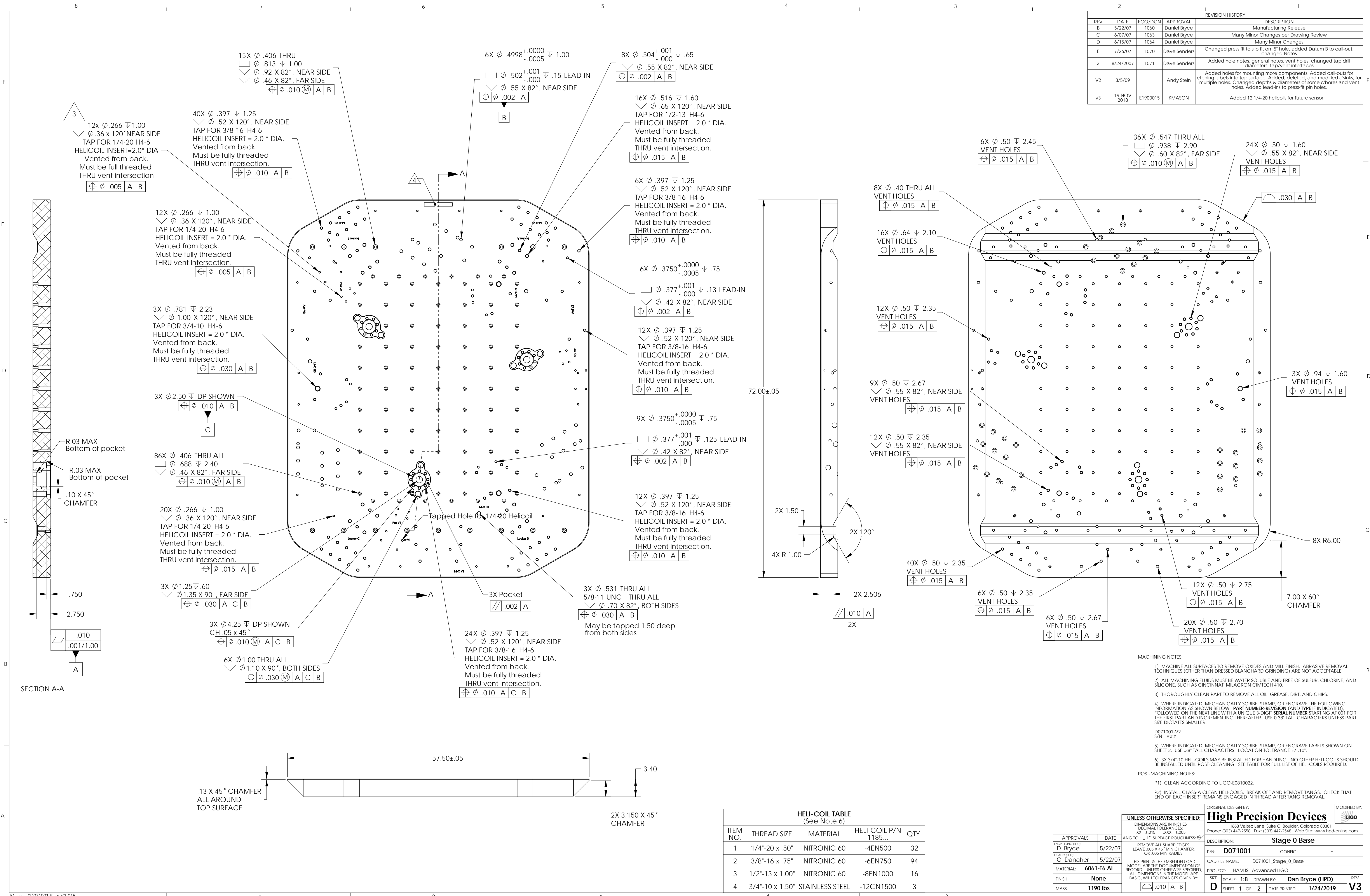


REVISION HISTORY				
REV	DATE	ECO/DCN	APPROVAL	DESCRIPTION
B	5/22/07	1060	Daniel Bryce	Manufacturing Release
C	6/07/07	1063	Daniel Bryce	Many Minor Changes per Drawing Review
D	6/15/07	1064	Daniel Bryce	Many Minor Changes
E	7/26/07	1070	Dave Senders	Changed press fit to slip fit on .5" hole, added Datum B to call-out, changed Notes
3	8/24/2007	1071	Dave Senders	Added hole notes, general notes, vent holes, changed tap drill diameters, tap/vent interfaces
V2	3/5/09		Andy Stein	Added holes for mounting more components. Added call-outs for etching labels into top surface. Added, deleted, and modified c/sinks for multiple holes. Changed depths & diameters of some c-bores and vent holes. Added lead-ins to press-fit pin holes.
V3	19 NOV 2018	E1900015	KMASON	Added 12 1/4-20 helicoils for future sensor.



15X ϕ .406 THRU
 ϕ .813 ∇ 1.00
 ∇ .92 X 82°, NEAR SIDE
 ∇ .46 X 82°, FAR SIDE
 \oplus ϕ .010 (M) A B

6X ϕ .4998^{+0.000}_{-.0005} ∇ 1.00
 ϕ .502^{+0.001}_{-.000} ∇ .15 LEAD-IN
 ∇ .55 X 82°, NEAR SIDE
 \oplus ϕ .002 A B

8X ϕ .504^{+0.001}_{-.000} ∇ .65
 ∇ .55 X 82°, NEAR SIDE
 \oplus ϕ .002 A B

16X ϕ .516 ∇ 1.60
 ∇ .65 X 120°, NEAR SIDE
 TAP FOR 1/2-13 H4-6
