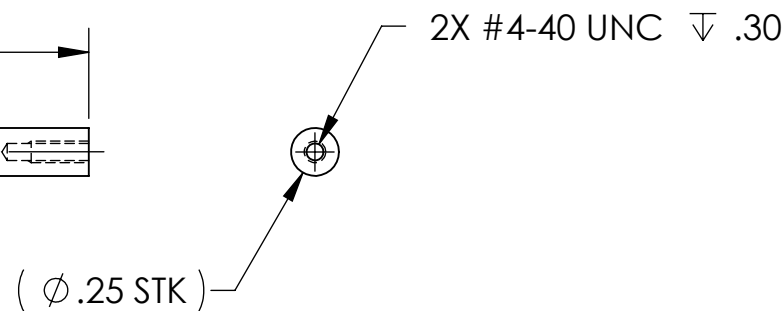
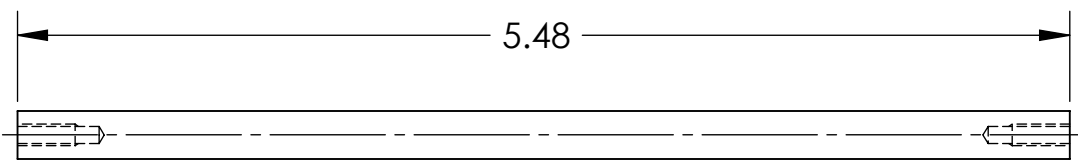


NOTES CONTINUED:

- 5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIANT OR "TYPE" (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TOO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
EXAMPLE (PART): 001-v1
EXAMPLE (TAG): DXXXXXX-VY, TYPE-XX, QTY: TBD
- 6. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 22 OCT 2009 | E0900369 | E080191 |
| v2 | 02 SEP 2011 | E1100826 | E080191 |
| - | - | - | - |



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .01
.XXX ± .005

ANGULAR ± 0.5°

- 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.

MATERIAL PFA440 HP (PRESHRUNK) **FINISH** N/A μinch

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM ADVANCED LIGO **SUB-SYSTEM** SUS

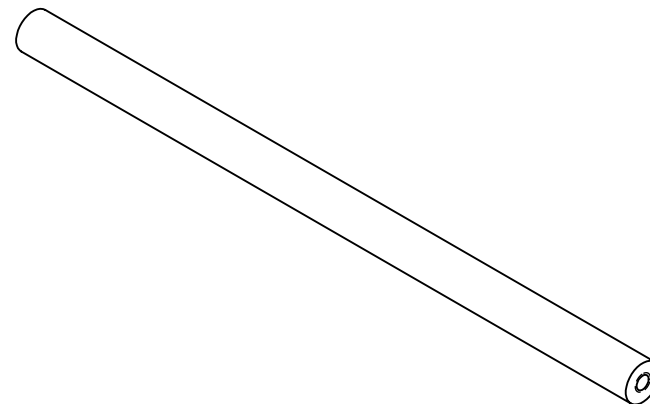
NEXT ASSY SAPPHIRE PRISM BONDING FIXTURE, HLTS

| PART NAME | | | DESIGNER | | DATE | | SIZE | DWG. NO. | REV. |
|------------------|--|--|------------|-------------|-------------|-------------|------|-------------|--------------|
| SUPPORT CYLINDER | | | D. BRIDGES | D. BRIDGES | 02 SEP 2011 | 02 SEP 2011 | A | D0902669 | v2 |
| APPROVAL | | | B. MOORE | 06 SEP 2011 | | SCALE: 1:1 | | PROJECTION: | SHEET 1 OF 1 |

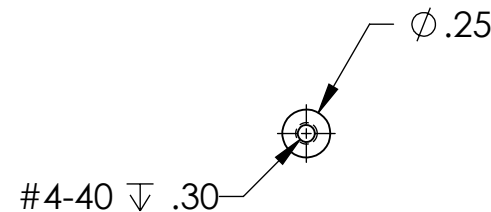
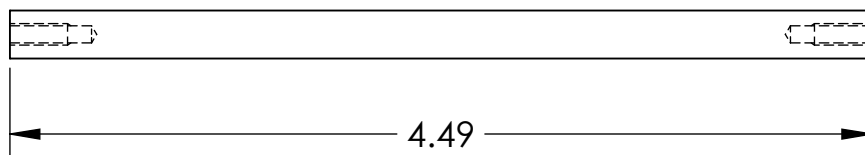
NOTES CONTINUED:

- 5. SCRIBE, ENGRAVE, LASER MARK OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIANT OR "TYPE" (IF APPLICABLE), AND QUANTITY, IF PARTS ARE TOO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
EXAMPLE (PART): 001-v1
EXAMPLE (TAG): DXXXXXX-VY, TYPE-XX, QTY: TBD
- 6. APPROXIMATE WEIGHT = 4.65 grams.
- 7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED. REFER TO LIGO-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 | E1101054 | 24 OCT 2011 | E0900353 |
| - | - | - | - |
| - | - | - | - |



ISOMETRIC VIEW



BOTH SIDES

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:

.XX ± .01
.XXX ± .005

ANGULAR ± 0.5°

- 1. INTERPRET DRAWING PER ASME Y14.5-1994.
- 2. REMOVE ALL SHARP EDGES .005-.015. FOR MACHINED PARTS. ROUND ALL EDGES APPROXIMATELY R.02 FOR SHEET METAL PARTS.
- 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 PFA440 HP (PRESHRUNK)

FINISH N/A μinch



SYSTEM ADVANCED LIGO

SUB-SYSTEM SUS

NEXT ASSY D1100394

PART NAME

SUPPORT CYLINDER

| | | |
|----------|------------|-------------|
| DESIGNER | D. BRIDGES | 13 NOV 2009 |
| DRAFTER | B. MOORE | 06 DEC 2011 |
| CHECKER | D. BRIDGES | 06 DEC 2011 |
| APPROVAL | | |

SIZE DWG. NO. A D0902719

REV. v1

SCALE: 1:1 PROJECTION: SHEET 1 OF 1

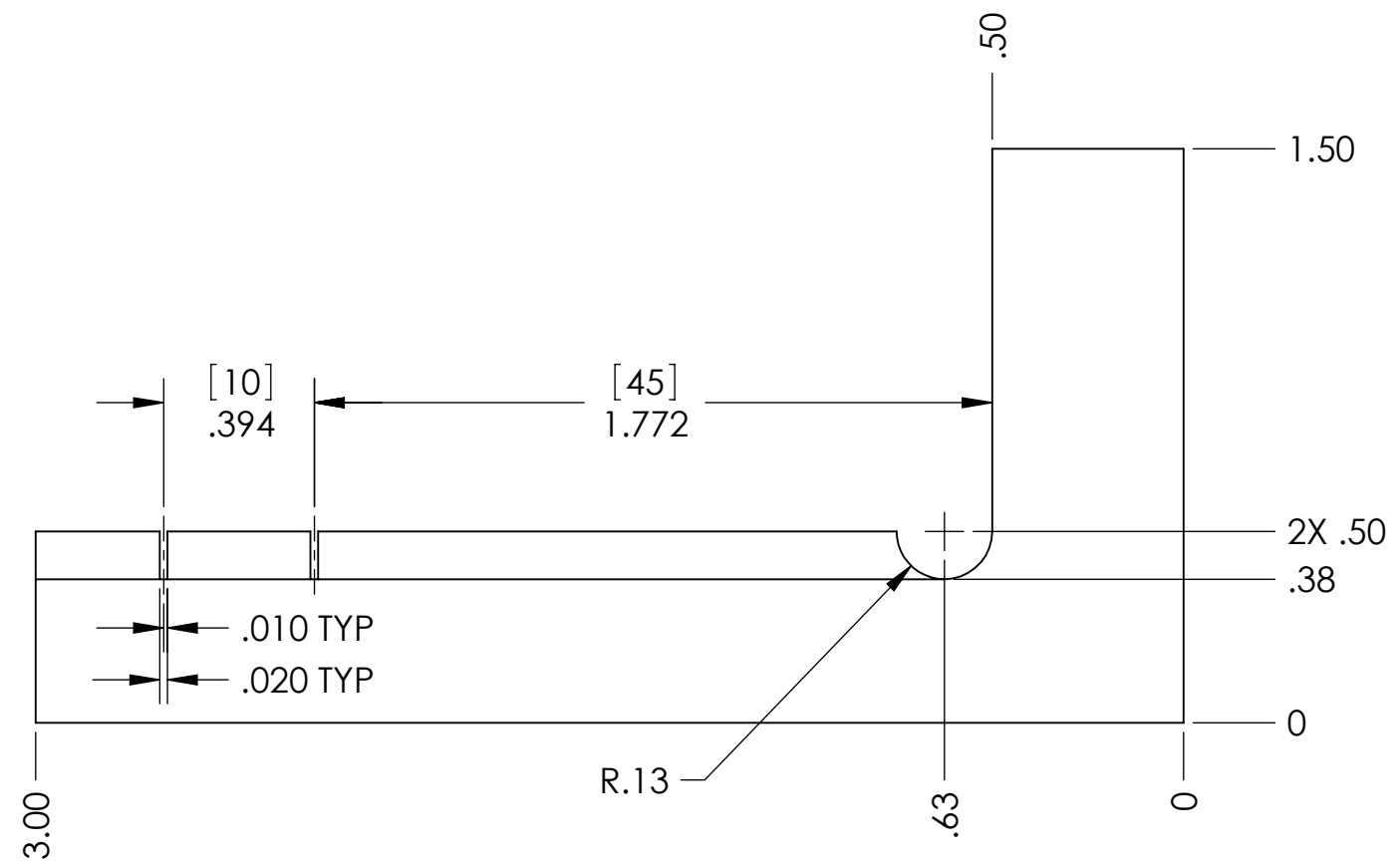
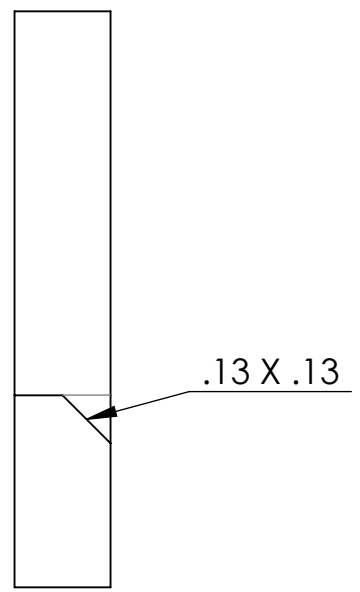
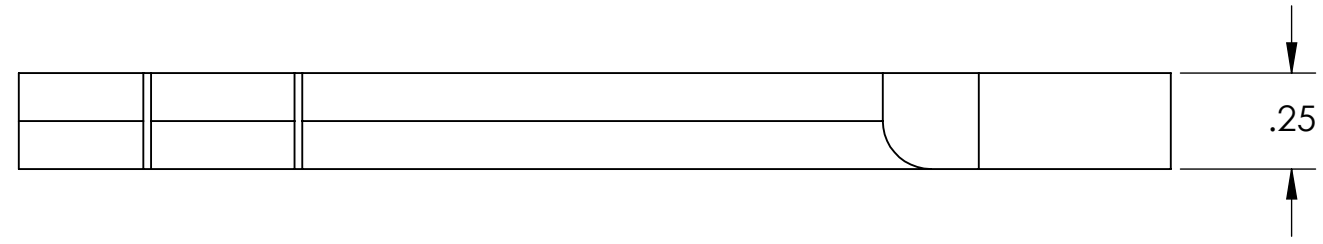
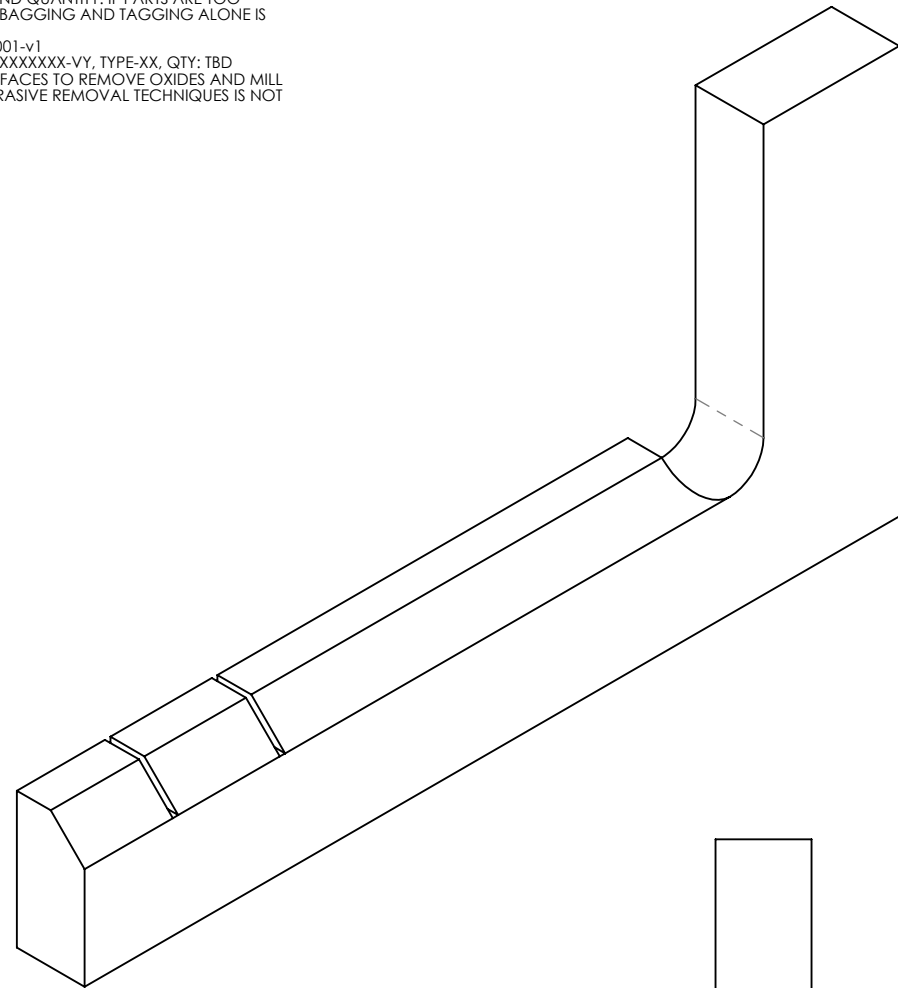
D1101791_Advanced_LIGO_SUS_HLTS_Lower_Loop_Wire_Comb, PART PDM REV: X-004, DRAWING PDM REV:

