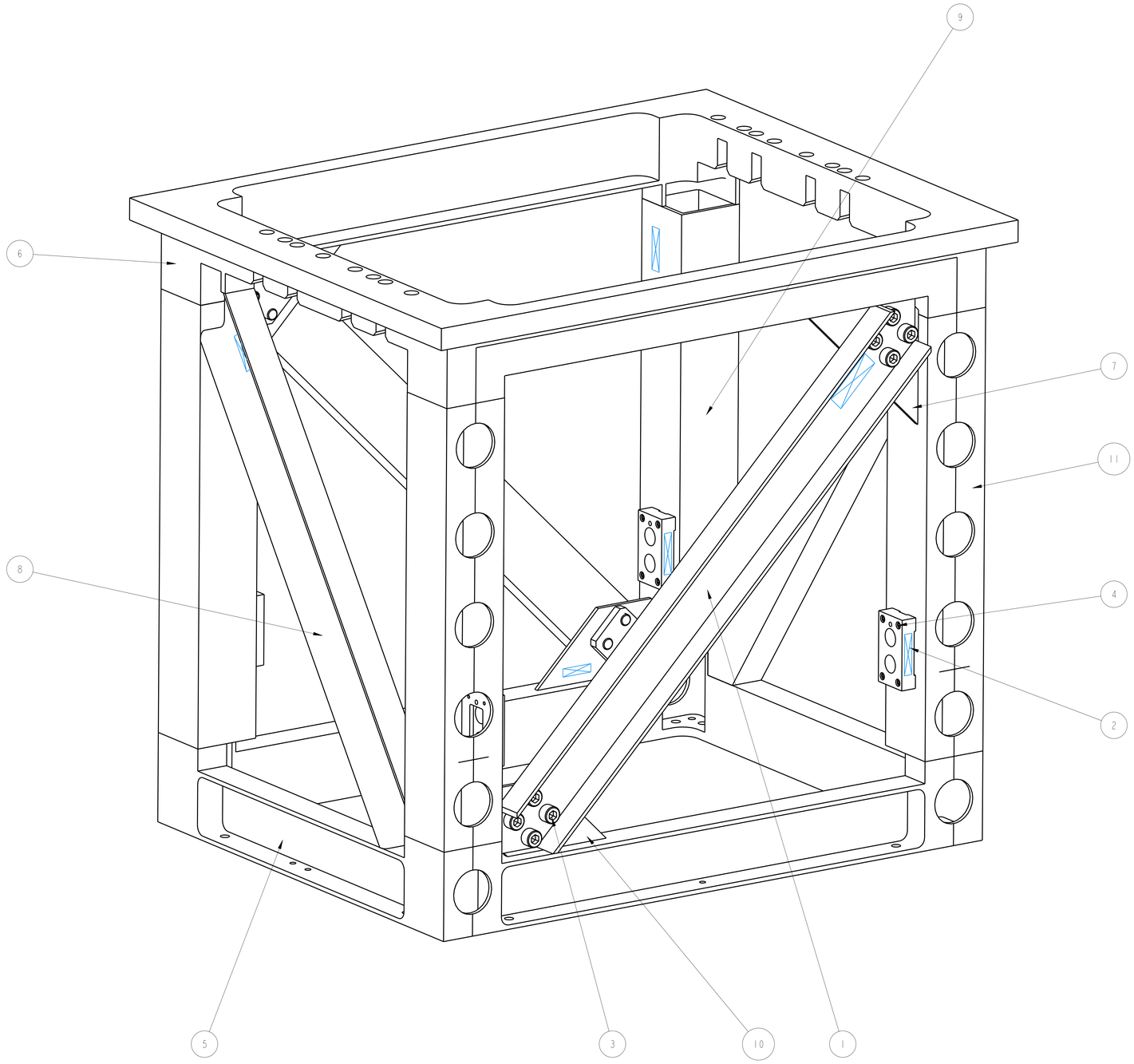
INTRALINK NAME: D060492

REV.	DATE	DCN #	DRAWING TREE #
-	-	-	-



ADDITIONAL NOTES:
1. THIS DRAWING SHOWS GAS OF WHOLE ASSEMBLY AND DETAIL OF MAIN WELDMENT. WELDMENT COMPONENTS DO NOT NEED UNIQUE PART NUMBERS.
2. COMPLETED WELDMENT TO BE ENGRAVED AS SHOWN WITH ASSY DRW No. AND SERIAL No.