 HELICOIL INSERT = 2.0" DIA.
 Vented from back.
 Must be fully threaded THRU vent intersection.
 \oplus ϕ .015 A B

6X ϕ .397 ∇ 1.25
 ∇ .52 X 120°, NEAR SIDE
 TAP FOR 3/8-16 H4-6
 HELICOIL INSERT = 2.0" DIA.
 Vented from back.
 Must be fully threaded THRU vent intersection.
 \oplus ϕ .010 A B

6X ϕ .3750^{+0.000}_{-.0005} ∇ .75
 ϕ .377^{+0.001}_{-.000} ∇ .13 LEAD-IN
 ∇ .42 X 82°, NEAR SIDE
 \oplus ϕ .002 A B

12X ϕ .397 ∇ 1.25
 ∇ .52 X 120°, NEAR SIDE
 TAP FOR 3/8-16 H4-6
 HELICOIL INSERT = 2.0" DIA.
 Vented from back.
 Must be fully threaded THRU vent intersection.
 \oplus ϕ .010 A B

9X ϕ .3750^{+0.000}_{-.0005} ∇ .75
 ϕ .377^{+0.001}_{-.000} ∇ .125 LEAD-IN
 ∇ .42 X 82°, NEAR SIDE
 \oplus ϕ .002 A B

12X ϕ .397 ∇ 1.25
 ∇ .52 X 120°, NEAR SIDE
 TAP FOR 3/8-16 H4-6
 HELICOIL INSERT = 2.0" DIA.
 Vented from back.
 Must be fully threaded THRU vent intersection.
 \oplus ϕ .010 A B

3X ϕ .531 THRU ALL
 5/8-11 UNC THRU ALL
 ∇ .70 X 82°, BOTH SIDES
 \oplus ϕ .030 A B
 May be tapped 1.50 deep from both sides

24X ϕ .397 ∇ 1.25
 ∇ .52 X 120°, NEAR SIDE
 TAP FOR 3/8-16 H4-6
 HELICOIL INSERT = 2.0" DIA.
 Vented from back.
 Must be fully threaded THRU vent intersection.
 \oplus ϕ .010 A C B

