERAL VIEW
FOR REFERENCE ONLY
NO SCALE



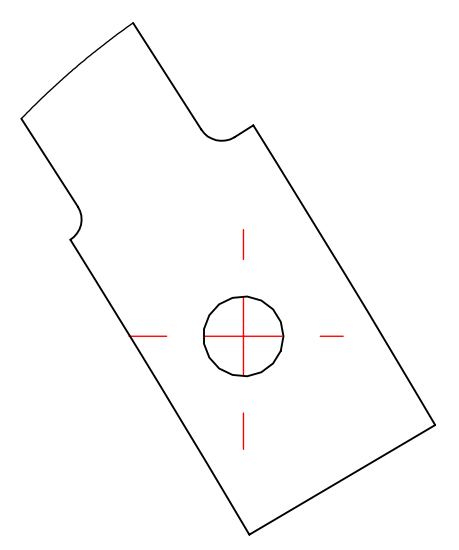
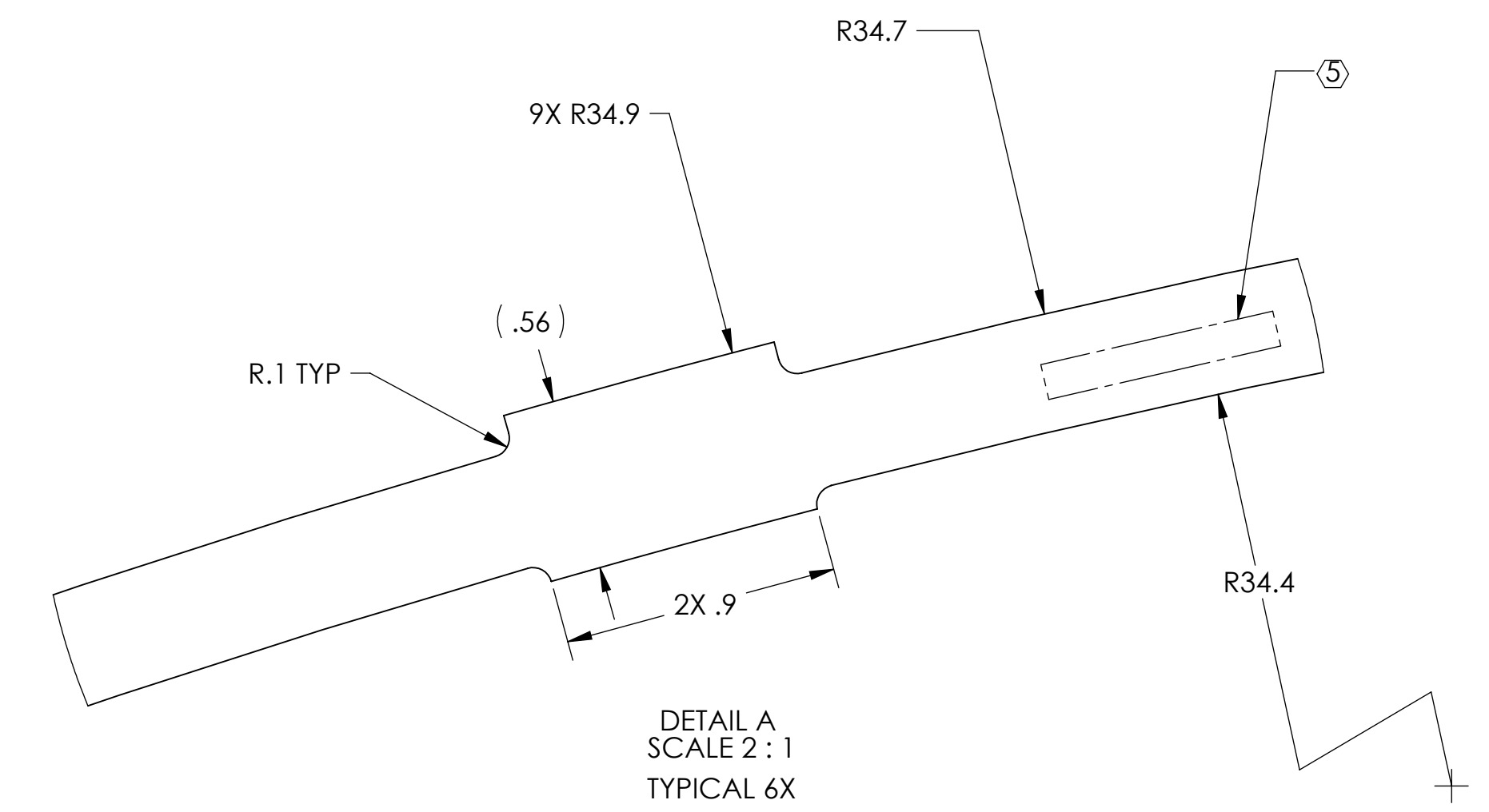
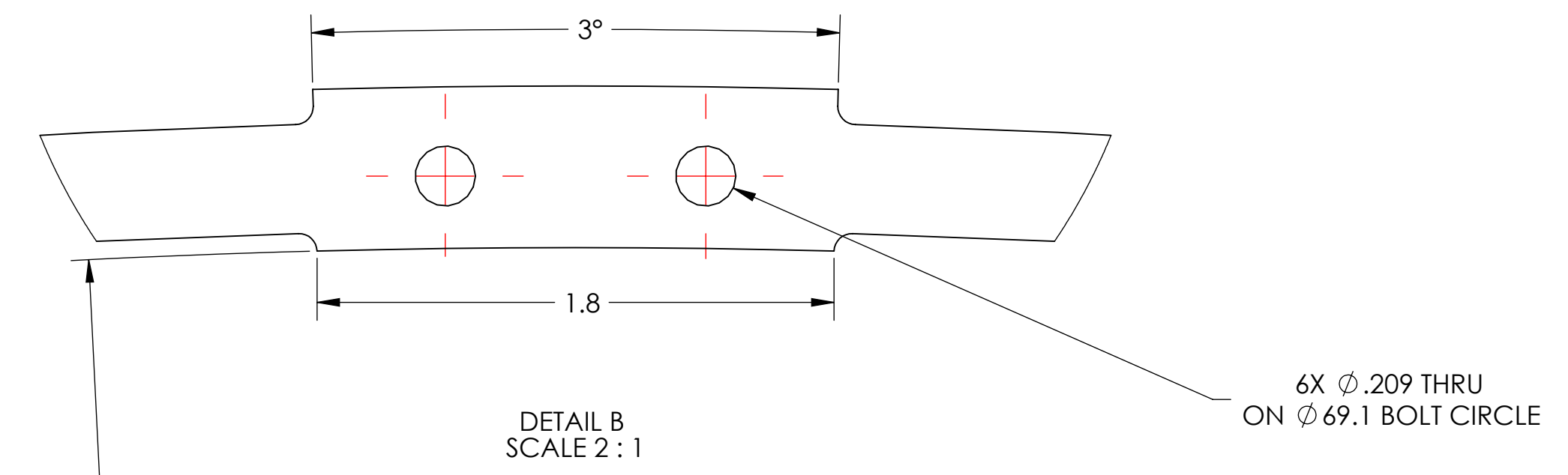
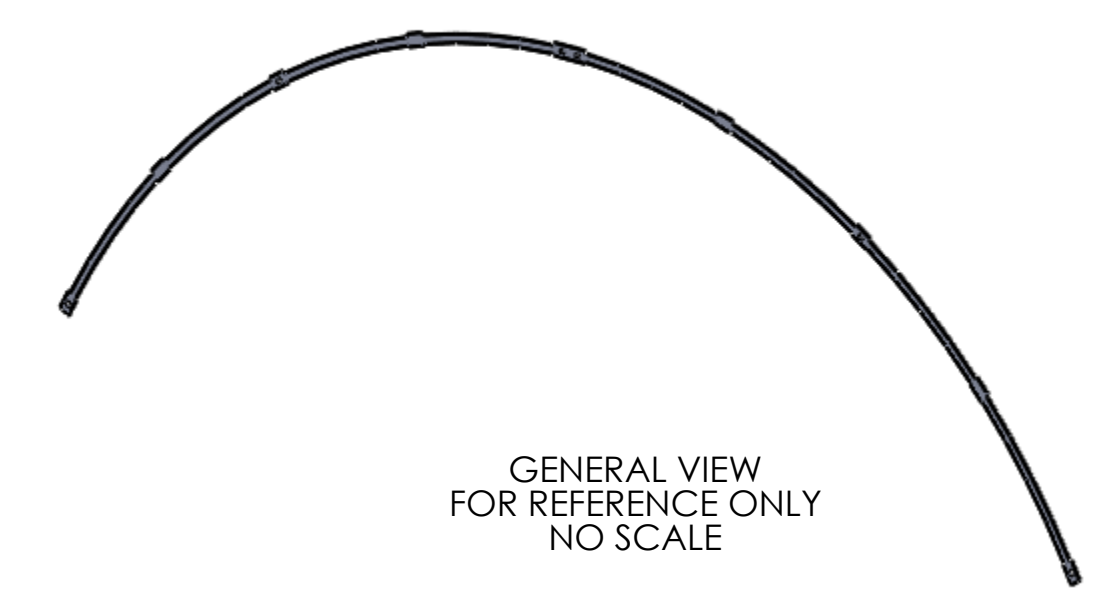
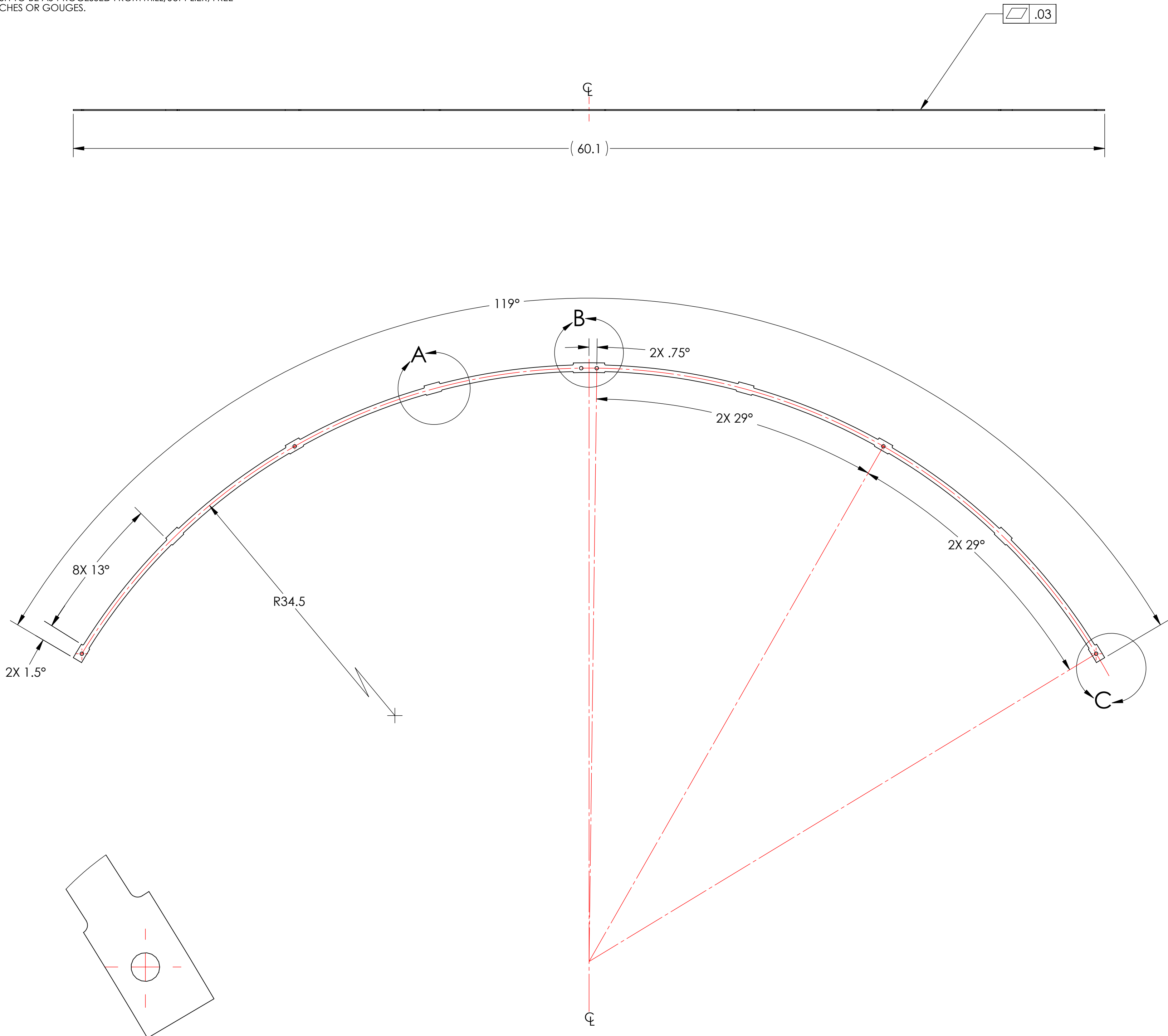
THIS PIECE IS PART OF A WELDMENT. DIMENSIONS SHOWN ARE APPROXIMATE; WELD INDUCED SHRINKAGE OR FILL, AND POST WELD ANNEALING AND MACHINING CONSIDERATIONS ARE NOT INCLUDED. SEE D1001348 FOR REQUIRED DIMENSIONS FOR STRUCTURE AFTER WELDMENT.