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIANT OR "TYPE" (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TOO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
 EXAMPLE (PART): 001-v1
 EXAMPLE (TAG): DXXXXXX-VY, TYPE-XX, QTY: TBD

6. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 15 SEP 2011 | E1100865 | E080191 |
| - | - | - | - |
| - | - | - | - |



| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | |
|--|--------------------------------------|
| DIMENSIONS ARE IN INCHES [MM] | |
| TOLERANCES: .XX ± .01 .XXX ± .005 ANGULAR ± 0.5° | |
| 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. | |
| MATERIAL PFA440 HP (PRESHRUNK) | FINISH 63 μinch |

| LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | |
|---|-------------------|----------------------------|----------------------|
| SYSTEM ADVANCED LIGO | SUB-SYSTEM SUS | LOWER LOOP WIRE COMB, HLTS | |
| DESIGNER D. BRIDGES | 10 SEP 2011 | SIZE B | DWG. NO. D1101791 |
| DRAFTER D. BRIDGES | 20 SEP 2011 | REV. v1 | |
| CHECKER B. MOORE | 21 SEP 2011 | SCALE: 2:1 | PROJECTION: |
| APPROVAL | | | SHEET 1 OF 1 |

8 7 6 5 4 3 2 1

D C B A

D C B A

8 7 6 5 4 3 2 1

4

3

2

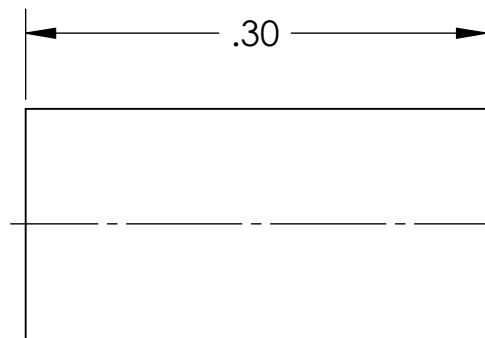
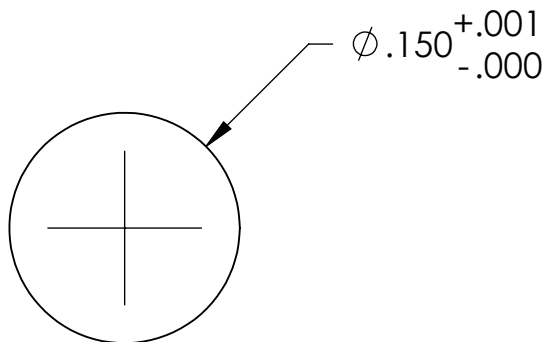
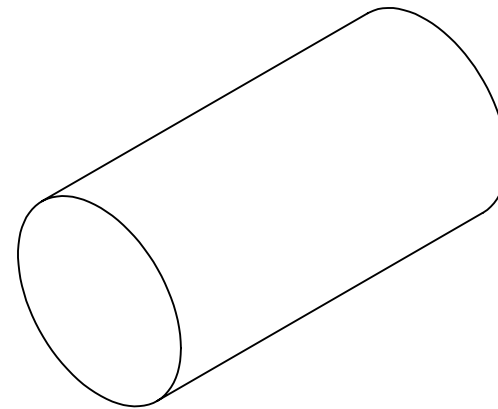
1

NOTES CONTINUED:

Ⓢ SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIANT OR "TYPE" (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TOO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.

EXAMPLE (PART): 001-v1
 EXAMPLE (TAG): DXXXXXX-VY, TYPE-XX, QTY: TBD

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 07 OCT 2011 | E1101010 | - |
| - | - | - | - |
| - | - | - | - |



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
 .XX ± .01
 .XXX ± .005

ANGULAR ± 0.5°

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.

MATERIAL PFA440 HP (PRESHRUNK) FINISH 63 μinch

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM ADVANCED LIGO SUB-SYSTEM SUS
 NEXT ASSY MULTIPLE ASSYS

PART NAME PFA TIP, LOCATING STOP

| | | | | | |
|----------|------------|-------------|------------|-------------|--------------|
| DESIGNER | D. BRIDGES | 10 OCT 2011 | SIZE | DWG. NO. | REV. |
| DRAFTER | D. BRIDGES | 11 OCT 2011 | A | D1101920 | v1 |
| CHECKER | B. MOORE | 12 OCT 2011 | | | |
| APPROVAL | | | SCALE: 8:1 | PROJECTION: | SHEET 1 OF 1 |

4

3

2

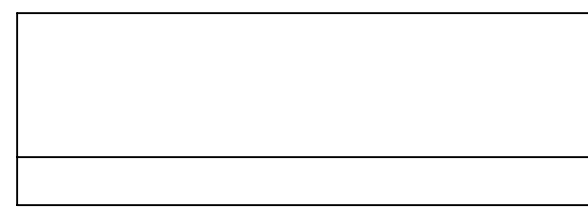
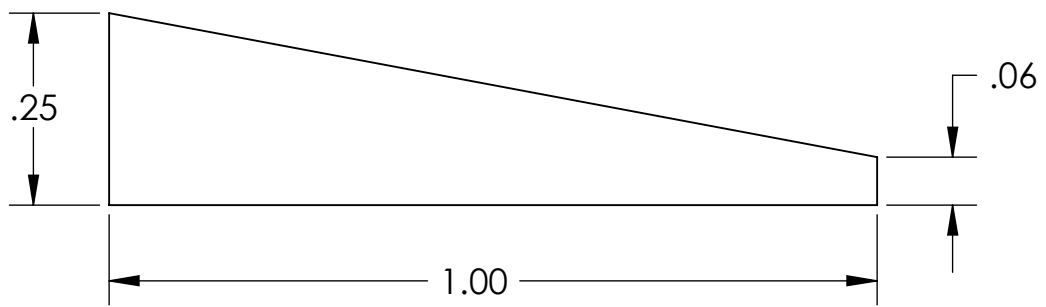
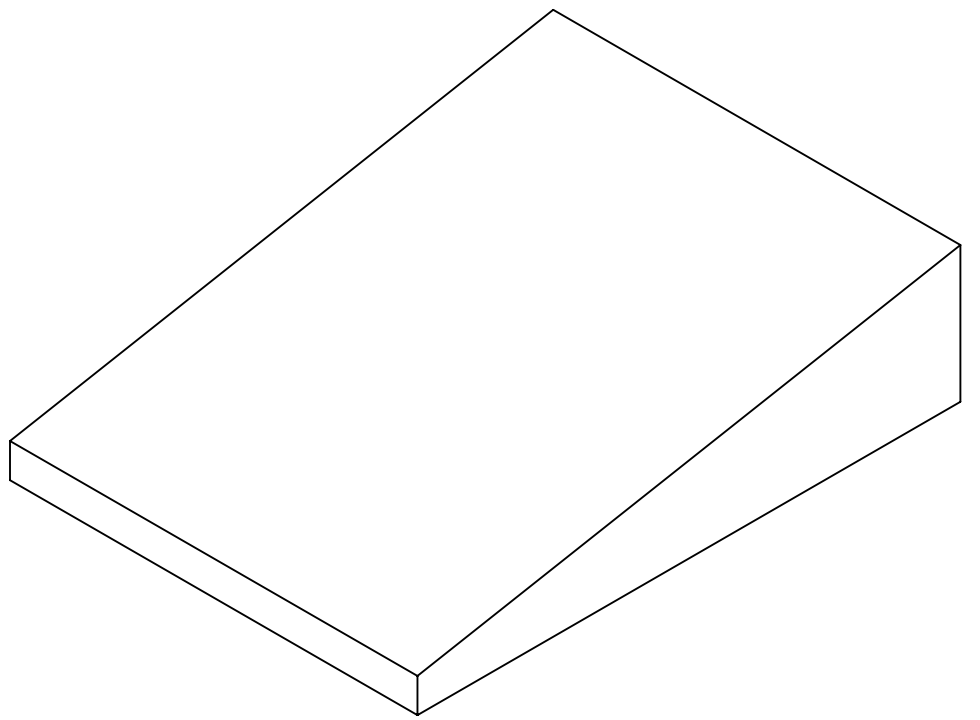
1