ITEM	QTY	PARENT	TOTAL	PART NUMBER	DESCRIPTION	MATERIALS
1	2			D060499	REMOVEABLE CROSS MEMBER; (UPPER STRUCTURE)	AL ALLOY: 6061-T6 OR 5083-T6
2	4			D070247	TABLECLOTH PADS; (UPPER STRUCTURE)	AL ALLOY: 5083 T6 OR 6061 T6
3	16				-	
4	16				0-32 UNC X 0.625" CAP HEAD;	
5	1				UPPER STRUCTURE BTM RING;	
6	1				UPPER STRUCTURE TOP RING;	
7	2				TOP GUSSET PLATE;	
8	2				PERMANENT CROSS MEMBER;	
9	2				SQUARE SECTION UPRIGHT; MEMBER #2	
10	2				BTM GUSSET PLATE;	
11	2				SQUARE SECTION UPRIGHT; MEMBER #1	

PARTS LIST

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL SHARP EDGES. 0.02 MIN.
2. DO NOT SCALE FROM DRAWING
3. ALL WELDING FLUXES SHALL BE ACID FREE AND FREE OF SULFUR, CHLORINE AND SILICONE, SUCH AS CINCINNATI WILLACRON'S CHWTECH 410 STAINLESS STEEL
4. DEFINE, ENGRAVE OR STAMP ON ONE OF THE MAIN WELDMENT THE DRAWING PART AND A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST PART AND PROCEED CONSECUTIVELY.
5. REMOVE ALL BURRS AND SLIVERS. EXAMPLE: DEBURR, DBT. A VIBRATORY TOOL MAY BE USED.