12X ϕ .266 ∇ 1.00
 ∇ .36 X 120°, NEAR SIDE
 TAP FOR 1/4-20 H4-6
 HELICOIL INSERT = 2.0" DIA.
 Vented from back.
 Must be fully threaded THRU vent intersection.
 \oplus ϕ .005 A B

3X ϕ .781 ∇ 2.23
 ∇ .100 X 120°, NEAR SIDE
 TAP FOR 3/4-10 H4-6
 HELICOIL INSERT = 2.0" DIA.
 Vented from back.
 Must be fully threaded THRU vent intersection.
 \oplus ϕ .030 A B

3X ϕ 2.50 ∇ DP SHOWN
 \oplus ϕ .010 A B
 C

86X ϕ .406 THRU ALL
 ϕ .688 ∇ 2.40
 ∇ .46 X 82°, FAR SIDE
 \oplus ϕ .010 (M) A B

20X ϕ .266 ∇ 1.00
 ∇ .36 X 120°, NEAR SIDE
 TAP FOR 1/4-20 H4-6
 HELICOIL INSERT = 2.0" DIA.
 Vented from back.
 Must be fully threaded THRU vent intersection.
 \oplus ϕ .015 A B

3X ϕ 1.25 ∇ .60
 ∇ .135 X 90°, FAR SIDE
 \oplus ϕ .030 A C B

3X ϕ 4.25 ∇ DP SHOWN
 CH .05 x 45°
 \oplus ϕ .010 (M) A C B

6X ϕ 1.00 THRU ALL
 ∇ .110 X 90°, BOTH SIDES
 \oplus ϕ .030 (M) A C B

6X ϕ .50 ∇ 2.45
 VENT HOLES
 \oplus ϕ .015 A B

16X ϕ .64 ∇ 2.10
 VENT HOLES
 \oplus ϕ .015 A B

12X ϕ .50 ∇ 2.35
 VENT HOLES
 \oplus ϕ .015 A B

9X ϕ .50 ∇ 2.67
 ∇ .55 X 82°, NEAR SIDE
 VENT HOLES
 \oplus ϕ .015 A B

12X ϕ .50 ∇ 2.35
 ∇ .55 X 82°, NEAR SIDE
 VENT HOLES
 \oplus ϕ .015 A B

40X ϕ .50 ∇ 2.35
 VENT HOLES
 \oplus ϕ .015 A B

6X ϕ .50 ∇ 2.35
 VENT HOLES
 \oplus ϕ .015 A B

6X ϕ .50 ∇ 2.67
 VENT HOLES
 \oplus ϕ .015 A B

36X ϕ .547 THRU ALL
 ϕ .938 ∇ 2.90
 ∇ .60 X 82°, FAR SIDE
 \oplus ϕ .010 (M) A B

24X ϕ .50 ∇ 1.60
 VENT HOLES
 \oplus ϕ .015 A B

3X ϕ .94 ∇ 1.60
 VENT HOLES
 \oplus ϕ .015 A B

12X ϕ .50 ∇ 2.75
 VENT HOLES
 \oplus ϕ .015 A B

20X ϕ .50 ∇ 2.70
 VENT HOLES
 \oplus ϕ .015 A B

8X R6.00

7.00 X 60° CHAMFER

- MACHINING NOTES:
- 1) MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. ABRASIVE REMOVAL TECHNIQUES (OTHER THAN DRESSED BLANCHARD GRINDING) ARE NOT ACCEPTABLE.
 - 2) ALL MACHINING FLUIDS MUST BE WATER SOLUBLE AND FREE OF SULFUR, CHLORINE, AND SILICONE. SUCH AS CINCINNATI MILACRON CIMTECH 410.
 - 3) THOROUGHLY CLEAN PART TO REMOVE ALL OIL, GREASE, DIRT, AND CHIPS.
 - 4) WHERE INDICATED, MECHANICALLY SCRIBE, STAMP, OR ENGRAVE THE FOLLOWING INFORMATION AS SHOWN BELOW: PART NUMBER-REVISION (AND TYPE IF INDICATED), FOLLOWED ON THE NEXT LINE WITH A UNIQUE 3-DIGIT SERIAL NUMBER STARTING AT 001 FOR THE FIRST PART AND INCREMENTING THEREAFTER. USE 0.35" TALL CHARACTERS UNLESS PART SIZE DICTATES SMALLER.
 - 5) WHERE INDICATED, MECHANICALLY SCRIBE, STAMP, OR ENGRAVE LABELS SHOWN ON SHEET 2. USE .38" TALL CHARACTERS. LOCATION TOLERANCE +.7-.10".
 - 6) 3X 3/4"-10 HELI-COILS MAY BE INSTALLED FOR HANDLING. NO OTHER HELI-COILS SHOULD BE INSTALLED UNTIL POST-CLEANING. SEE TABLE FOR FULL LIST OF HELI-COILS REQUIRED.
- POST-MACHINING NOTES:
- P1) CLEAN ACCORDING TO LIGO-E0810022.
 - P2) INSTALL CLASS A CLEAN HELI-COILS. BREAK OFF AND REMOVE TANGS. CHECK THAT END OF EACH INSERT REMAINS ENGAGED IN THREAD AFTER TANG REMOVAL.

HELI-COIL TABLE (See Note 6)				
ITEM NO.	THREAD SIZE	MATERIAL	HELI-COIL P/N	QTY.
1	1/4"-20 x .50"	NITRONIC 60	-4EN500	32
2	3/8"-16 x .75"	NITRONIC 60	-6EN750	94
3	1/2"-13 x 1.00"	NITRONIC 60	-8EN1000	16
4	3/4"-10 x 1.50"	STAINLESS STEEL	-12CN1500	3

APPROVALS	DATE	5/22/07	APPROVALS	DATE	5/22/07
DESIGNED BY: D. Bryce			DESIGNED BY: D. Bryce		
QUALITY BY: C. Danaher			QUALITY BY: C. Danaher		
MATERIAL: 6061-16 Al			MATERIAL: 6061-16 Al		
FINISH: None			FINISH: None		
MASS: 1190 lbs			MASS: 1190 lbs		

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 DECIMAL TOLERANCES:
 .XX ±.015 XXX ±.005
 ANG TOL ±1° SURFACE ROUGHNESS:
 REMOVE ALL SHARP EDGES.
 LEAVE .005 X 45° MIN CHAMFER OR .005 MIN RADIUS.

THIS PRINT & THE EMBEDDED CAD MODEL ARE THE DOCUMENTATION OF RECORD. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS IN THE MODEL ARE BASIC, WITH TOLERANCES GIVEN BY:

