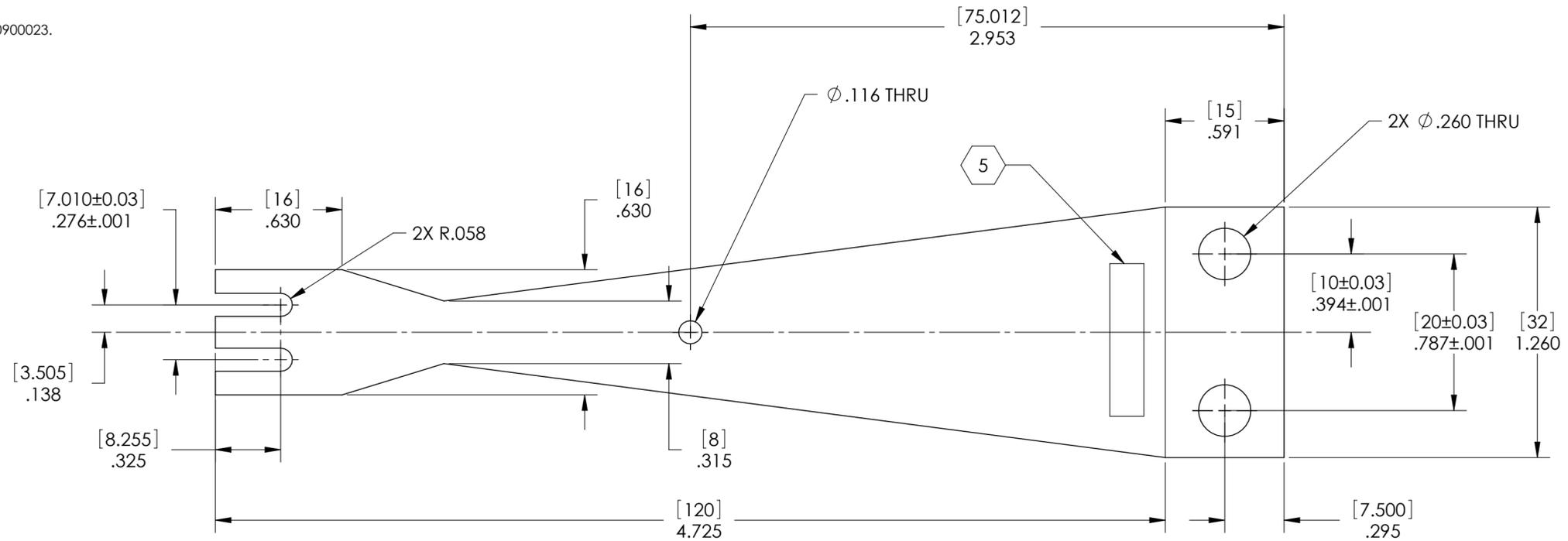


- NOTES:**
1. INTERPRET DRAWING PER ASME Y14.5-1994.
  2. REMOVE ALL SHARP EDGES, R.02 MIN.
  3. DO NOT SCALE FROM DRAWING.
  4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.
  5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) 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 500 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE: DXXXXXX-VY, TYPE-XX, S/N XXX
  6. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900023.

REV.	DATE	DCN #	DRAWING TREE #
A	28 MAR 2008	E080113-00	-
B	17 APR 2008	E080169-00	-
C	24 APR 2008	E080179-00	-
v1	03 AUG 2009	E0900226	-
v2	28 JUL 2010	E1000255	E080191



← MATERIAL GRAIN DIRECTION →

**INTERNAL LIGO NOTES:**

1. EXCEL SPREADSHEET REF T0900353-v3
2. SHAPE FACTOR FOR LOWER BLADE = 1.48 AND YOUNGS MODULUS USED IS 1.86e11 Pa.
3. LOAD ON LOWER BLADE (FLAT) = 6.0875 kg AND UNCOUPLED LOAD = 3.0525 kg.
4. PREDICTED UNCOUPLED SUSPENSION FREQUENCY = 2.78 Hz.
5. PREDICTED FIRST BLADE INTERNAL FREQUENCY = 306 Hz.
6. MAXIMUM STRESS = 982 MPa
7. MID TO MID DEFLECTION = 64.1 mm.
8. LENGTH IS 120 mm (135 mm INCLUDING CLAMPING LENGTH), THICKNESS IS 1.17 mm AND WIDTH IS 32 mm.
9. RADIUS IS 99.3 mm CALCULATED USING BLADE EQUATIONS.
10. IN THE CURVED SKETCH IN SW PART ADD MID TO MID DEFLECTION AND ADJUST RADIUS UNTIL DESIRED LENGTH IS ATTAINED.
11. IN SW PART, BLADE IS DRAWN WITH SHEET METAL AND EXTRUDED VERTICALLY DOWNWARDS.
12. ON SW DRAWING, SOLIDWORKS RADIUS VALUE IS THE VALUE MEASURED DIRECT FROM SW USING THE DIMENSION TOOL.