DIMENSIONS ARE IN mm [INCHES]
TOLERANCES:
X .XX ± .mm [INCHES]
ANGULAR ± .°

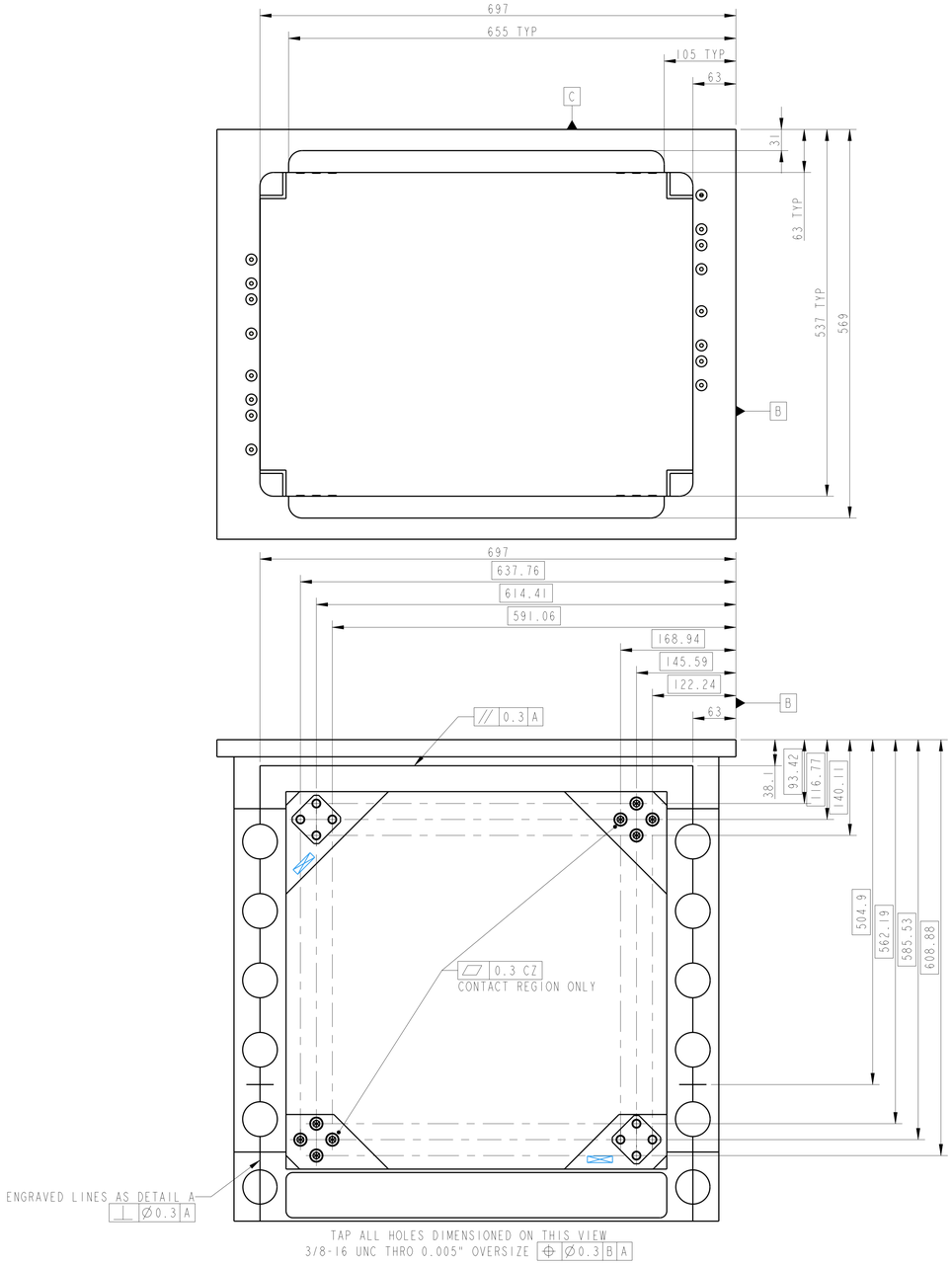
MATERIAL: SEE NOTE
FINISH: CLEAN
m (µin) Ra = STOCK