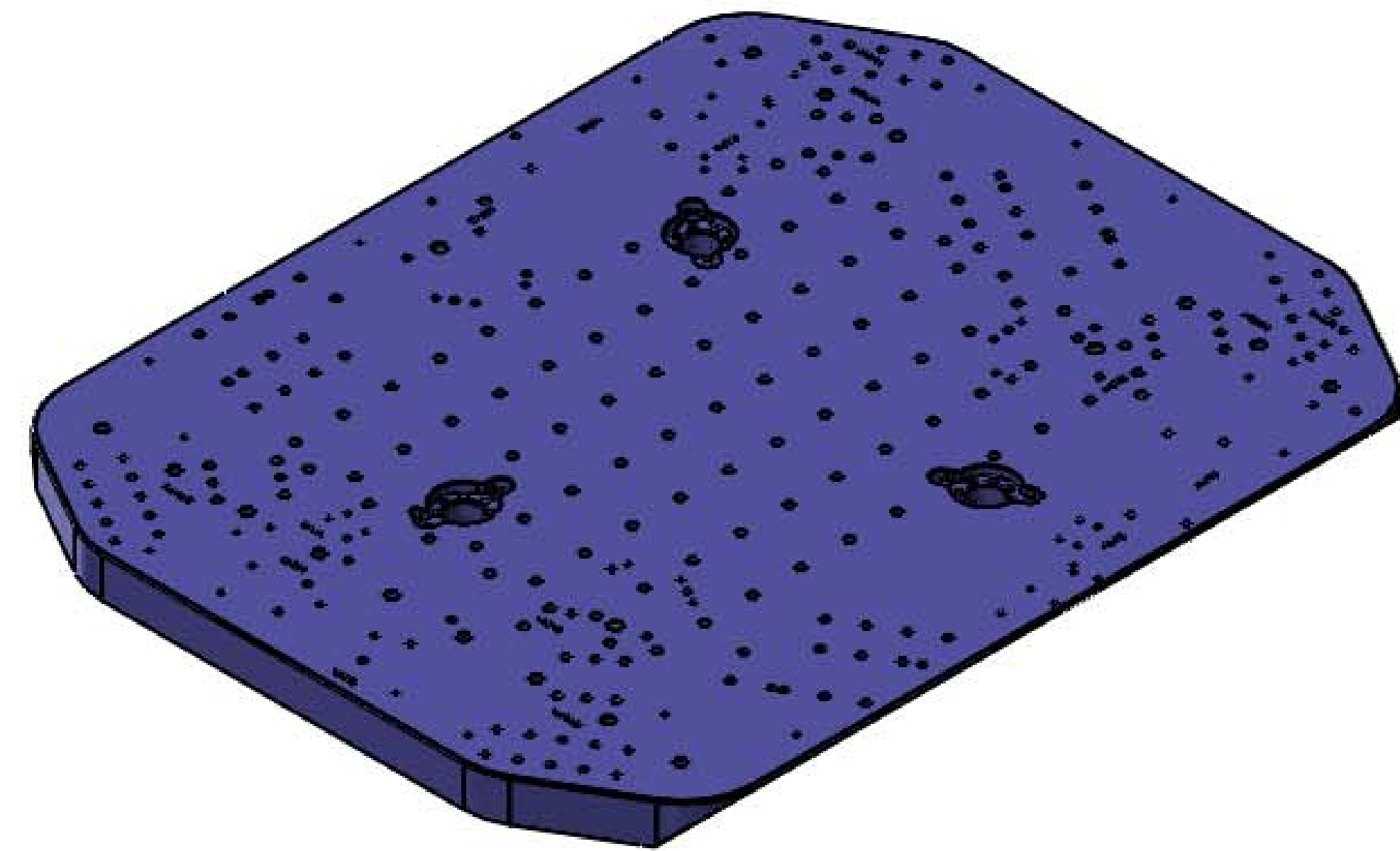
