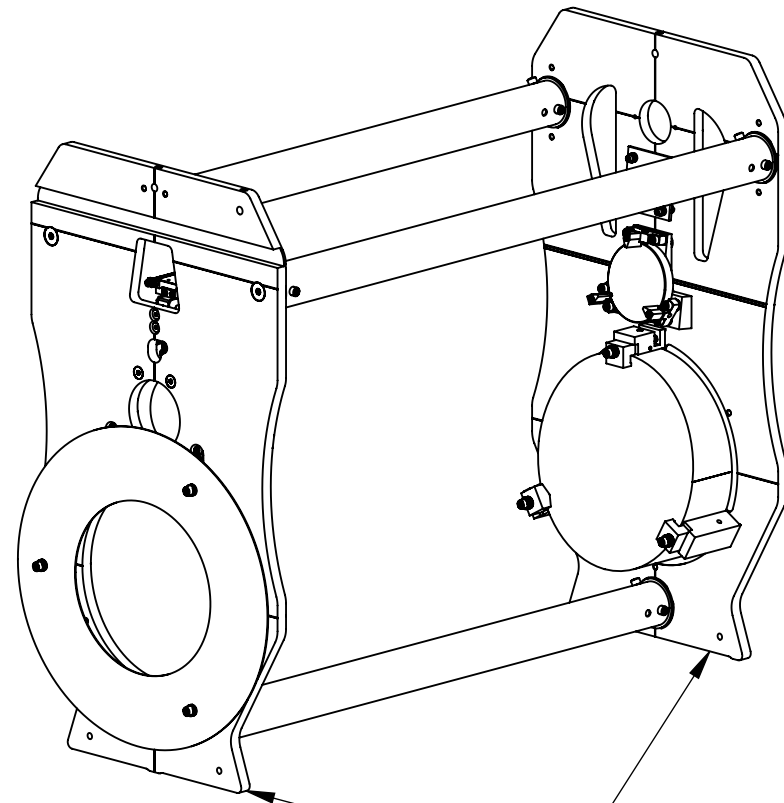


NOTES CONTINUED:

1. BAG OR WRAP AND TAG ASSEMBLY WITH DRAWING NUMBER, REVISION, AND SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. EXAMPLE (TAG): DXXXXXXX-VY, S/N 001
2. MASS/WEIGHT = 26.53 Kg
- ③ STACK 8 ITEMS ⑨ AT EACH CLAMPING POINT. ITEMS TO ALTERNATE ORIENTATIONS WITHIN EACH STACK. I.D.'s AT FAR ENDS OF EACH STACK. COMPRESS EACH STACK BY 325° OF ROTATION OF ITEM ⑩.
- ④ FOR PROPER ALIGNMENT OF THE MAIN FRAME ASSEMBLY (ITEMS ① THRU ⑤): ORIENT THE COMPONENTS AS SHOWN IN VIEW A-A ON A PRECISION FLAT TABLE. TIGHTEN ITEMS ⑤ TO 340 LB-IN. USE A 2 OR 3 STEP TIGHTENING SEQUENCE. USE OF ALCOHOL ON ITEMS ⑤ AT ASSEMBLY IS PERMISSIBLE.
5. STARTING ORIENTATION FOR ASSEMBLY OF THE END PLATES IS SHOWN ON PAGE 2.
- ⑥ THE END PLATES ARE PLACED INVERTED ON A FLAT SURFACE TO START. THE TWO TOP EDGES ARE THEN CO-PLANAR AFTER THE TUBES ARE FIXED IN PLACE. SEE LIGO E1201012 FOR REFERENCE.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 MAR 2012	E1101204	E1101208-v1
v7	18 JUL 2013	E1300609-x0	-
-	-	-	-