VIEWS PRIOR TO FORMING

**NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)**

DIMENSIONS ARE IN INCHES [MM]

TOLERANCES:  
 .XX ± .01  
 .XXX ± .005

ANGULAR ± 0.5°

**MATERIAL**  
 MARAGING STEEL C250

**FINISH**  
 32 μinch

**LIGO** CALIFORNIA INSTITUTE OF TECHNOLOGY  
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

**SYSTEM**  
 ADVANCED LIGO

**SUB-SYSTEM**  
 SUS

**NEXT ASSY**  
 HLTS UPPER MASS ASSY

**PART NAME**

HLTS LOWER BLADE

**DESIGNER**  
 B. KIRSNER

**DRAFTER**  
 CIT

**CHECKER**  
 CIT

**APPROVAL**

**SIZE**  
 c

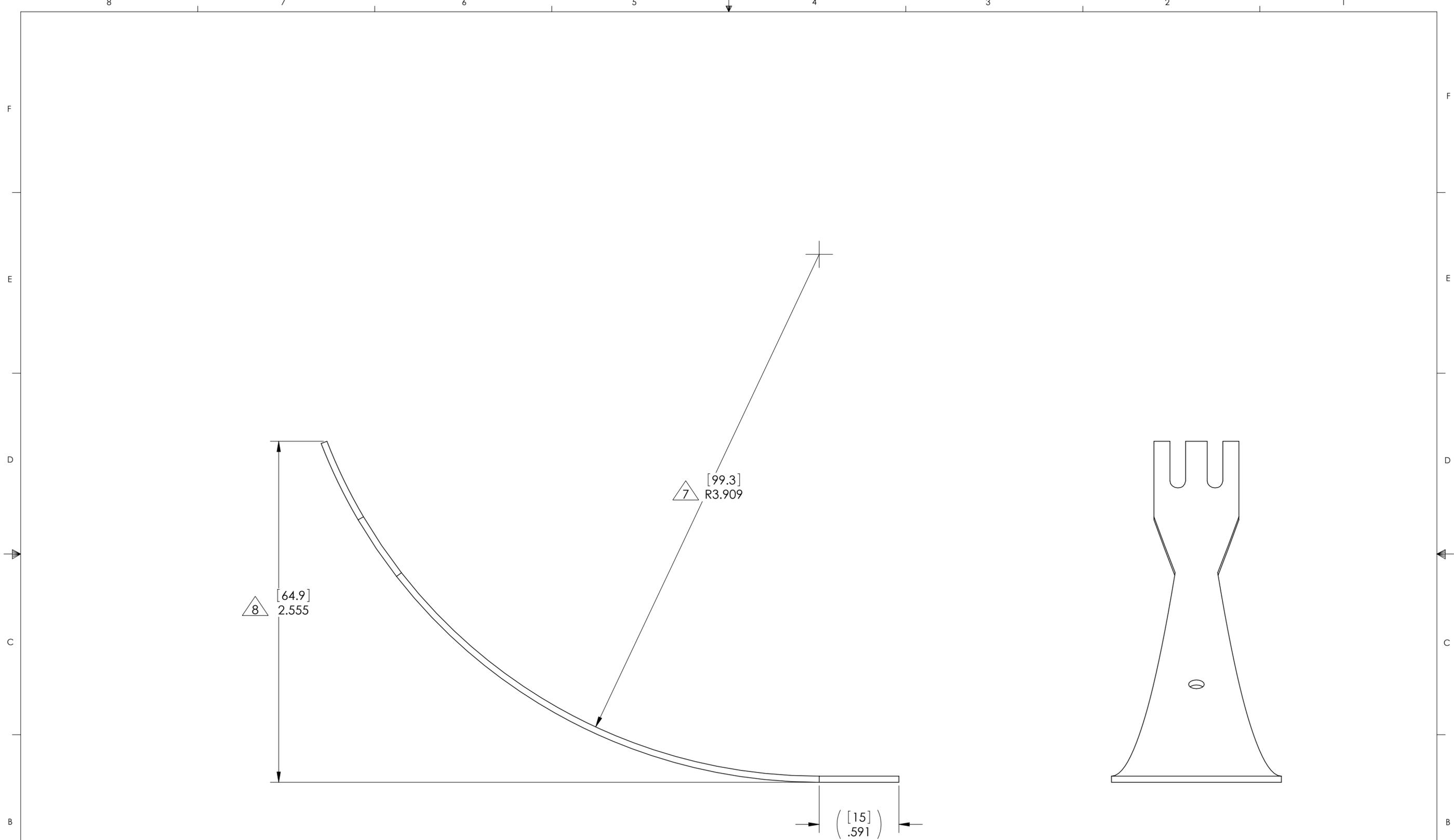
**DWG. NO.**  
 D020615

**SCALE:** 2:1

**REV.**  
 v2

**PROJECTION:**

SHEET 1 OF 2



VIEWS AFTER FORMING AND HEAT TREATMENT

- △7 THE RADIUS OF THE CURVATURE IS THE INSIDE RADIUS
- △8 THE OVERALL DEFLECTION IS MEASURED FROM THE BOTTOM OF THE BASE POINT TO THE HIGHEST POINT ON THE TIP

 <b>CALIFORNIA INSTITUTE OF TECHNOLOGY</b> <b>MASSACHUSETTS INSTITUTE OF TECHNOLOGY</b>		
SIZE <b>C</b>	DWG. NO. D020615	REV. v2
SCALE: 2:1	PROJECTION: 	SHEET 2 OF 2