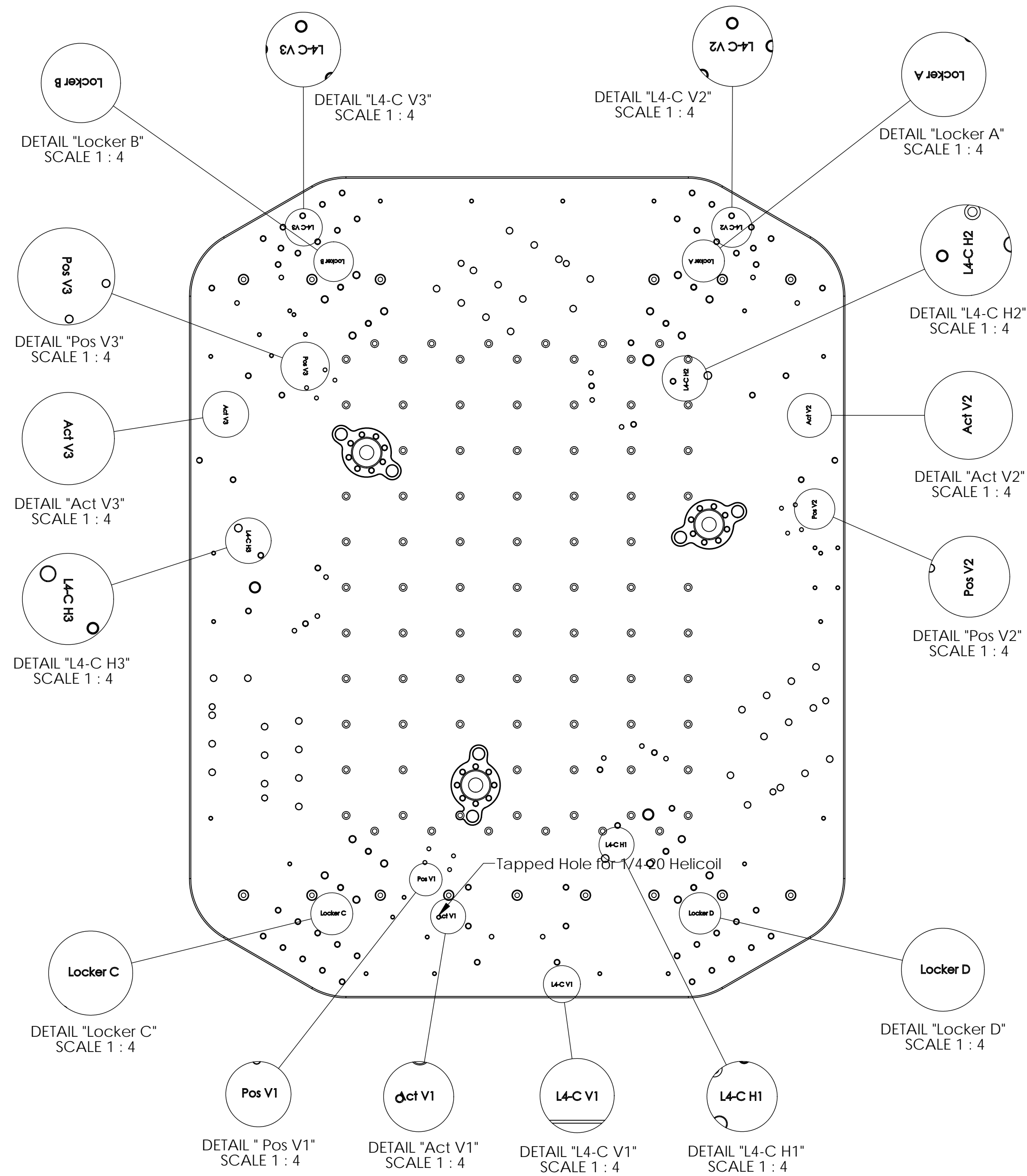
APPROVALS: [Signature] DATE: 5/22/07