TOOLING

34	C-2412-N UC COMPONENTS OR EQ.	SCREW, SHF, 10-24 X .75 LG.	2
33	99934A330 McMASTER-CARR OR EQ.	SKT SET SCRW, 6-32 X 1/8 L, SILVER TIP	2
32	D1200527	ALIGO, AOS, TMS, ALIGNMENT TELESCOPE, CENTERING SLEEVE	1
31	D-271 (Davidson Optronics)	AUTOCOLLIMATOR	1
30	D1200526	ALIGO, AOS, TMS, ALIGNMENT TELESCOPE, MT. ADAPTER	1
29	2-106V75 CRC SEALS OR EQ.	O-RING, 3/16 I.D X 3/8 O.D X 3/32 CS	10
28	WF-08 UC COMPONENTS OR EQ.	WASHER, FLAT, NO. 8	16
27	92510A780 McMASTER-CARR OR EQ.	SPACER, ALUMINUM .252 I.D., 1/2 O.D., 5/8 L	1
26	D1102297	ALIGO TRANSMON TELESCOPE SSTL PLATE	1
25	2-108V75 CRC SEALS OR EQ.	O-RING, .25 I.D X 7/16 O.D X3/32 CS	12
24	D1001241	ALIGO ETM TELESCOPE BEAM DUMP GLASS	1
23	94518A418 McMASTER-CARR OR EQ.	SCREW, SHF, 10-24 x .75 LG.	2
22	D1102365	ALIGO TMS TELESCOPE SECONDARY MIRROR ASSEMBLY	1
21	D1200243	ALIGO TMS F2 MIRROR ASSEMBLY	1
20	D1200244	ALIGO TMS F1 MIRROR ASSEMBLY	1
19	WF-25 UC COMPONENTS OR EQ.	.255 ID, .468 OD, .032 TH	28
18	D1000075	ALIGO PRIMARY PARABOLIC MIRROR	1
17	99934A330 McMASTER-CARR OR EQ.	SKT SET SCRW, 6-32 X 1/8 L, SILVER TIP	1
16	94355A614 McMASTER-CARR OR EQ.	SKT SET SCRW, FLAT PT, 1/4-28 X 1/2	1
15	D1002731	ALIGO TMS PRIMARY MIRROR SIDE CLAMP UPPER	1
14	C-820-N UC COMPONENTS OR EQ.	SCREW, SHC, 8-32 X 1.25 LG.	2
13	C-816-N UC COMPONENTS OR EQ.	SCREW, SHC, 8-32 X 1.0 LG.	2
12	C-2028-N UC COMPONENTS OR EQ.	SCREW, SHC, 1/4-20 x 1.75 LG.	1
11	C-2020-N UC COMPONENTS OR EQ.	SCREW, SHC, 1/4-20 x 1.25 LG.	2
10	C-2024-N UC COMPONENTS OR EQ.	SCREW, SHC, 1/4-20 x 1.50 LG.	3
9	9713K61 McMASTER-CARR OR EQ.	DISC SPRING .255" ID, .500" OD, .018" THICK 47 Lb @ .008" DEFLECTION	24
8	D1002732	ALIGO TMS PRIMARY MIRROR CLAMP	3
7	FA-2014-N UC COMPONENTS OR EQ.	SCREW, SHF, 1/4-20 X .88 LG.	13
6	D1002728	ALIGO TMS PRIMARY MIRROR SIDE CLAMP LOWER	2
5	FA-1624-N UC COMPONENTS OR EQ.	SCREW, SHF, 3/8-16 x 1.50 LG.	6
4	D1101688	ALIGO TMS TELE ENTRY END PLATE	1
3	D1000243	ALIGO ETM TELE TUBE AND INSERTS ASSEMBLY	3
2	D1001108	ALIGO ETM TELESCOPE TUBE LARGE WASHER	6
1	D1101727	ALIGO TMS TELE PRIMARY 3 TUBE END PLATE	1
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.