| DIMENSIONS ARE IN INCHES | | NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | | LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | |
|---|--|--|--|---|--|---|--|
| TOLERANCES: .X ±.1 .XX ±.06 .XXX ±.010 | | 1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES .005-.015 FOR ALL EDGES AND HOLES. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | | SYSTEM ADVANCED LIGO SUB-SYSTEM AOS | | ELLIPSE SCRAPER BLADE | |
| ANGULAR ± 1.0° | | MATERIAL 18 GAUGE 304 SSTL FINISH ⑥ SUPER #8 | | NEXT ASSY D1001348 | | DESIGNER H. KELMAN 15 JUN 2010 SIZE DWG. NO. D1001018 REV. v3 | |
| | | | | | | DRAFTER TQ. NGUYEN 18 AUG 2010 | |
| | | | | | | CHECKER M. SMITH 27 SEPT 2010 | |
| | | | | | | APPROVAL D. COYNE SCALE: 1:2 PROJECTION: SHEET 1 OF 1 | |

D1001018.dwg_Monitichl_Crvz_Baffle_Scraper_Blade_PART.PDM REV: X-203.DRAWING PDM REV: X-019

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 08 SEP 2010 | E1000360 | E1000085 |
| v2 | 12 MAY 2011 | E1000360-v2 | E1000090 |
| v3 | 12 SEP 2011 | E1000360-v3 | E1000091 |

- NOTES CONTINUED:**
- ⑤ SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR TYPE IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE
 - 6. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
 - 7. ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.
 - ⑧ SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.



THIS PIECE IS PART OF A WELDMENT. DIMENSIONS SHOWN ARE APPROXIMATE; WELD INDUCED SHRINKAGE OR FILL, AND POST WELD ANNEALING AND MACHINING CONSIDERATIONS ARE NOT INCLUDED. SEE NEXT ASSEMBLY FOR REQUIRED DIMENSIONS FOR STRUCTURE AFTER WELDMENT.

| DIMENSIONS ARE IN INCHES | |
|--------------------------|--|
| TOLERANCES: | |
| .X ± .1 | |
| .XX ± .06 | |
| .XXX ± .010 | |
| ANGULAR ± 1.0° | |

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
|--|-------------------|
| 1. INTERPRET DRAWING PER ASME Y14.5-1994. | |
| 2. REMOVE ALL SHARP EDGES .005-.015 ON ALL EDGES AND HOLES. | |
| 3. DO NOT SCALE FROM DRAWING. | |
| 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | |
| MATERIAL | 14 GAUGE 304 SSSL |
| FINISH | ⑧ |

| | |
|---|---------------|
| CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | |
| SYSTEM | ADVANCED LIGO |
| SUB-SYSTEM | AOS |
| NEXT ASSY | VARIOUS |

| PART NAME | | | |
|-----------------------------|------------|--------------|---------------|
| RADIAL ATTACHMENT NUT PLATE | | | |
| DESIGNER | H. KELMAN | 6 APRIL 2010 | SIZE DWG. NO. |
| DRAFTER | TQ. NGUYEN | 17 AUG 2010 | D D1001073 |
| CHECKER | M. SMITH | 27 SEP 2011 | |
| APPROVAL | D. COYNE | | REV. v3 |
| SCALE: 1:4 | | PROJECTION: | SHEET 1 OF 1 |