PROJECT: HAM ISI, Advanced LIGO

SCALE: 1:8 DRAWN BY: Dan Bryce (HPD)

SHEET 1 OF 2 DATE PRINTED: 1/24/2019

REV V3



APPROVALS		DATE	ORIGINAL DESIGN BY:		MODIFIED BY:
D. Bryce		5/22/07	High Precision Devices		Ligo
C. Danaher		5/22/07	1668 Valtec Lane, Suite C, Boulder, Colorado 80301		
MATERIAL: 6061-T6 Al			Phone: (303) 447-2558 Fax: (303) 447-2548 Web Site: www.hpd-online.com		
FINISH: None			DESCRIPTION: Stage 0 Base		
MASS: 1190 lbs			P/N: D071001		CONFIG: -
			CAD FILE NAME: D071001_Stage_0_Base		
			PROJECT: HAM ISI, Advanced LIGO		
			SIZE: SCALE: 1:8		DRAWN BY: Dan Bryce (HPD)
			SHEET 2 OF 2		DATE PRINTED: 1/24/2019
					REV: V3

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 DECIMAL TOLERANCES:
 XX ±.015 XXX ±.005
 ANG TOL ±1° SURFACE ROUGHNESS:
 REMOVE ALL SHARP EDGES.
 LEAVE .005 X 45° MIN CHAMFER,
 OR .005 MIN RADIUS.

THIS PRINT & THE EMBEDDED CAD MODEL ARE THE DOCUMENTATION OF RECORD. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS IN THE MODEL ARE BASIC, WITH TOLERANCES GIVEN BY:
 .010 A B