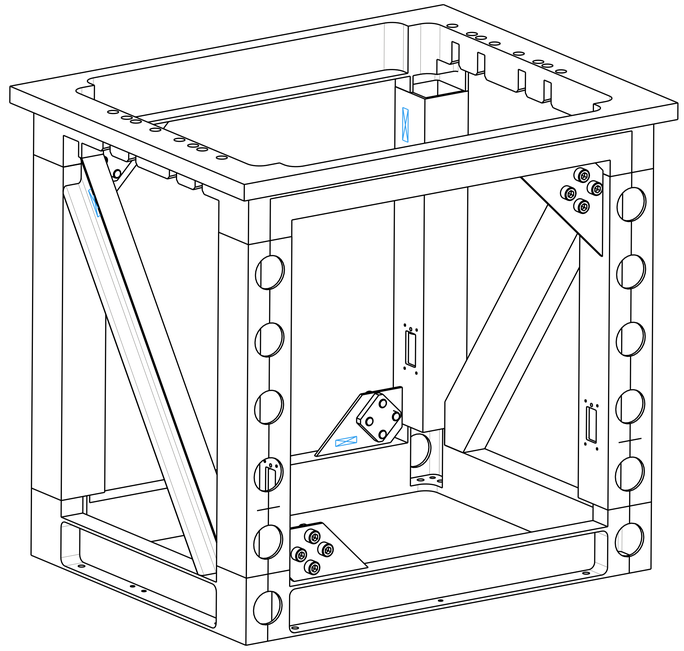
	NAME	DATE
DRAWN	R.LIMIT	31/07/12
CHECKED	MR	31/MAR/12
APPROVED	JOD	31/MAR/12

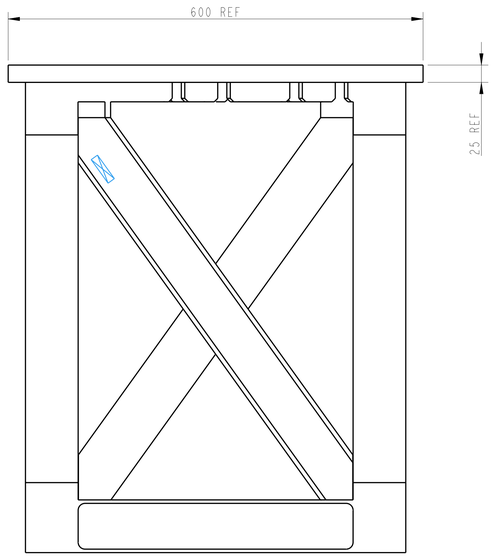
LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, UK: GLASGOW UNIVERSITY, GEO-HIG GROUP, RUTHERFORD APPLETON LABORATORIES.

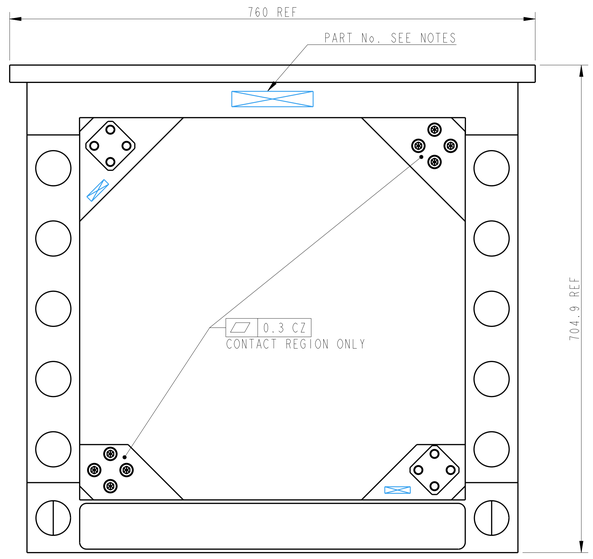
SYSTEM: aLIGO
SUB-SYSTEM: SUS
NEXT ASSY: QUAD
PART NAME: UPPER STRUCTURE WELDMENT

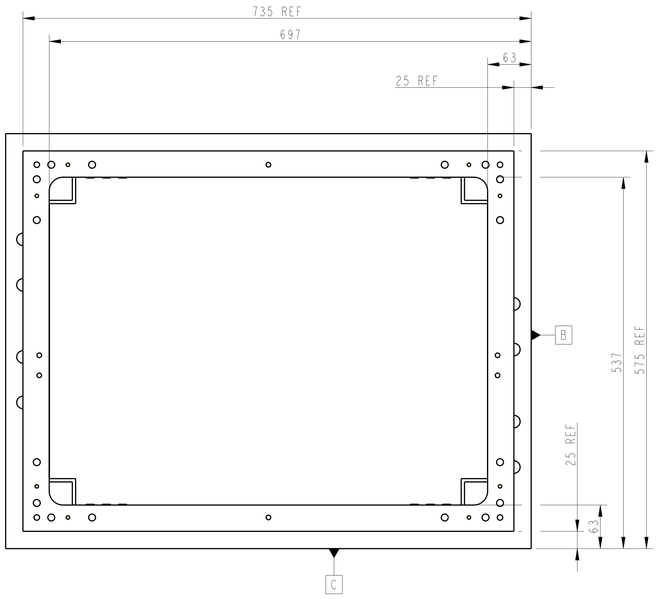
SIZE: E | DRG. NO.: D060492 | REV: C
SCALE: 1:2 PROJECTION | SHEET 1 OF 2











DRAWING SHOWING FULL UPPER STRUCTURE WELDMENT
DRAWING NOT INTENDED FOR MANUFACTURE
DETAIL OF WELD PREPS, TOOLING RADS, FAB STEPS EXCLUDED