NOTES CONTINUED:
 5. SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR 'TYPE' IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX

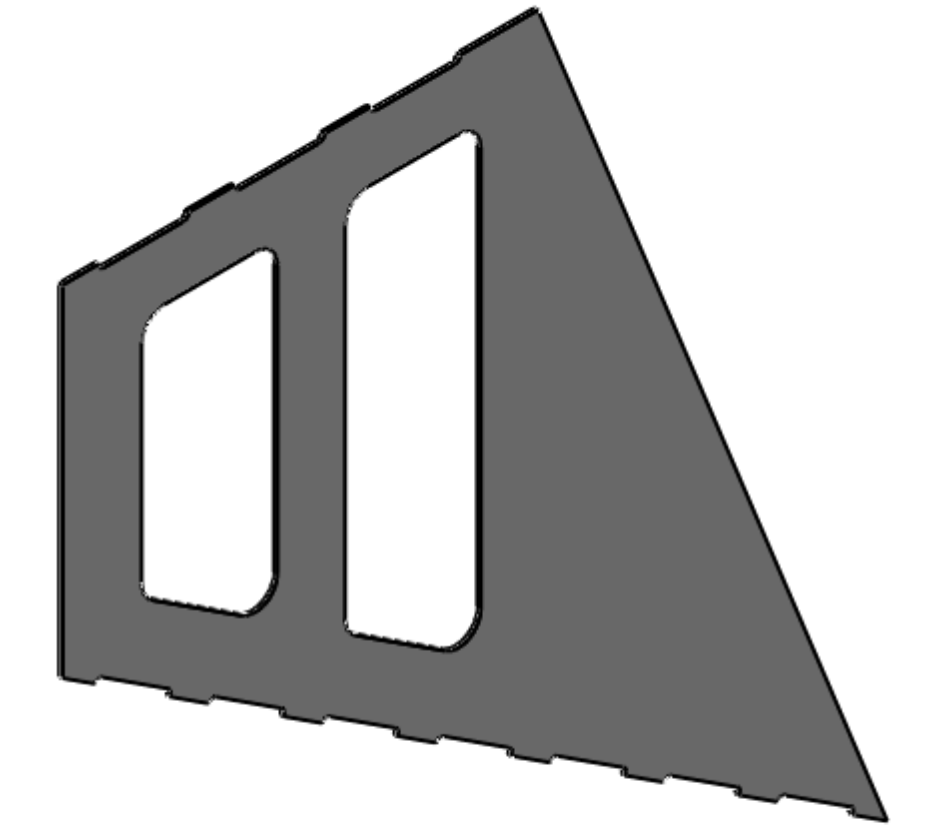
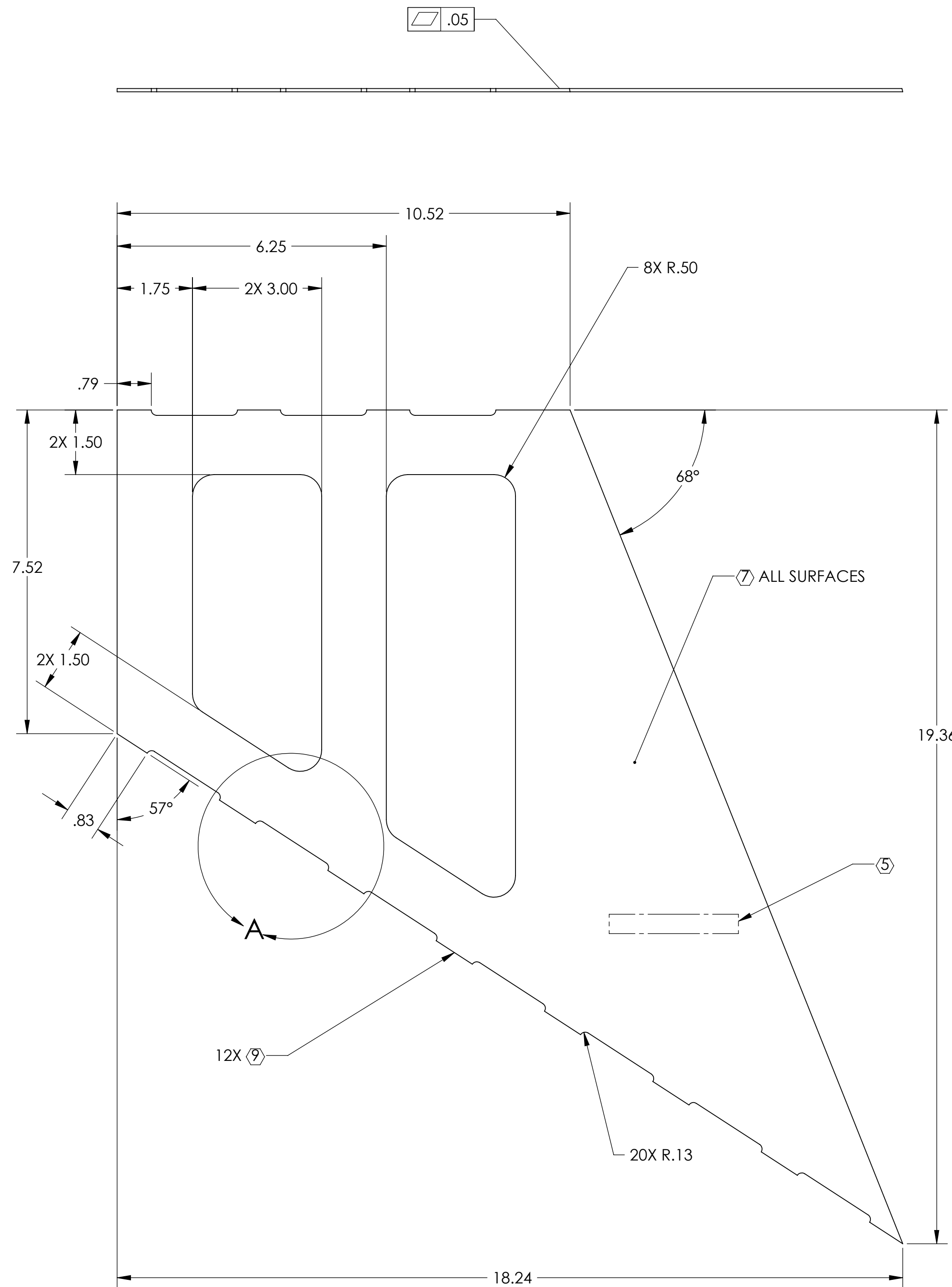
6. ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.

7. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364 AND E1100842.

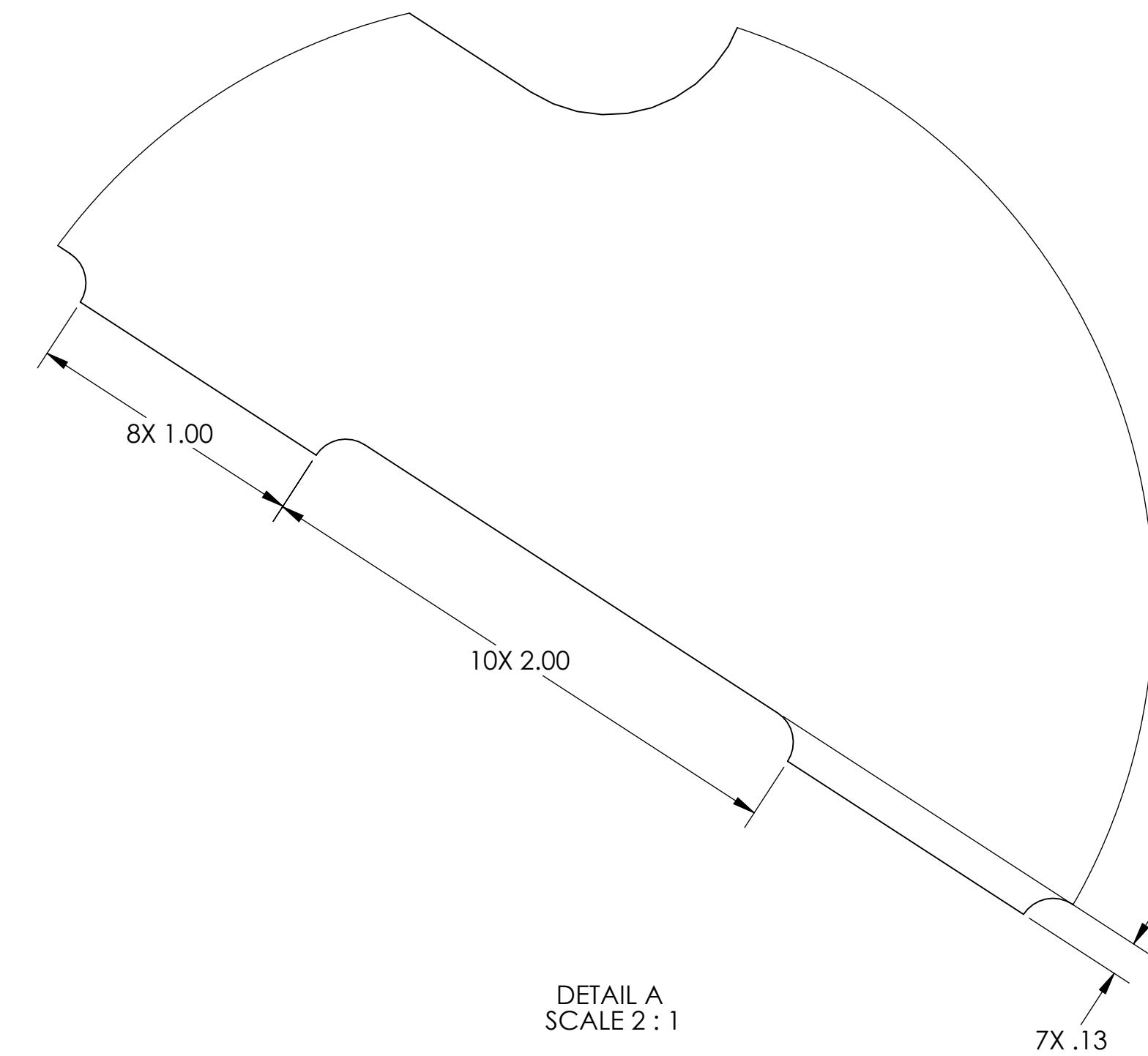
8. SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.

9. CASTELLATION ON MATERIAL EDGES ARE FOR WELD PURPOSES IN ASSEMBLIES (D0902654, D0902655, D0902656).

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|-------------|----------------|
| v1 | 2 OCT 2010 | E1000360 | E1000085-v1 |
| v2 | 12 MAY 2011 | E1000360-v2 | E1000090-v1 |
| v3 | 4 OCT 2011 | E1000360-v3 | E1000091-v1 |



GENERAL VIEW
FOR REFERENCE ONLY
NO SCALE



DETAIL A
SCALE 2:1

THIS PIECE IS PART OF A WELDMENT. DIMENSIONS SHOWN ARE APPROXIMATE; WELD INDUCED SHRINKAGE OR FILL AND POST WELD ANNEALING AND MACHINING CONSIDERATIONS ARE NOT INCLUDED. SEE NEXT ASSEMBLY FOR REQUIRED DIMENSIONS FOR STRUCTURE AFTER WELDING.