D1101921_Advanced_LIGO_SUS_Locating_Wedge_Optic_Base_Assembly_PART PDM REV: X-001, DRAWING PDM REV: X-000

8 7 6 5 4 3 2 1

NOTES CONTINUED:
⑤ SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIANT OR "TYPE" (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TOO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
EXAMPLE (PART): 001-v1
EXAMPLE (TAG): DXXXXXX-VY, TYPE-XX, QTY: TBD

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 08 OCT 2011 | E1101010 | - |
| - | - | - | - |
| - | - | - | - |



D C B A

D C B A

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | | | | LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | |
|--|--|--|--|---|--|---------------------------------|---------------------------|
| DIMENSIONS ARE IN INCHES | | | | ADVANCED LIGO | | LOCATING WEDGE, OPTIC BASE ASSY | |
| TOLERANCES: .XX ± .01 .XXX ± .005 ANGULAR ± 0.5° | | | | SUB-SYSTEM SUS | | DESIGNER D. BRIDGES | 07 OCT 2011 |
| 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. | | | | NEXT ASSY MULTIPLE ASSYS | | DRAFTER D. BRIDGES | 15 OCT 2011 |
| MATERIAL PFA440 HP (PRESHRUNK) | | | | FINISH 63 μinch | | CHECKER B. MOORE | 17 OCT 2011 |
| | | | | | | APPROVAL | |
| | | | | | | SCALE: 4:1 | PROJECTION: SHEET 1 OF 1 |
| | | | | | | SIZE DWG. NO. B | D1101921 |
| | | | | | | REV. | v1 |

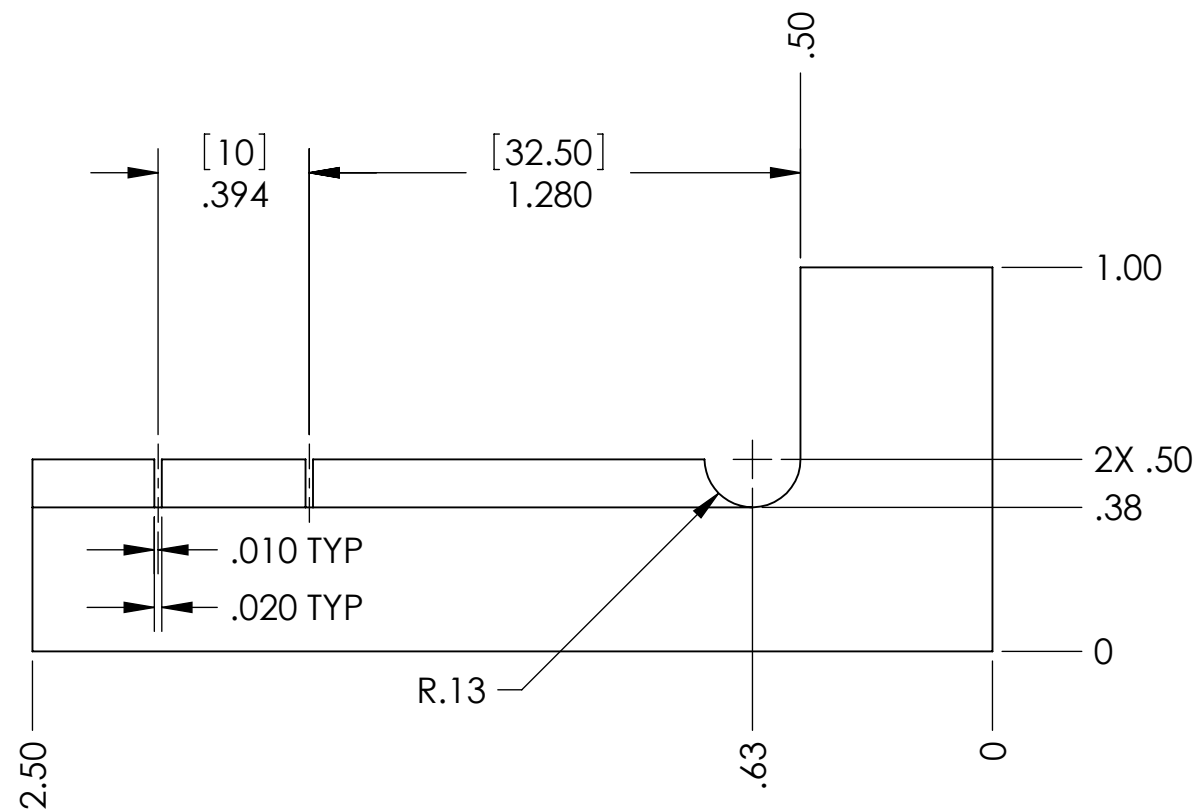
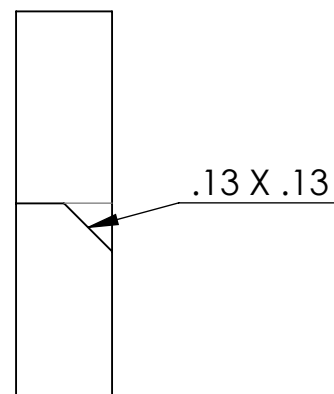
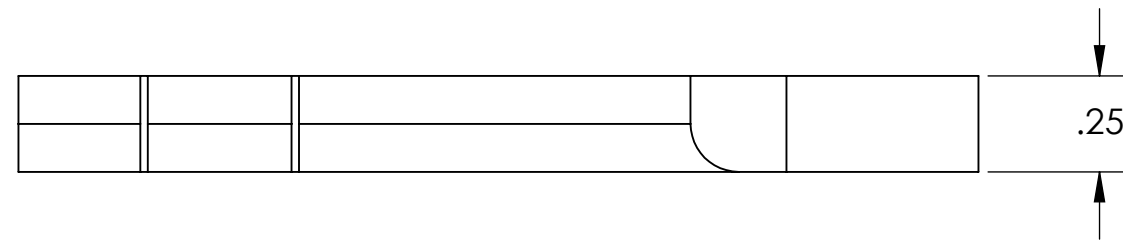
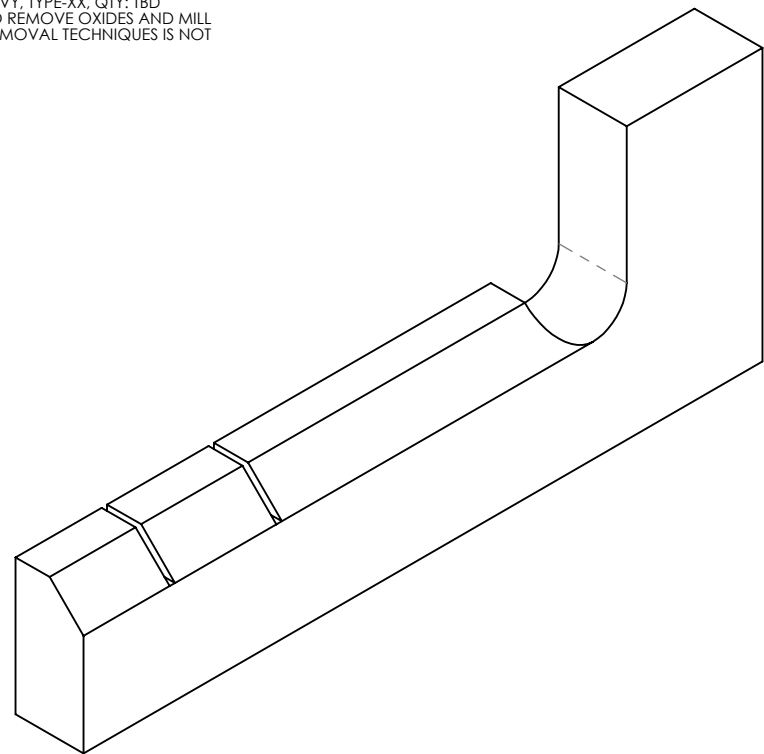
8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

NOTES CONTINUED:

- 5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIANT OR "TYPE" (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TOO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
EXAMPLE (PART): 001-v1
EXAMPLE (TAG): DXXXXXX-VY, TYPE-XX, QTY: TBD
- 6. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 28 OCT 2011 | E1101061 | E1000035 |
| - | - | - | - |
| - | - | - | - |



D1102086_Advanced_LIGO_SUS_HSTS_Lower_Loop_Wire_Comb, PART PDM REV: X-000, DRAWING PDM REV:

D

C

B

A

D

C

B

A

| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | | | | LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | |
|--|--|-----------------|--|---|----------|----------------------------|-------------|
| DIMENSIONS ARE IN INCHES [MM] | | | | ADVANCED LIGO | | LOWER LOOP WIRE COMB, HSTS | |
| TOLERANCES: .XX ± .01 .XXX ± .005 | | | | SUB-SYSTEM SUS | | DESIGNER | D. BRIDGES |
| ANGULAR ± 0.5° | | | | NEXT ASSY HSTS OVERALL ASSY AND FIXTURES | | DRAFTER | D. BRIDGES |
| MATERIAL PFA440 HP (PRESHRUNK) | | FINISH 63 μinch | | CHECKER | B. MOORE | DATE | 28 OCT 2011 |
| | | | | APPROVAL | | SIZE | DWG. NO. |
| | | | | | | B | D1102086 |
| | | | | | | REV. | v1 |
| | | | | | | SCALE: 2:1 | PROJECTION: |
| | | | | | | SHEET 1 OF 1 | |