SHEET 1 SHOWS ASSEMBLY
SHEET 2 AND 3 SHOW FULL WELDMENT DETAIL

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. REMOVE ALL SHARP EDGES, R 0.2 MIN.
2. DO NOT SCALE FROM DRAWING.
3. ALL MACHINING FLUIDS SHALL BE WATER SOLUBLE AND FREE OF SULFUR, CHLORINE AND SILICONE, SUCH AS CINCINNATI MILACRON'S CINTECH 4 OR 5 OR EQUIVALENT.
4. SCRIBE, ENGRAVE OR STAMP DRAWING PARTNUMBER ON NOTED SURFACE OF PART AND A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST PART AND PROCEED CONSECUTIVELY. USE 07" HIGH CHARACTERS. EXAMPLE: D020490 001. A VIBRATORY TOOL MAY BE USED.

DIMENSIONS ARE IN mm [INCHES]
TOLERANCES:
X.XX ±0.2 mm [INCHES]
ANGULAR ±0.2°

MATERIAL: SEE NOTE

FINISH: CLEAN
m (µin) Ra = STOCK

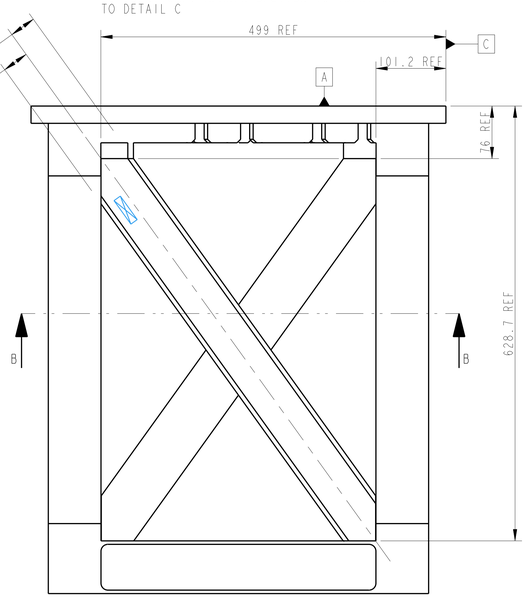
	NAME	DATE
DRAWN	M.WILMOT	10/01/07
CHECKED	MB	15/MAR/10
APPROVED	JOD	15/MAR/10

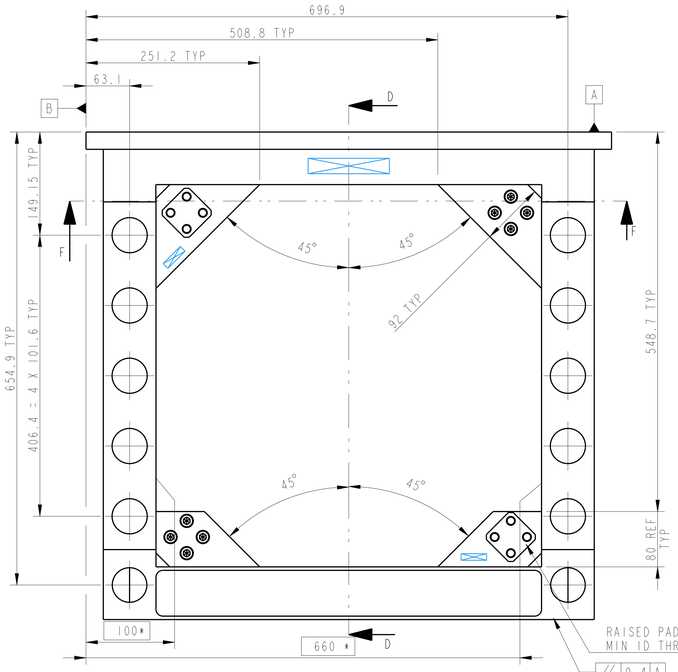
CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
UNIV. GLASGOW UNIVERSITY GEO 600 GROUP
RUTHERFORD APPLETON LABORATORIES

SYSTEM: aLIGO
SUB-SYSTEM: SUS
NEXT ASSY: QUAD ETM/ITM
PART NAME: UPPER STRUCTURE WELDMENT
SIZE: E
DRG. NO.: D060492
REV: C
SCALE: 3:16 PROJECTION
SHEET 2 OF 3