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | | LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | | | | | |
|---|--|---|--|-------------------------------------|--------------------------|-----------------------|---------------------|----------------------|-----------------------------|
| DIMENSIONS ARE IN INCHES | | | | MANIFOLD CRYO BAFFLE WELDMENT BRACE | | | | | |
| TOLERANCES: .XX ± .06 .XXX ± .010 ANGULAR ± 1.0° | | | | SYSTEM ADVANCED LIGO | SUB-SYSTEM AOS | DESIGNER H. KELMAN | DATE 27 OCT 2010 | SIZE D | DWG. NO. D1002849 |
| MATERIAL 14 GAUGE 304 SSSL | | FINISH | | NEXT ASSY VARIOUS | | CHECKER M. SMITH | | APPROVAL D. COYNE | |
| | | | | SCALE: 1:2 | | PROJECTION: | | SHEET 1 OF 1 | |

D1002849.dwg; Manifold_Cryo_Baffle_Weldment_Brace; PART PDM REV: X-024; DRAWING PDM REV: X-016

NOTES CONTINUED:

5. SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR TYPE IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS.
 EXAMPLE: DXXXXXX-VY, TYE-XX, S/N XXX
 DO NOT APPLY MARK ON SUPER #8 SIDE.

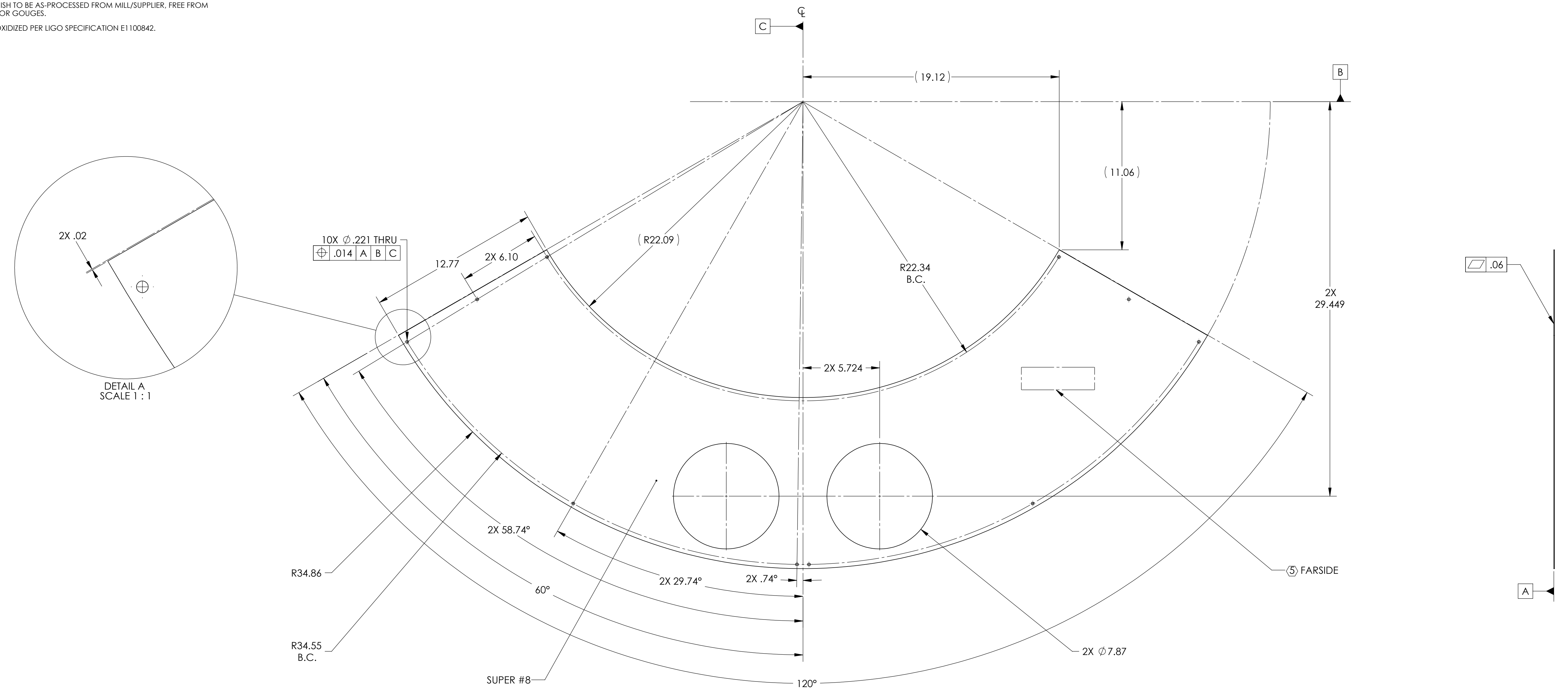
6. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

7. ALL MATERIAL IS TO BE VIRGIN MATERIAL (i.e. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL), NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.

8. SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.

9. PART TO BE OXIDIZED PER LIGO SPECIFICATION E1100842.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|------------|-------------|----------------|
| v1 | 4 OCT 2011 | E1000360-v3 | - |
| - | - | - | - |
| - | - | - | - |

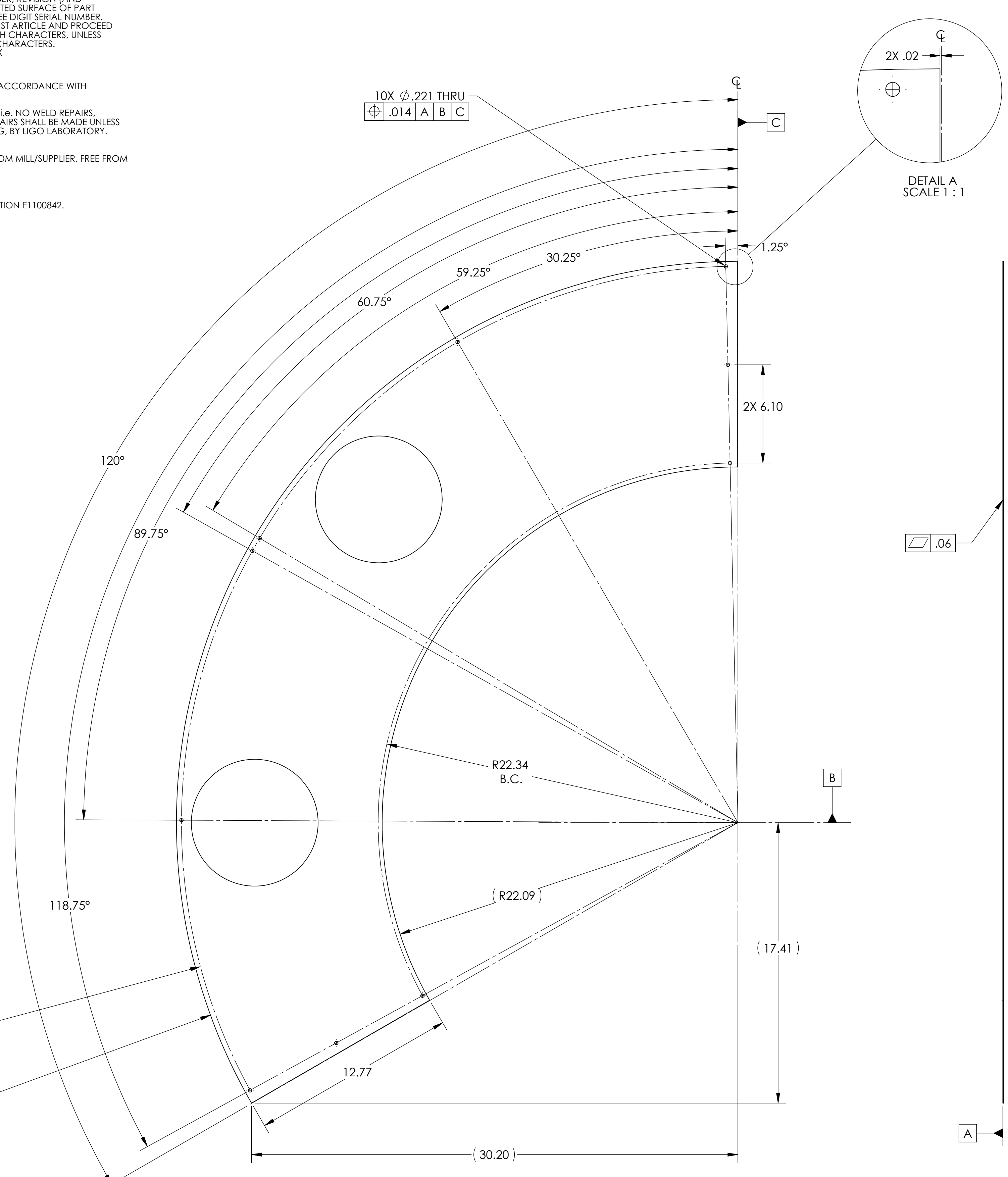


| DIMENSIONS ARE IN INCHES | | NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | | LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | | | |
|---|--|---|--------------------|---|--|------------------------------------|--|---|--|
| TOLERANCES: .XX ± .03 .XXX ± .010 | | 1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES .005-.015 ON ALL EDGES AND HOLES. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | | SYSTEM ADVANCED LIGO | | SUB-SYSTEM AOS | | LOWER FACE PLATE, ITM XY DESIGNER: TQ. NGUYEN 26 JUL 2011 DRAFTER: TQ. NGUYEN 3 AUG 2011 CHECKER: M. SMITH APPROVAL: C. TORRIE | SIZE: D DWG. NO.: D1101501 REV.: v1 |
| ANGULAR ± 0.5° | | MATERIAL: 18 GAUGE 304 SSSL | FINISH: 8 SUPER #8 | NEXT ASSY: D1101398 | | SCALE: 1:4 PROJECTION: [Symbol] | | | |