8 7 6 5 4 3 2 1

4

3

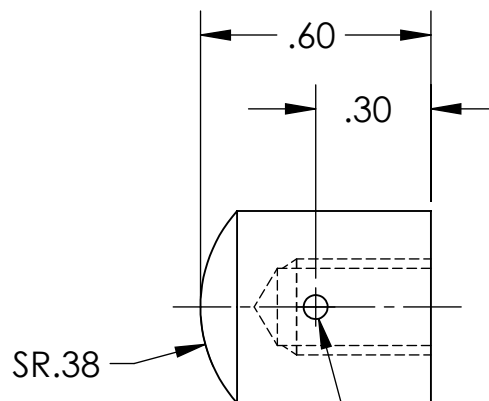
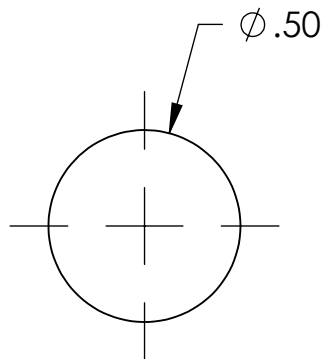
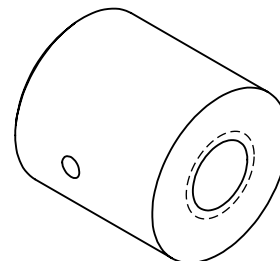
2

1

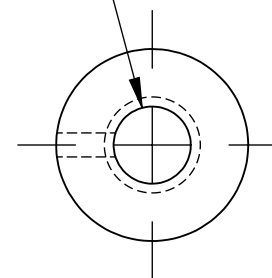
NOTES CONTINUED:

- 5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIANT OR "TYPE" (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TOO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
EXAMPLE (PART): 001-v1
EXAMPLE (TAG): DXXXXXX-YY, TYPE-XX, QTY: TBD
- 6. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 24 OCT 2011 | E1101054 | - |
| - | - | - | - |
| - | - | - | - |



DRILL ϕ .20 ∇ .40 AND
TAP 1/4-20 UNC-2B ∇ .35



VENT HOLE ϕ .06 THRU
TO THREADED HOLE

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX \pm .01
.XXX \pm .005

ANGULAR \pm 0.5°

- 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.

MATERIAL PFA440 HP (Preshrunk) FINISH 63 μ inch



SYSTEM ADVANCED LIGO SUB-SYSTEM SUS

NEXT ASSY MULTIPLE ASSYS

PART NAME CAP BODY, SEMI-ROUNDED END, EARTHQUAKE STOP

| | | | | | |
|----------|------------|-------------|------------|-------------|--------------|
| DESIGNER | D. BRIDGES | 04 NOV 2011 | SIZE | DWG. NO. | REV. |
| DRAFTER | D. BRIDGES | 04 NOV 2011 | A | D1102161 | v1 |
| CHECKER | B. MOORE | 07 NOV 2011 | SCALE: 2:1 | PROJECTION: | SHEET 1 OF 1 |
| APPROVAL | | | | | |

4

3

2

1

4

3

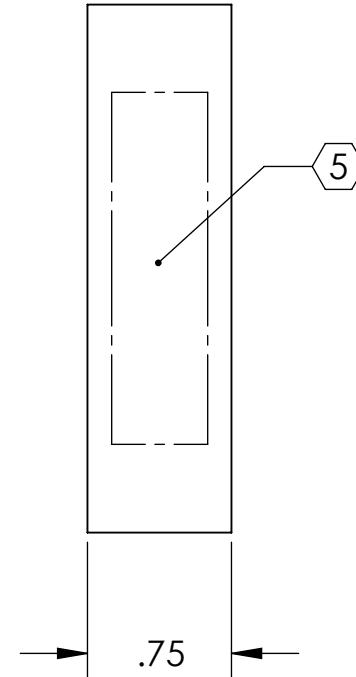
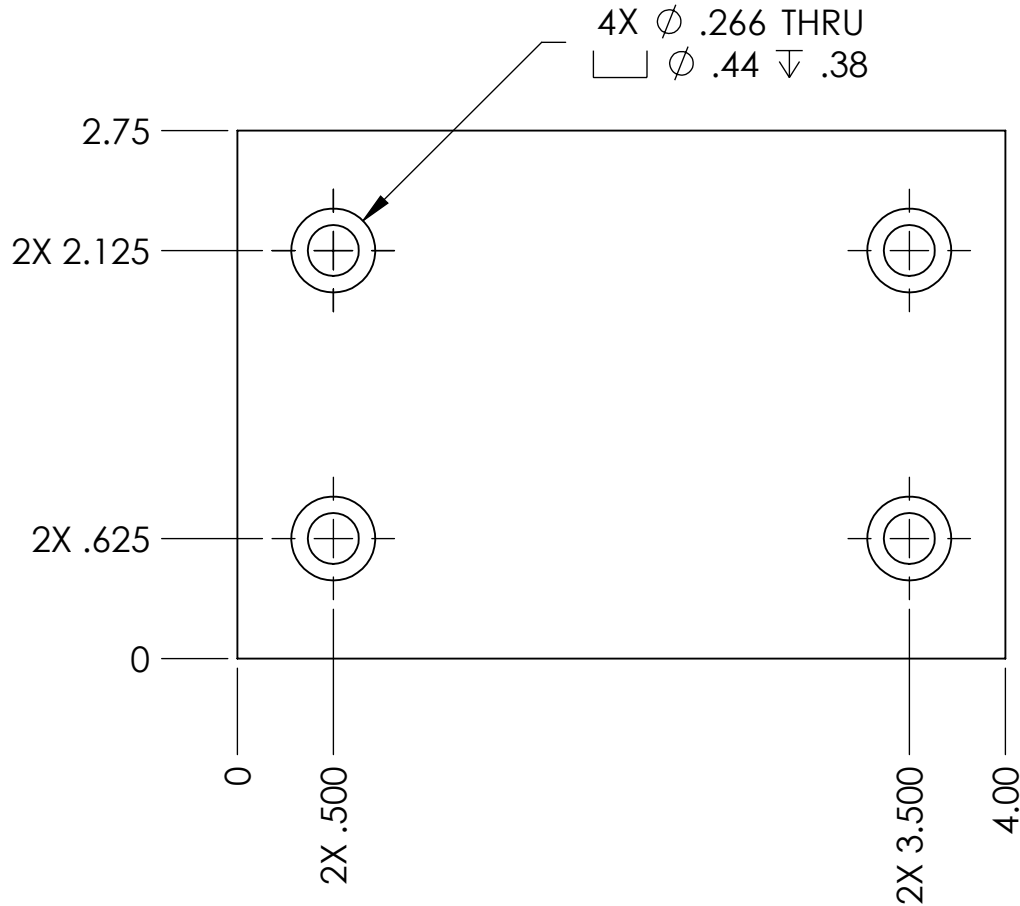
2

1

NOTES CONTINUED:

⑤ SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER AND REVISION ON NOTED SURFACE FOLLOWED ON THE NEXT LINE BY A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE .07" HIGH CHARACTERS. EXAMPLE: DXXXXXX-VY, S/N 001. A VIBRATORY TOOL MAY BE USED.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 22 OCT 2009 | E0900369 | - |
| - | - | - | - |
| - | - | - | - |



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
 .XX ± .01
 .XXX ± .005

ANGULAR ± 0.5°

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.

MATERIAL PFA440 HP (PRESHRUNK)
 FINISH N/A μinch



CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM ADVANCED LIGO
 SUB-SYSTEM SUS
 NEXT ASSY OPTIC HOLDER, HAM SUS.

PART NAME

OPTIC REST PLATE

| | | | | | |
|----------|------------|-------------|------------|-------------|--------------|
| DESIGNER | D. BRIDGES | 11 NOV 2009 | SIZE | DWG. NO. | REV. |
| DRAFTER | D. BRIDGES | 11 NOV 2009 | A | D0902585 | v1 |
| CHECKER | J. ROMIE | 12 NOV 2009 | SCALE: 1:1 | PROJECTION: | SHEET 1 OF 1 |
| APPROVAL | | | | | |

4

3

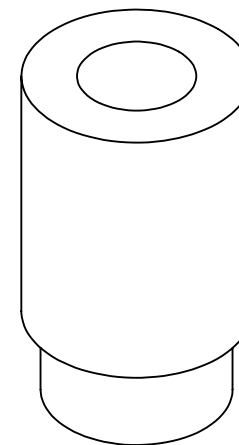
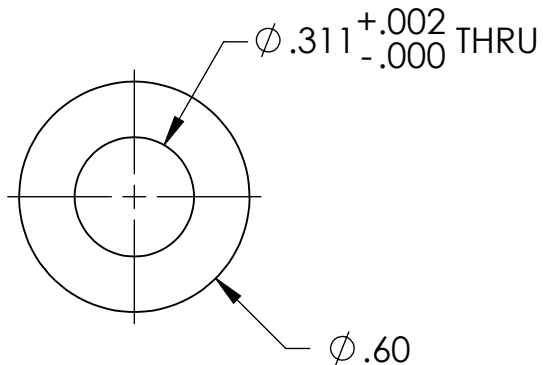
2

1

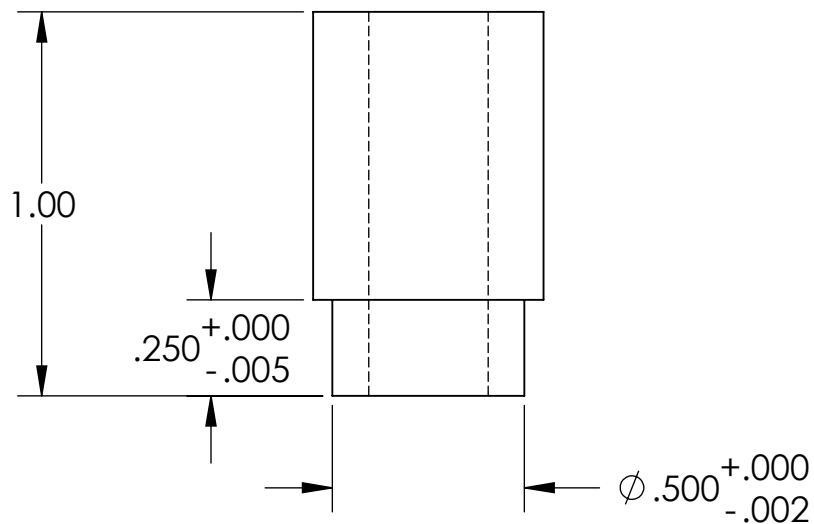
NOTES CONTINUED:

- 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. APPROXIMATE WEIGHT = 0.009 LB.
- 7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 01 MAR 2011 | E0900502 | E0900353 |
| v2 | 27 OCT 2011 | E1101059 | E0900353 |
| - | - | - | - |



ISOMETRIC VIEW



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .01
.XXX ± .005

ANGULAR ± 0.2°

- 1. INTERPRET DRAWING PER ASME Y14.5-1994.
- 2. REMOVE ALL SHARP EDGES, .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.