REV.	DATE	DCN #	DRAWING TREE #
-	-	-	-

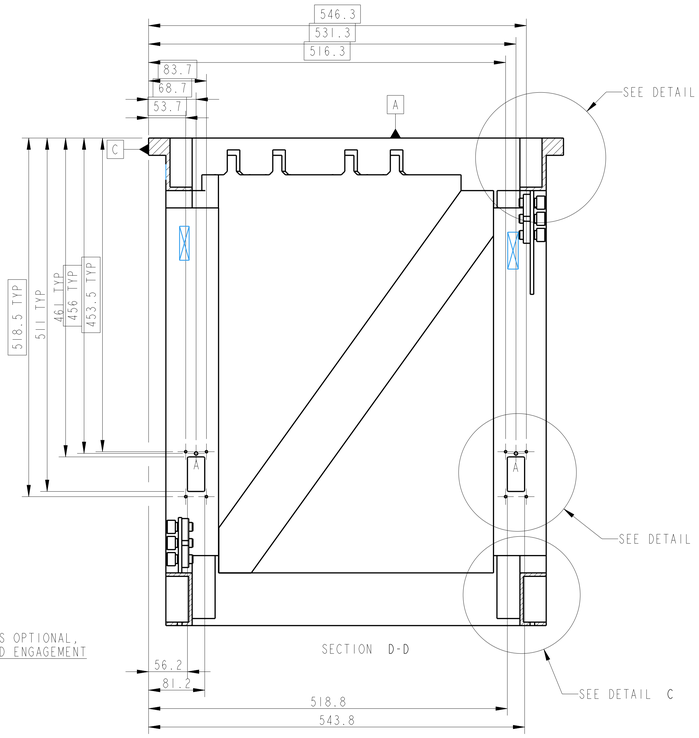
NOTE: DIAGONAL MEMBER ON OPPOSITE SIDE IS IDENTICAL. MEMBER SECTION IS IDENTICAL TO DETAIL C

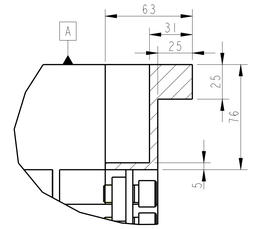




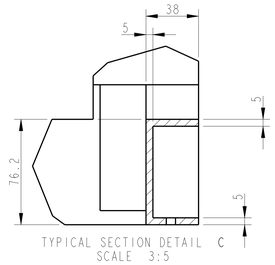
RAISED PAD IS OPTIONAL, MIN ID THREAD ENGAGEMENT