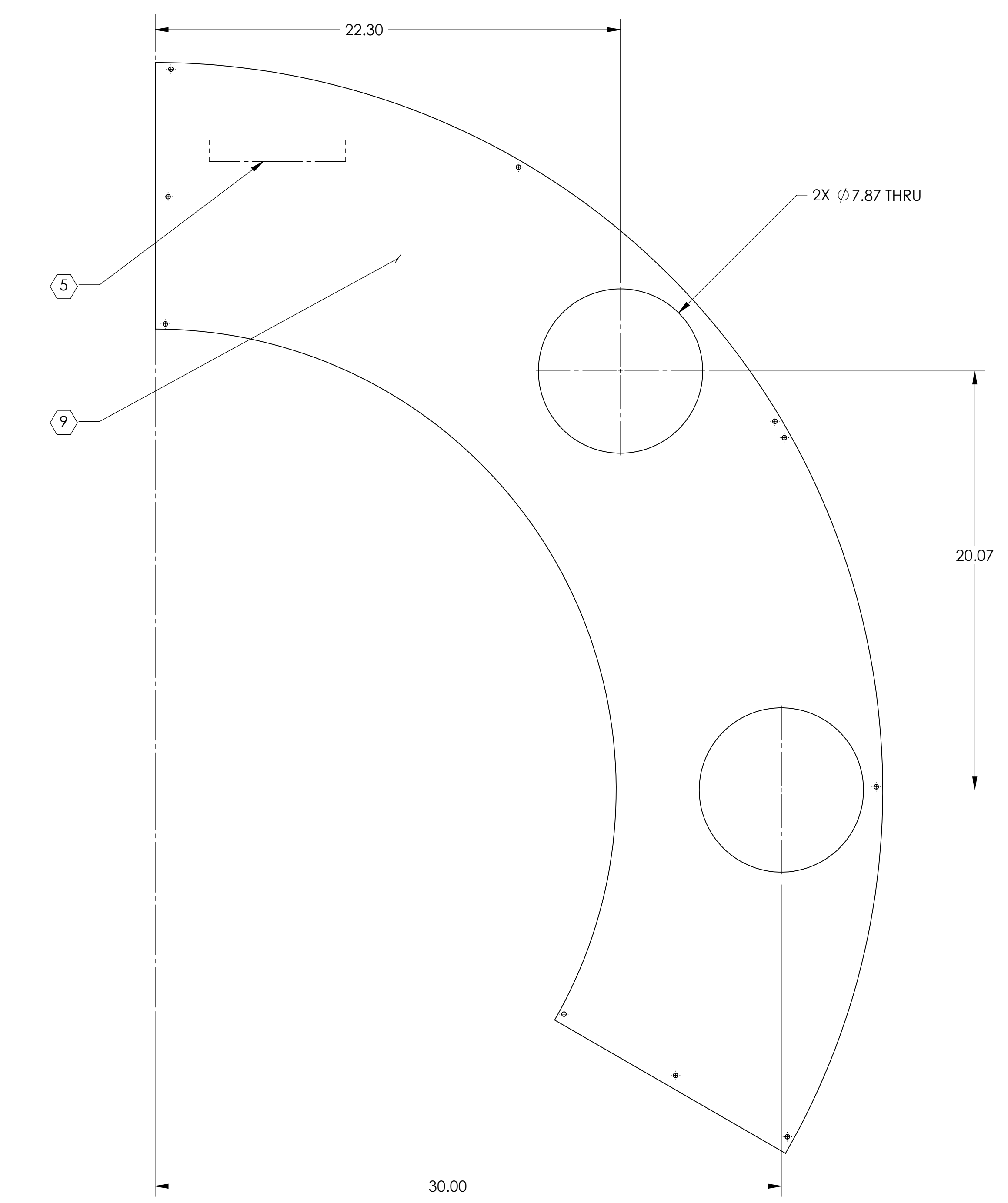
D:\101501_01\LIGO_Monitichd_Cryo_Baffle_Lower Face Plate_ITM_PART PDM_REV: X-007_DRAWING PDM_REV: X-011

- NOTES CONTINUED:**
- 5. SCRIBE, ENGRAVE (A VIBRATORY TOOL MAY BE USED), LASER MARK (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX DO NOT APPLY MARK ON SUPER #8 SIDE.
 - 6. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
 - 7. ALL MATERIAL IS TO BE VIRGIN MATERIAL (I.E. NO WELD REPAIRS, PLUGS OR RECYCLED MATERIAL). NO REPAIRS SHALL BE MADE UNLESS APPROVED IN ADVANCE, AND IN WRITING, BY LIGO LABORATORY. REFER TO LIGO-E0900364.
 - 8. SURFACE FINISH TO BE AS-PROCESSED FROM MILL/SUPPLIER, FREE FROM SCRATCHES OR GOUGES.
 - 9. REFER TO TABLE 1 FOR SUPER #8 SIDE.
 - 10. PART TO BE OXIDIZED PER LIGO SPECIFICATION E1100842.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|------------|-------------|----------------|
| v1 | 4 OCT 2011 | E1000360-v3 | - |
| - | - | - | - |
| - | - | - | - |



| TABLE 1 | | |
|------------|-----------|-----------|
| | 5 | 9 |
| D1101503-1 | NEAR SIDE | FAR SIDE |
| D1101503-2 | FAR SIDE | NEAR SIDE |



| | | | | | | | | | | | | |
|---|--|---|--|---|--|---|--|------------------------------|-------------|------------------|-----------------------------|-------------------|
| DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .03 .XXX ± .010 ANGULAR ± 1.0° | | NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) 1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, .005-.015 ON ALL EDGES AND HOLES. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | | CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME UPPER SIDE FACE PLATE, ITM XY | | | | | | |
| MATERIAL 18 GAUGE 304 SSTL | | FINISH 8 9 SUPER #8 | | SYSTEM ADVANCED LIGO | | SUB-SYSTEM AOS | | DESIGNER H. KELMAN | 26 JUL 2011 | SIZE D | DWG. NO. D1101503 | REV. v1 |
| APPROVAL C. TORRIE | | NEXT ASSY D1101398 | | SCALE: 1:4 | | PROJECTION: | | SHEET 1 OF 1 | | | | |

D1101503.dwg: Mchickl_Crv2_Baffle_Upper Side Face Plate_ITM_PART_PDM_REV: X208_DRAWING_PDM_REV: X220