MATERIAL
PFA440 HP (PRESHRUNK)

FINISH
63 μinch

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM
ADVANCED LIGO

SUB-SYSTEM
SUS

NEXT ASSY
D020427

PART NAME
MAGNET BUSHING FOR HSTS RING FIXTURE

| | | |
|----------|------------|-------------|
| DESIGNER | M. MEYER | 22 SEP 2010 |
| DRAFTER | B. MOORE | 15 NOV 2011 |
| CHECKER | D. BRIDGES | 17 NOV 2011 |
| APPROVAL | | |

SIZE DWG. NO.
A D1002341

REV.
v2

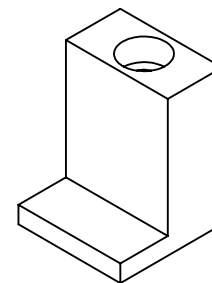
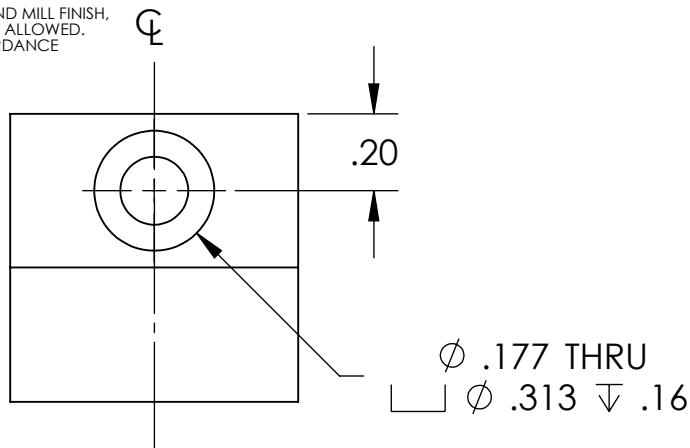
SCALE: 2:1 PROJECTION: SHEET 1 OF 1

NOTES CONTINUED:

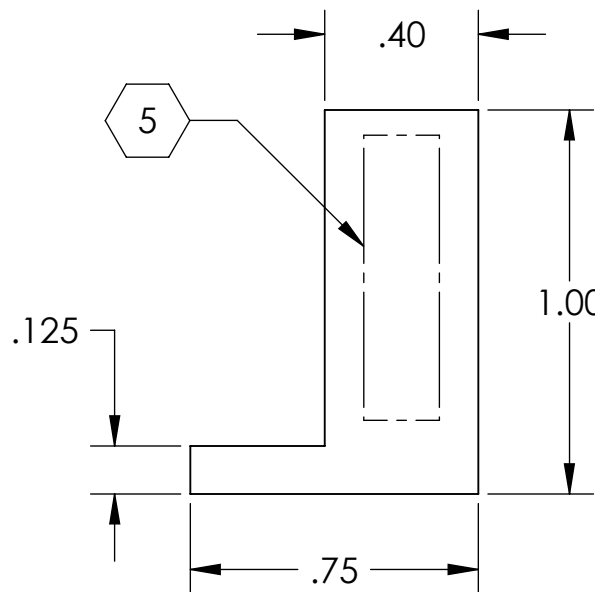
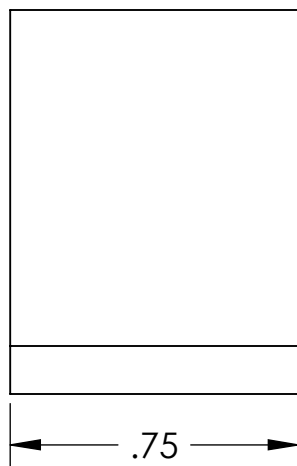
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 101 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 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. APPROXIMATE WEIGHT = 0.014 LB.
- 7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
- 8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 01 MAR 2011 | E0900502 | E0900353 |
| - | - | - | - |
| - | - | - | - |



ISOMETRIC VIEW



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:

.XX \pm .03
.XXX \pm .005

ANGULAR \pm 0.2°

- 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.

MATERIAL PFA440 HP (PRESHRUNK) **FINISH** 63 μ inch



SYSTEM ADVANCED LIGO **SUB-SYSTEM** SUS

NEXT ASSY D020427

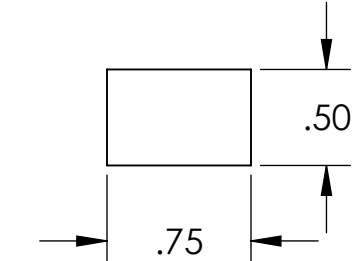
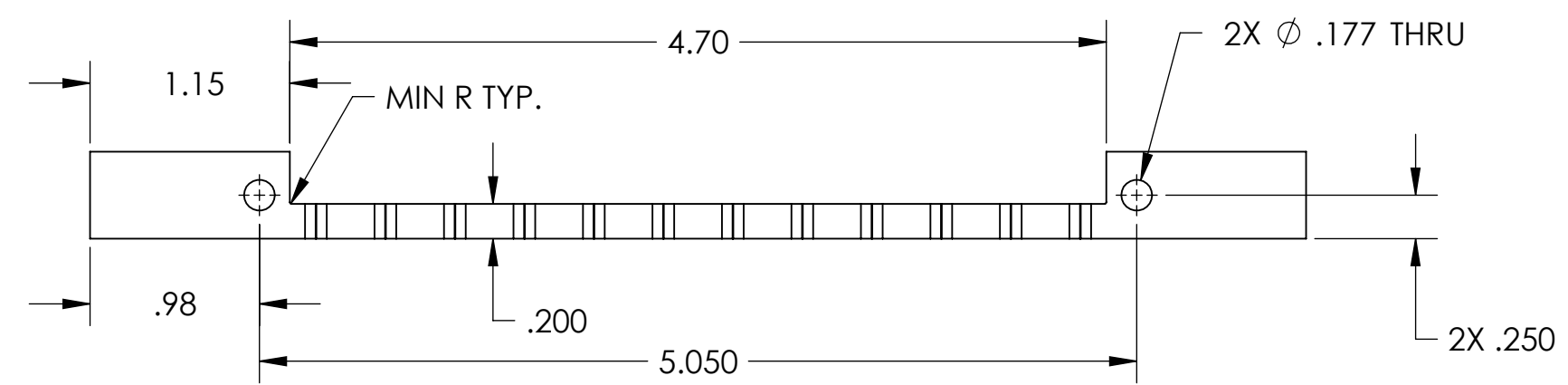
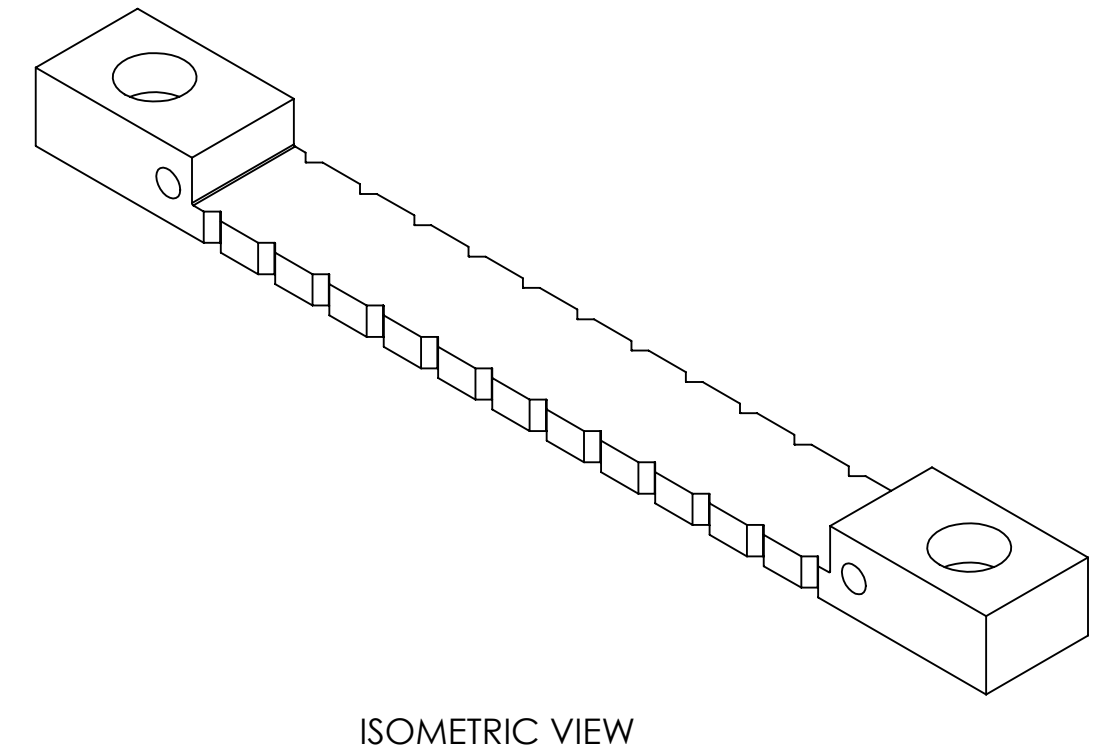
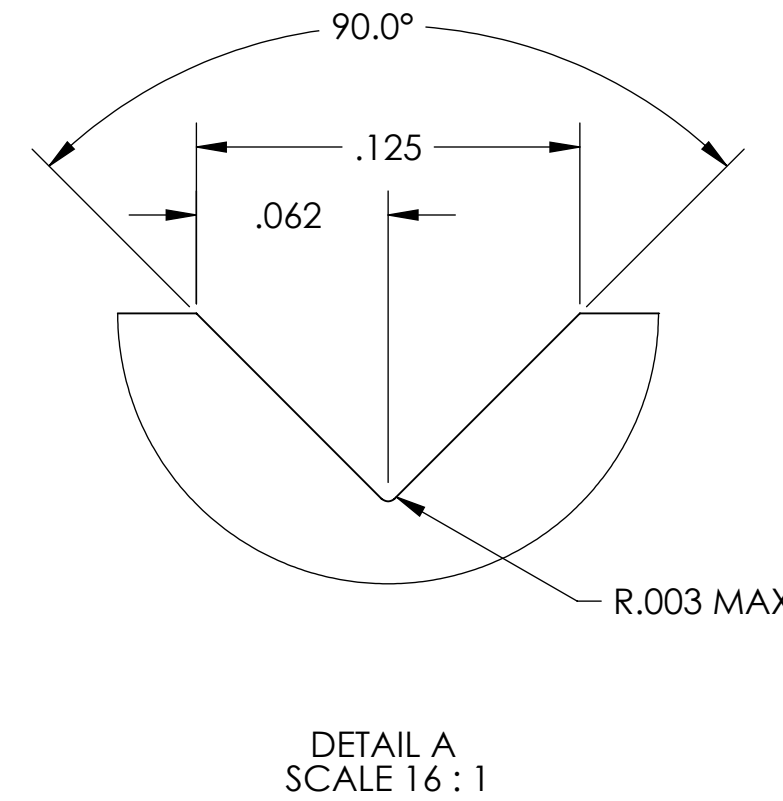
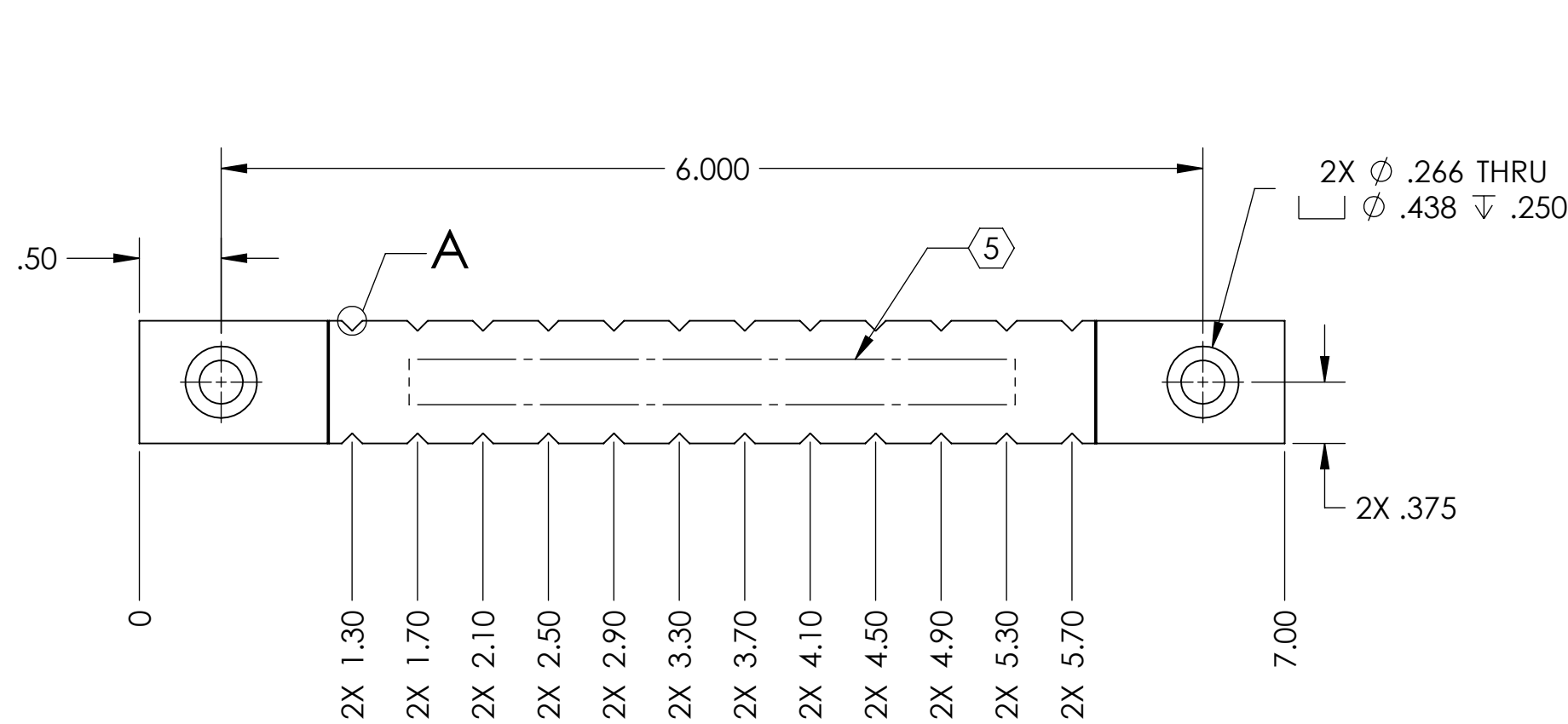
PART NAME STANDOFF BLOCK FOR HSTS RING FIXTURE