// 0.4 A





TYPICAL SECTION DETAIL D
SCALE 3:5



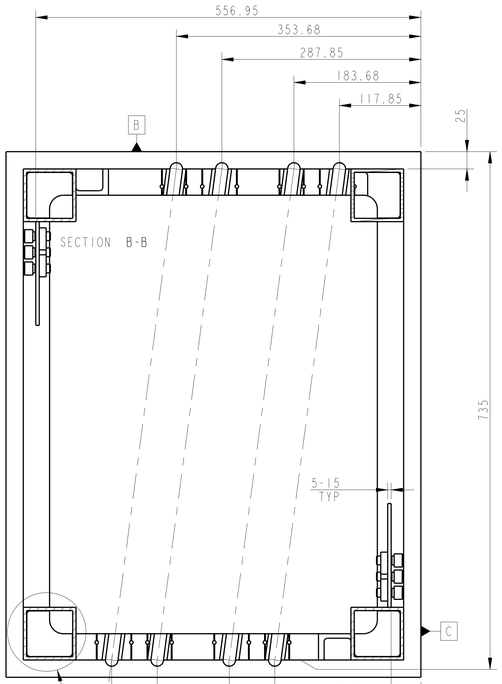
TYPICAL SECTION DETAIL C
SCALE 3:5

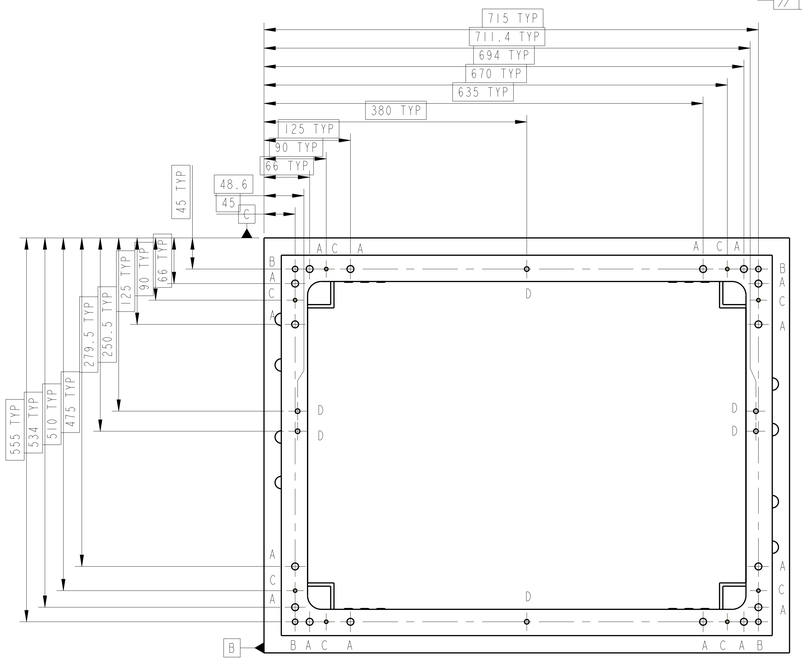
TAP ALL HOLES DIMENSIONED ON THIS VIEW 8-32 UNC 0.005" OVERSIZE THRO, EXCEPT WHERE MARKED

⌖ Ø0.2

HOLES MARKED 'A': REAM Ø5 H7 THRO'

⊥ 0.01 B ⌖ Ø0.2 A B





16 HOLES MARKED 'A' Ø10.4 THRU FIRST FACE ONLY

⌖ Ø0.2 B C

4 HOLES MARKED 'B' Ø8.2 - Ø8.3

⌖ Ø0.2 B C

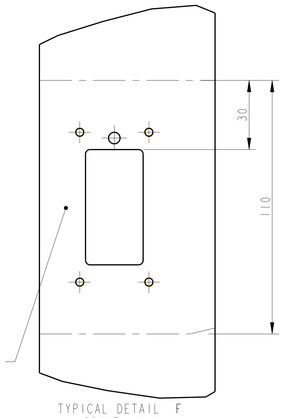
10 HOLES MARKED 'C' 1/4-20 UNC THRU FIRST FACE ONLY