④

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

MATERIAL N/A

FINISH N/A μinch

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM ADVANCED LIGO SUB-SYSTEM AOS

NEXT ASSY D1002460

PART NAME **ALIGO TMS TELESCOPE FRAME ASSEMBLY**

DESIGNER K. MAILAND 15 DEC 2011 SIZE DWG. NO. **B D1102361** REV. **v7**

DRAFTER C. CONLEY 01 MAR 2012

CHECKER SEE DCC SEE DCC

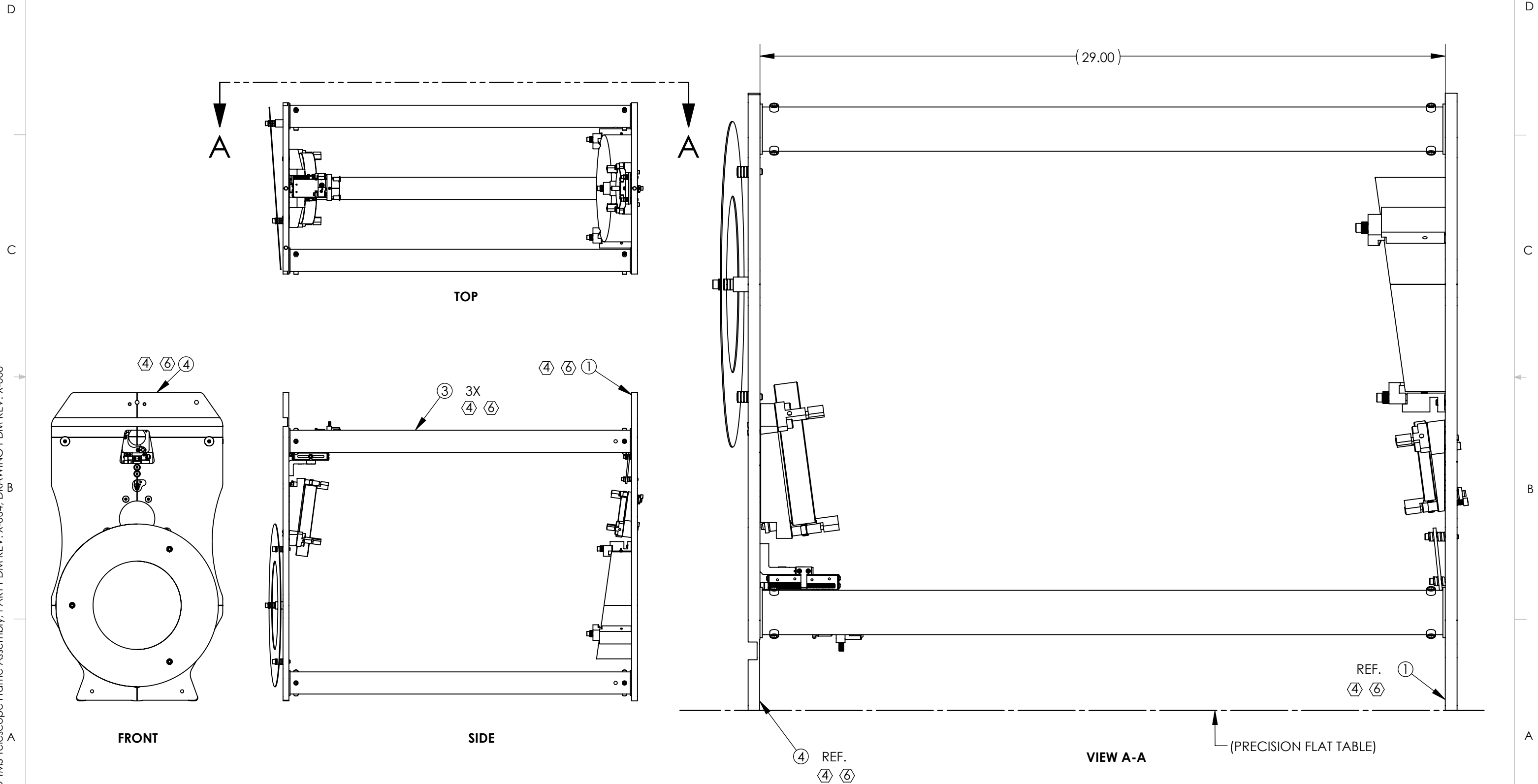
APPROVAL SEE DCC SEE DCC

SCALE: 1:8 PROJECTION: SHEET 1 OF 7

D1102361 ALIGO TMS Telescope Frame Assembly, PART PDM REV: X-064, DRAWING PDM REV: X-008

END PLATES ORIENTATION

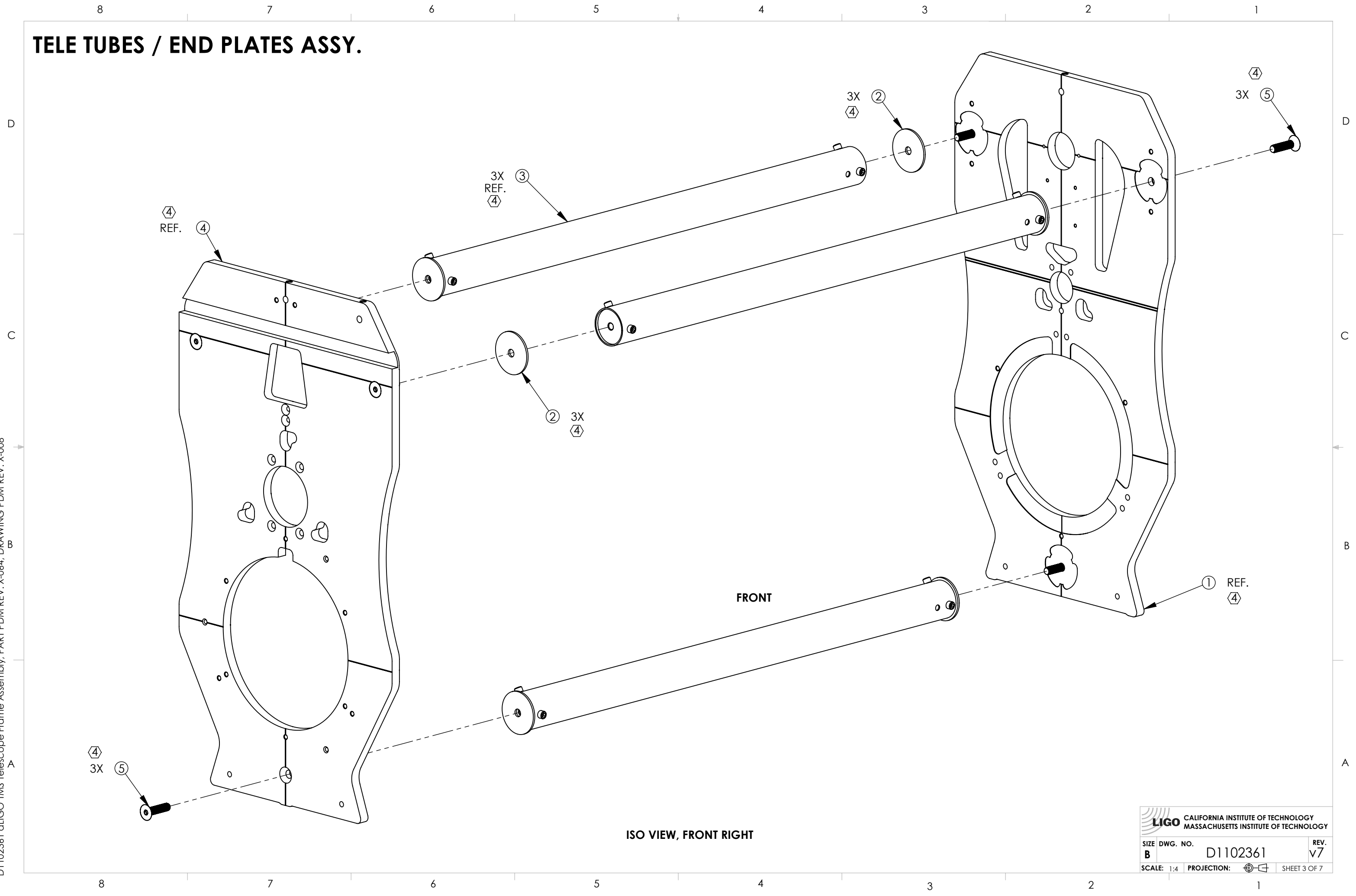
D1102361 dLIGO TMS Telescope Frame Assembly, PART PDM REV: X-064, DRAWING PDM REV: X-008



LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE	DWG. NO.	REV.
B	D1102361	v7
SCALE: 1:8	PROJECTION:	SHEET 2 OF 7

TELE TUBES / END PLATES ASSY.

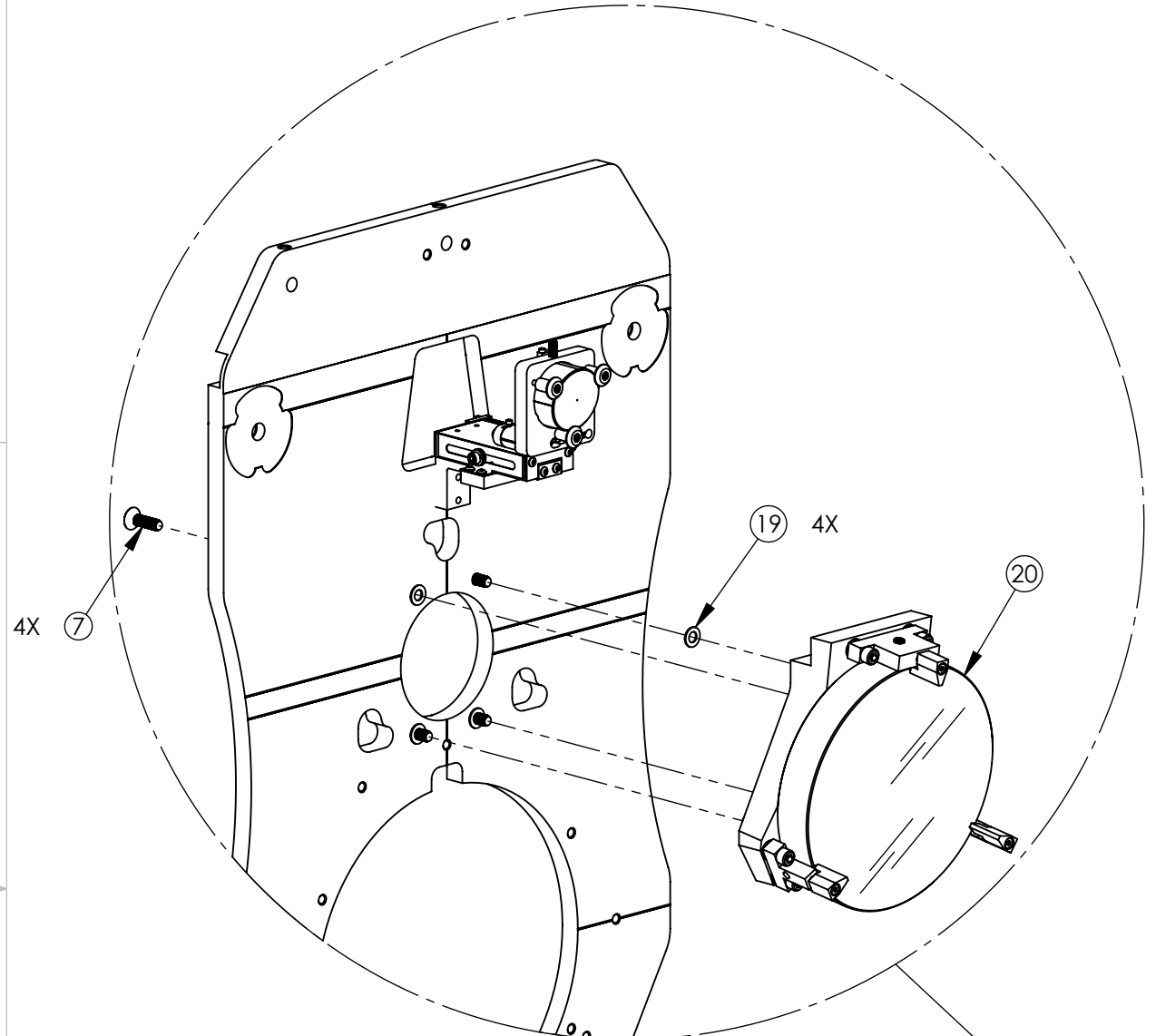
D1102361 aLIGO TMS Telescope Frame Assembly, PART PDM REV: X-064, DRAWING PDM REV: X-008