| | | | | |
|--------------------------|-------------|----------------------|-----------------|-------------------|
| DESIGNER M. MEYER | 22 SEP 2010 | SIZE DWG. NO. | D1002342 | REV. v1 |
| DRAFTER B. MOORE | 10 OCT 2010 | A | | |
| CHECKER M. MEYER | 12 OCT 2010 | | | |
| APPROVAL | | | | |

SCALE: 2:1 **PROJECTION:** SHEET 1 OF 1

- NOTES CONTINUED:**
- 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. APPROXIMATE WEIGHT = 0.059 LB.
 - 7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 28 APR 2011 | E0900502 | E0900353 |
| v2 | 14 JUN 2011 | E1100536 | E0900353 |
| v3 | 27 OCT 2011 | E1101059 | E0900353 |

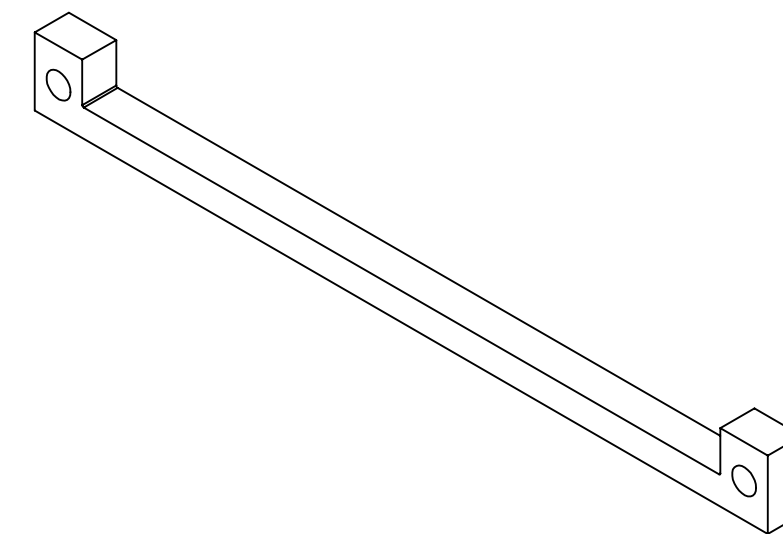
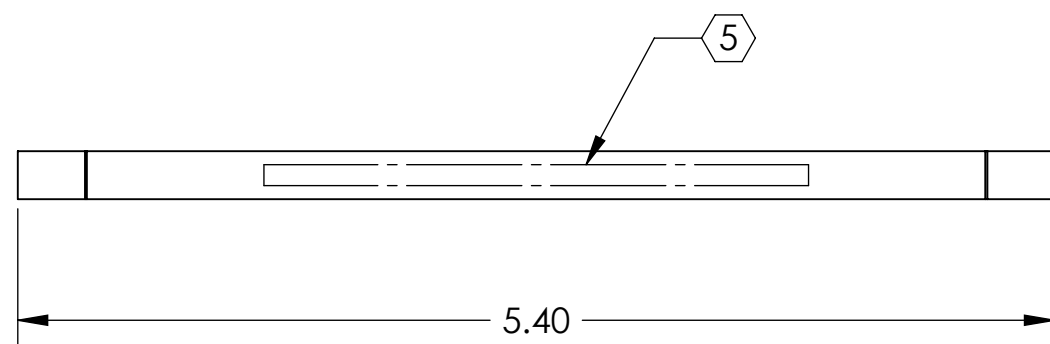


| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | | LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | | | |
|--|--|--|--|------------|--|----------------------|--|
| 1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE. | | SYSTEM | | DESIGNER | | MAGNET GLUING HOLDER | |
| MATERIAL | | SUB-SYSTEM | | DRAFTER | | DWG. NO. | |
| PFA440 HP (PRESHRUNK) | | SUS | | B. MOORE | | D1002372 | |
| FINISH | | NEXT ASSY | | CHECKER | | REV. | |
| 63 μ inch | | D1002371 | | D. BRIDGES | | v3 | |
| ANGULAR \pm 0.2° | | | | APPROVAL | | SCALE: 1:1 | |
| DIMENSIONS ARE IN INCHES [MM] | | | | | | PROJECTION: | |
| TOLERANCES: .XX \pm .01 .XXX \pm .005 | | | | | | SHEET 1 OF 1 | |

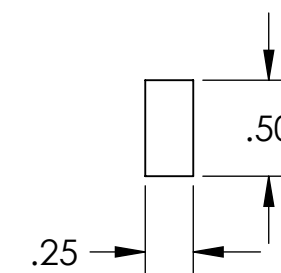
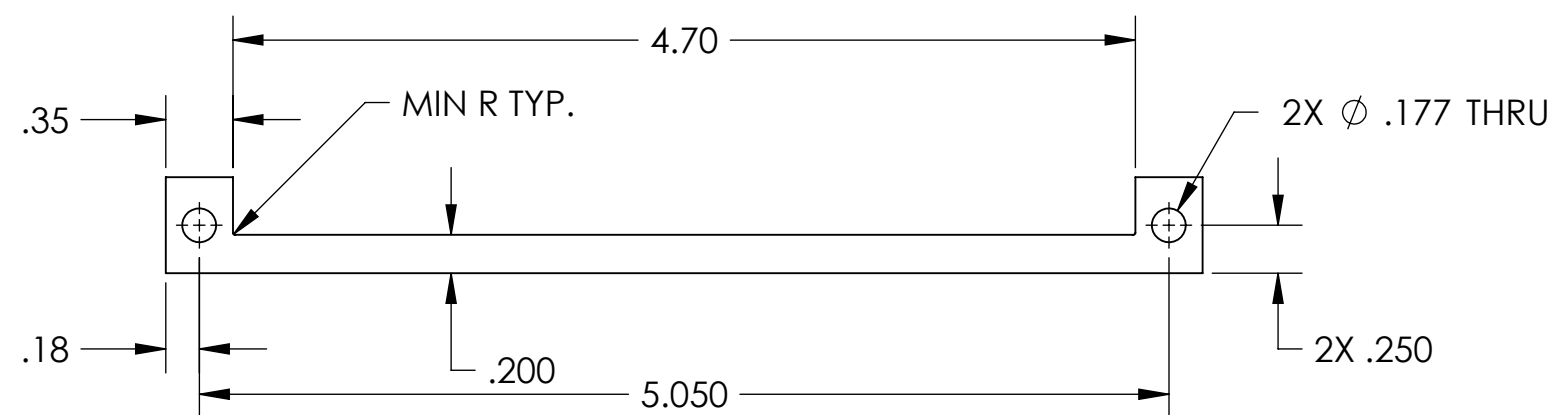
NOTES CONTINUED:

- 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. APPROXIMATE WEIGHT = 0.012 LB.
- 7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 28 APR 2011 | E1000538 | E0900353 |
| v2 | 14 JUN 2011 | E1100536 | E0900353 |
| v3 | 27 OCT 2011 | E1101059 | E0900353 |



ISOMETRIC VIEW



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES [MM]

TOLERANCES:
 .XX ± .01
 .XXX ± .005

ANGULAR ± 0.2°

- 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.