⌖ Ø0.2 B C

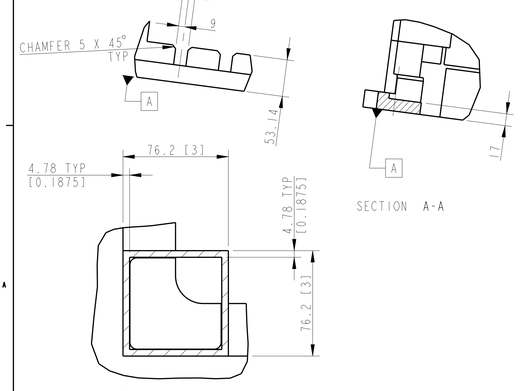
6 HOLES MARKED 'D' Ø7.2MM

⌖ Ø0.2 B C

// 0.2 B BASIC DIMMS MARKED *

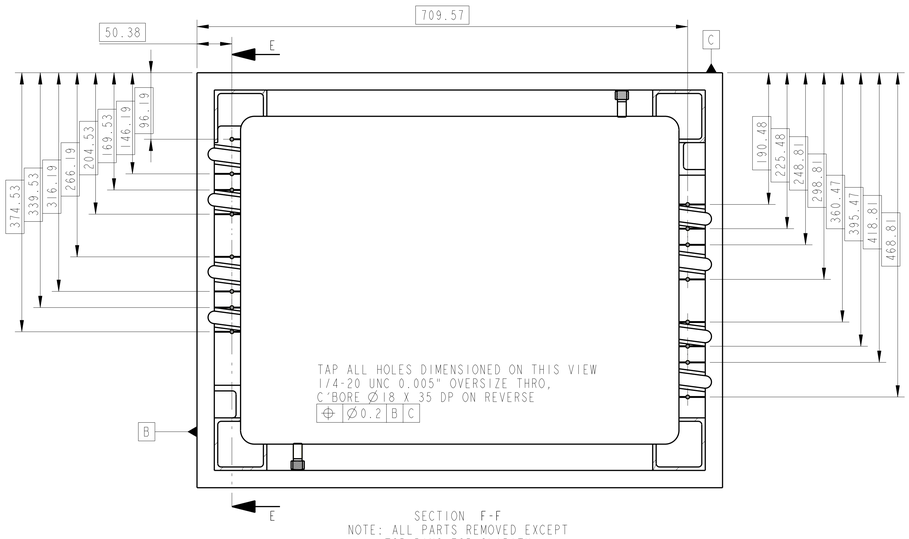


TYPICAL DETAIL F
SCALE 1:1
VIEW SHOWING LEG TOL ZONE



TYPICAL DETAIL E
SCALE 3:5
NOTE: EXACT BOX PROFILE CAN VARY

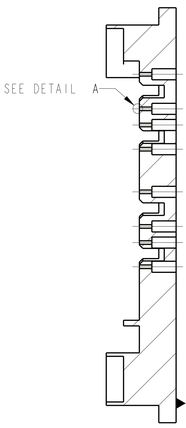
SECTION A-A



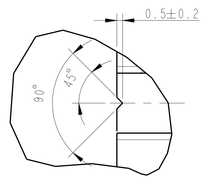
TAP ALL HOLES DIMENSIONED ON THIS VIEW 1/4-20 UNC 0.005" OVERSIZE THRO, C'BORE Ø18 X 35 DP ON REVERSE

⌖ Ø0.2 B C

SECTION F-F
NOTE: ALL PARTS REMOVED EXCEPT TOP RING FOR CLARITY



SECTION E-E



TYPICAL DETAIL A
SCALE 5:1

NOTES: (UNLESS OTHERWISE SPECIFIED)					
1. REMOVE ALL SHARP EDGES, 0.381mm.	DIMENSIONS ARE IN mm [INCHES]			CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LIGO LABORATORY UNIVERSITY OF GLASGOW UNIVERSITY OF GLASGOW RUTHERFORD APPLETON LABORATORIES	
2. DO NOT SCALE FROM DRAWING.	ANGULAR ±0.2 °				
3. ALL MACHINING FLUIDS SHALL BE WATER SOLUBLE AND FREE OF SULFUR, CHLORINE AND SILICONE, SUCH AS CINCINNATI MILACRON'S TRIM SOL OR TRIM VHP 210.	X XX ±0.2 mm [INCHES]			SYSTEM aLIGO	
4. SCRIBE, ENGRAVE OR STAMP DRAWING PART/NUMBER ON NOTED SURFACE OF PART AND A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START WITH 001 FOR THE FIRST PART AND PROCEED CONSECUTIVELY. USE .07" HIGH CHARACTERS. EXAMPLE: D020100 -001. A VIBRATORY TOOL MAY BE USED.	MATERIAL: SEE NOTE			SUB-SYSTEM SUS	
	FINISH: m (µin) CLEAN, Ra = STOCK			NEXT ASSY QUAD ETM/ITM	
		NAME	DATE	PART NAME UPPER STRUCTURE WELDMENT	
	DRAWN	M LIMIT	01/06/2021	SIZE	DRG. NO.	REV
	CHECKED	MR	1/3/MAR/2105	E	D060492	C
	APPROVED	JOD	1/3/MAR/2105	SCALE 3/8 PROJECTION	SHEET 2 OF 2	