MATERIAL
 PFA440 HP (PRESHRUNK)

FINISH
 63 μinch

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM
 ADVANCED LIGO

SUB-SYSTEM
 SUS

NEXT ASSY
 D1002371

PART NAME

MAGNET GLUING CLAMPING BLOCK

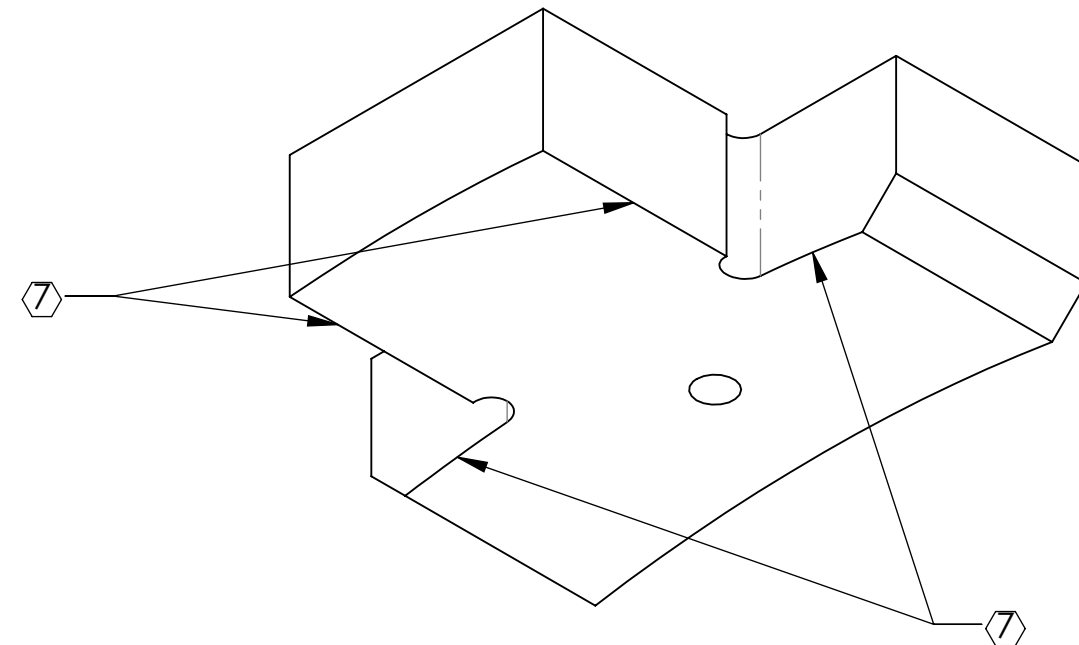
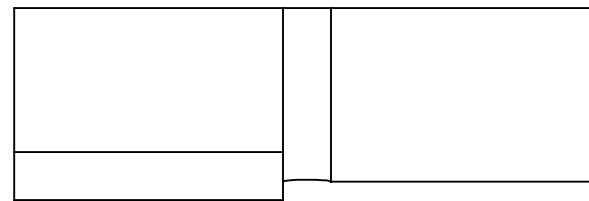
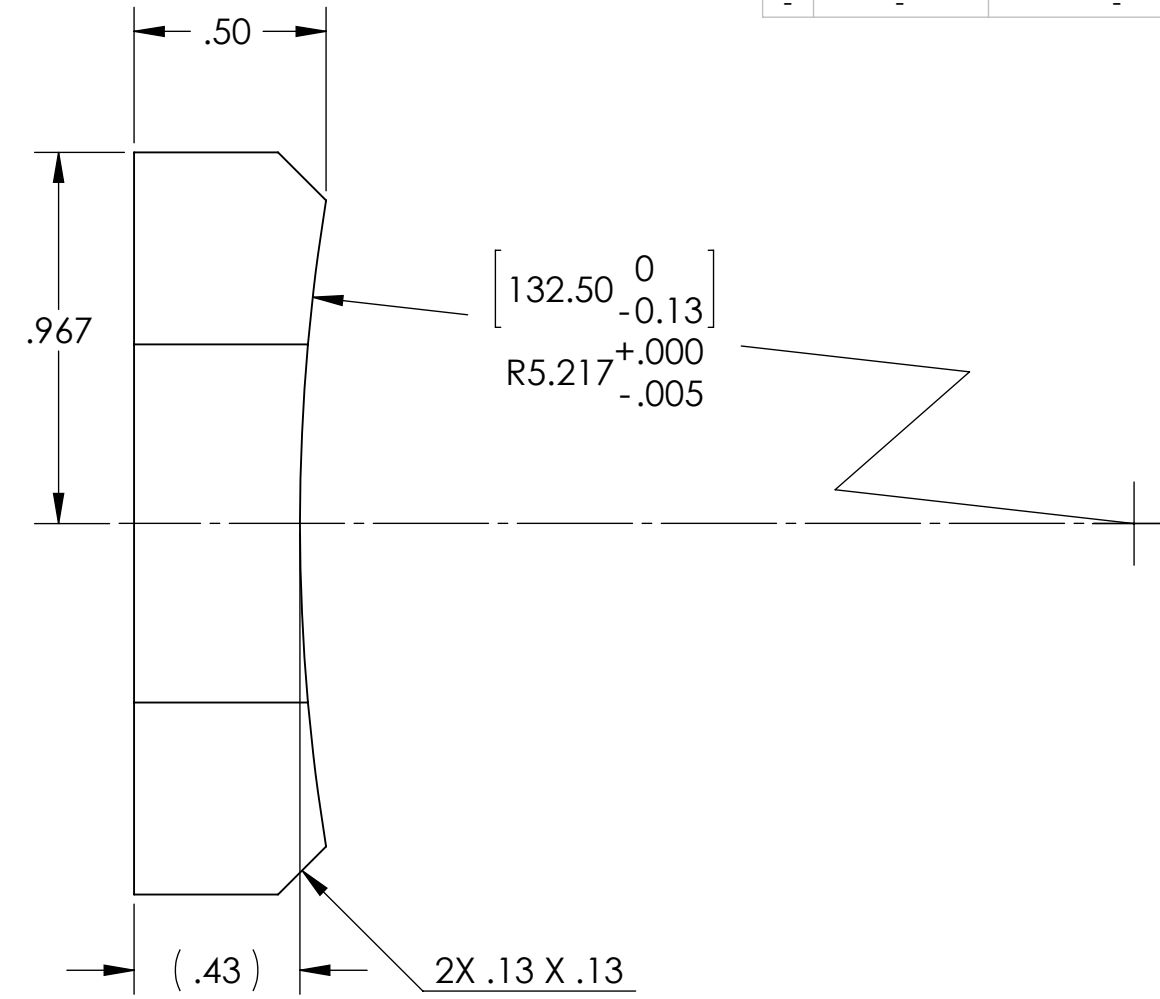
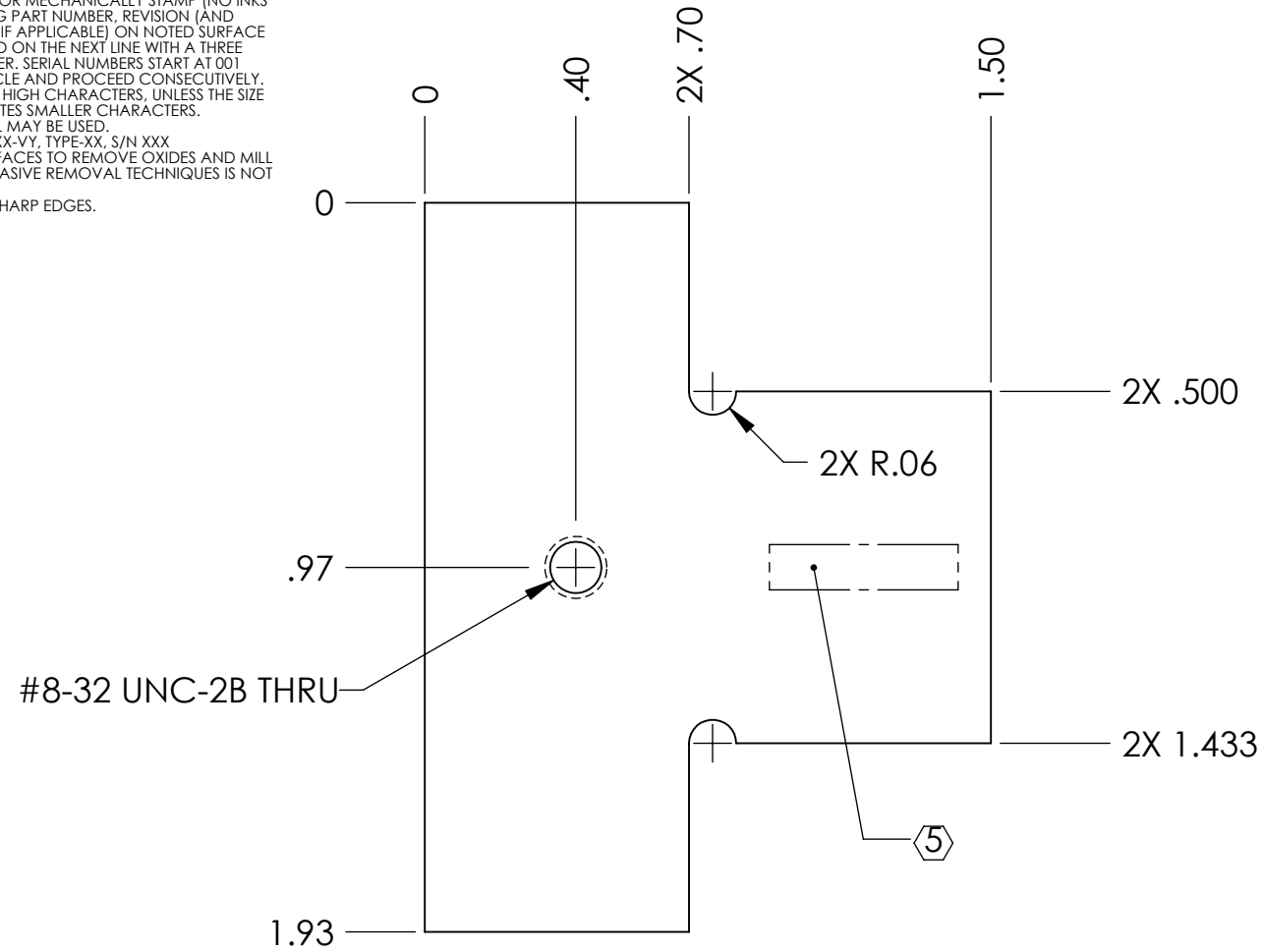
| | | |
|-----------------|------------|-------------|
| DESIGNER | B. MOORE | 09 SEP 2010 |
| DRAFTER | B. MOORE | 15 NOV 2011 |
| CHECKER | D. BRIDGES | 17 NOV 2011 |
| APPROVAL | | |

| | | |
|-------------------|--------------------|--------------|
| SIZE | DWG. NO. | REV. |
| c | D1002373 | v3 |
| SCALE: 1:1 | PROJECTION: | SHEET 1 OF 1 |

D1101790_Advanced_LIGO_SUS_HLTS_Glass_Optic_Secondary_Prism_Placement_Fixture, PART PDM REV: X-004, DRAWING PDM REV: X-002

NOTES CONTINUED:
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 001 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. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
7. DO NOT REMOVE SHARP EDGES.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 15 SEP 2011 | E1100865 | E080191 |
| - | - | - | - |
| - | - | - | - |



| NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED) | | | | CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY | | PART NAME | |
|--|--|--|--|---|--|--|--|
| DIMENSIONS ARE IN INCHES [MM] | | | | LIGO | | SECONDARY PRISM PLACEMENT FIXTURE, GLASS OPTIC | |
| TOLERANCES: .XX ± .01 .XXX ± .005 | | | | ADVANCED LIGO | | SUB-SYSTEM SUS | |
| ANGULAR ± 0.5° | | | | NEXT ASSY HLTS OVERALL ASSY AND FIXTURES | | DESIGNER D. BRIDGES | |
| MATERIAL PTFE | | | | FINISH 63 μinch | | DRAFTER D. BRIDGES | |
| | | | | | | CHECKER B. MOORE | |
| | | | | | | APPROVAL | |
| | | | | | | DESIGNER D. BRIDGES | |
| | | | | | | DRAFTER D. BRIDGES | |
| | | | | | | CHECKER B. MOORE | |
| | | | | | | APPROVAL | |
| | | | | | | SCALE: 2:1 | |
| | | | | | | PROJECTION: | |
| | | | | | | SHEET 1 OF 1 | |

8 7 6 5 4 3 2 1

D

D

C

C

B

B

A

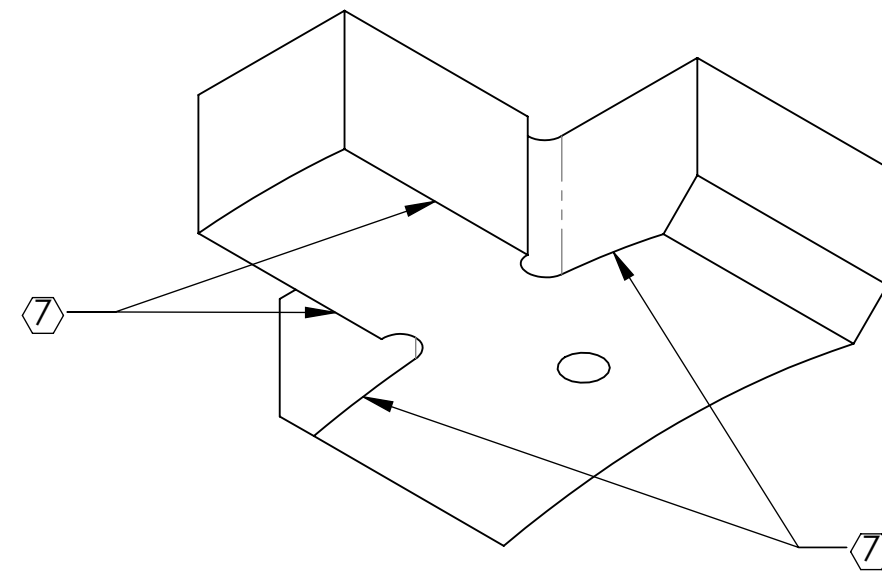
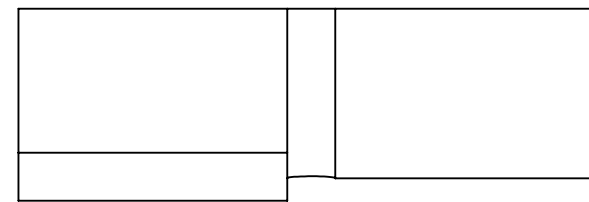
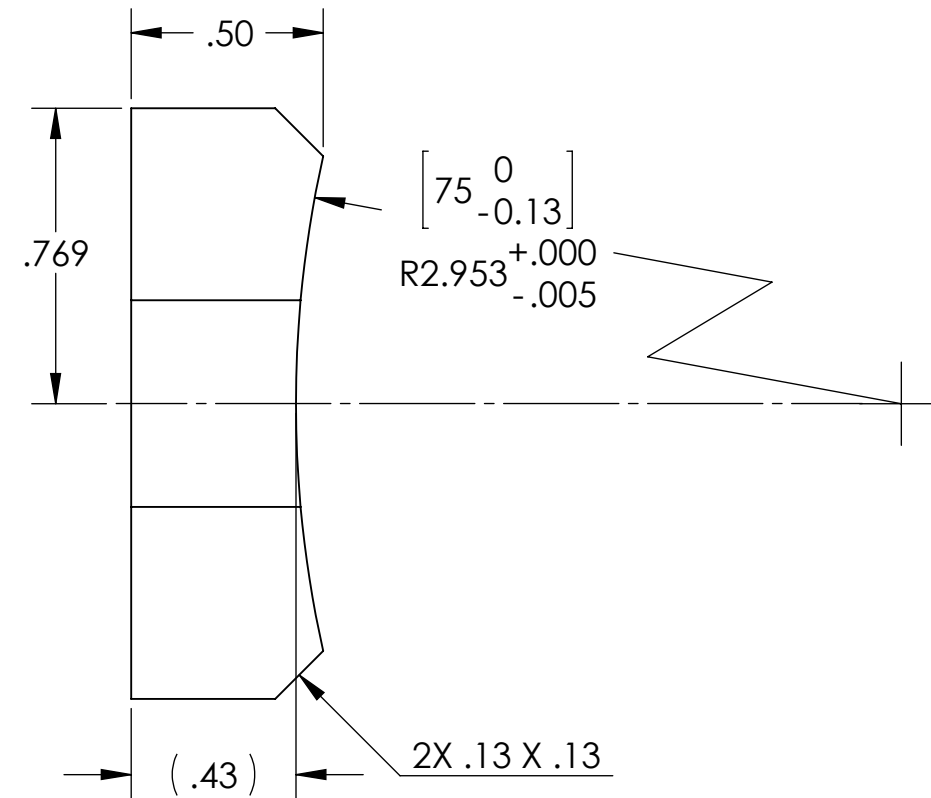
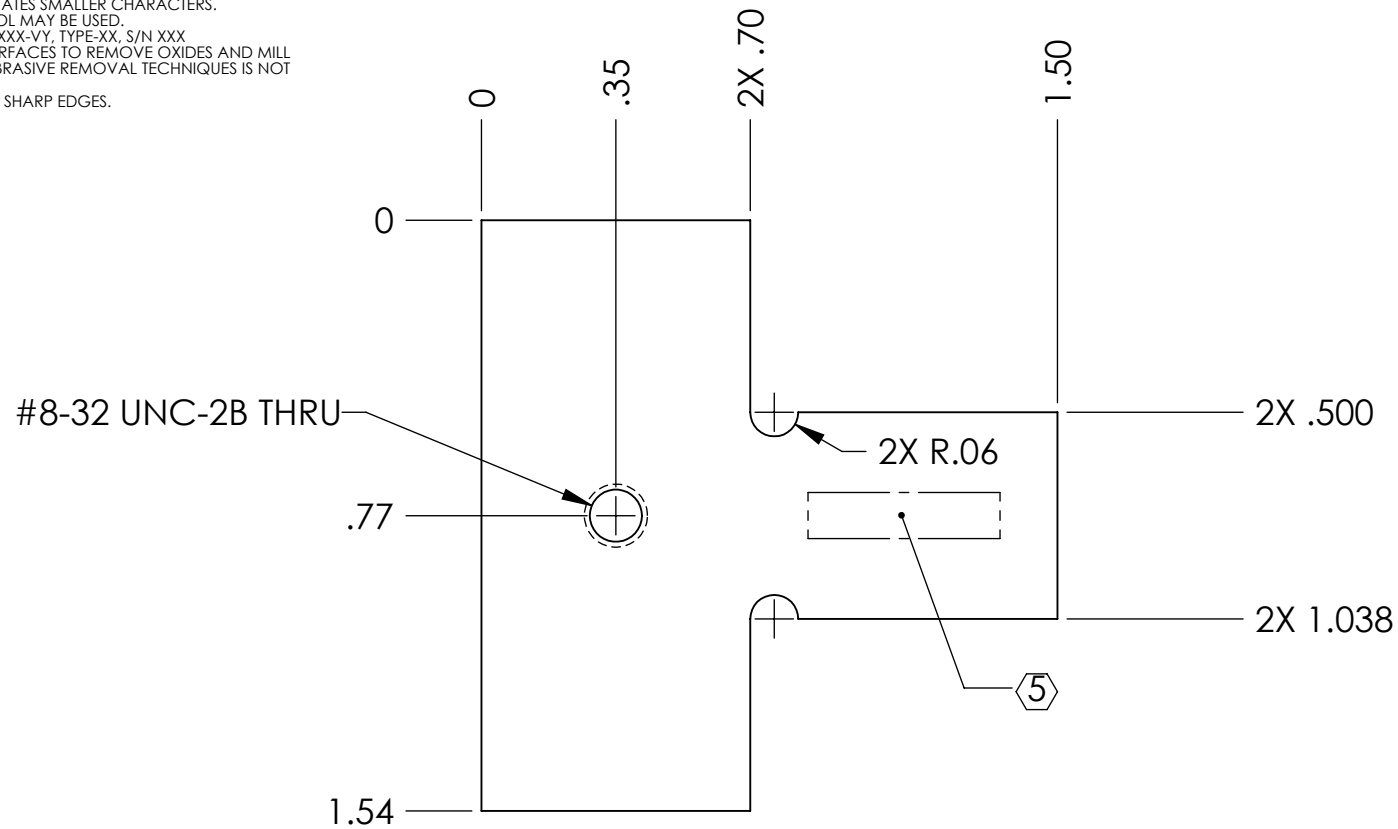
A

8 7 6 5 4 3 2 1

D1102103_Advanced_LIGO_SUS_HSTS_Glass_Optic_Secondary_Prism_Placement_Fixture, PART PDM REV: X-004, DRAWING PDM REV:

NOTES CONTINUED:
 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 001 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. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
 7. DO NOT REMOVE SHARP EDGES.

| REV. | DATE | DCN # | DRAWING TREE # |
|------|-------------|----------|----------------|
| v1 | 28 OCT 2011 | E1101061 | E1000035 |
| - | - | - | - |
| - | - | - | - |



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)
 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.
 DIMENSIONS ARE IN INCHES [MM]
 TOLERANCES:
 .XX ± .01
 .XXX ± .005
 ANGULAR ± 0.5°

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY
 SYSTEM ADVANCED LIGO SUB-SYSTEM SUS
 NEXT ASSY HSTS OVERALL ASSY AND FIXTURES

PART NAME
 SECONDARY PRISM PLACEMENT FIXTURE, GLASS OPTIC
 DESIGNER D. BRIDGES 31 OCT 2011
 DRAFTER D. BRIDGES 31 OCT 2011
 CHECKER B. MOORE 01 NOV 2011
 APPROVAL
 SIZE DWG. NO. B D1102103
 REV. v1
 SCALE: 2:1 PROJECTION: SHEET 1 OF 1