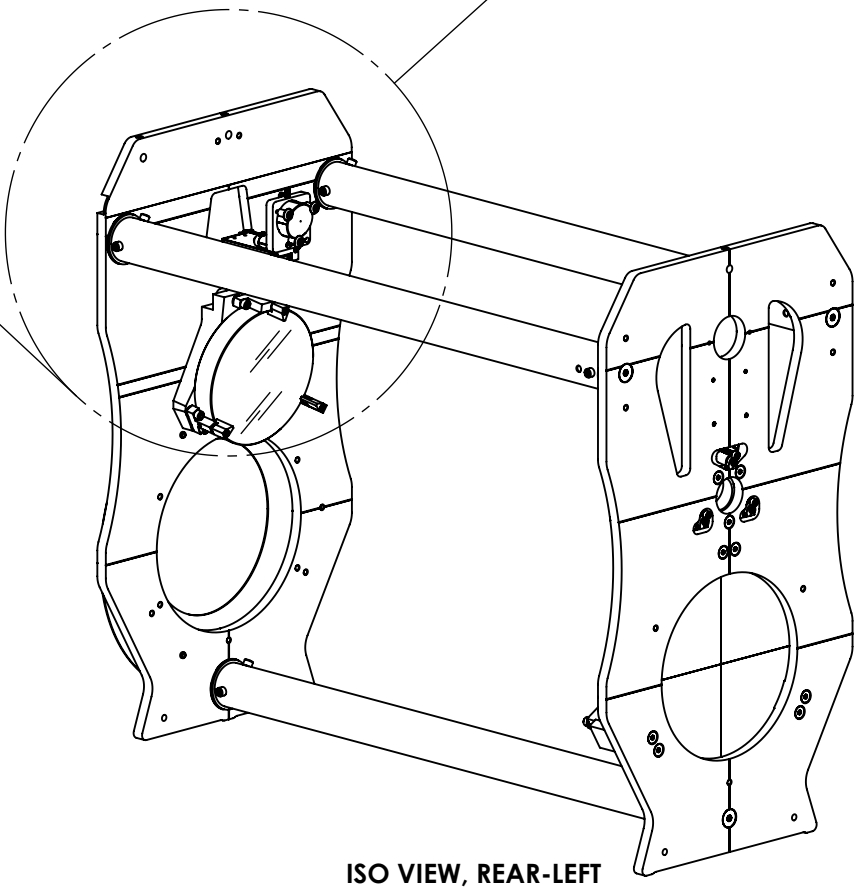
ISO VIEW, FRONT RIGHT

CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE	DWG. NO.	REV.
B	D1102361	v7
SCALE: 1:4	PROJECTION:	SHEET 3 OF 7

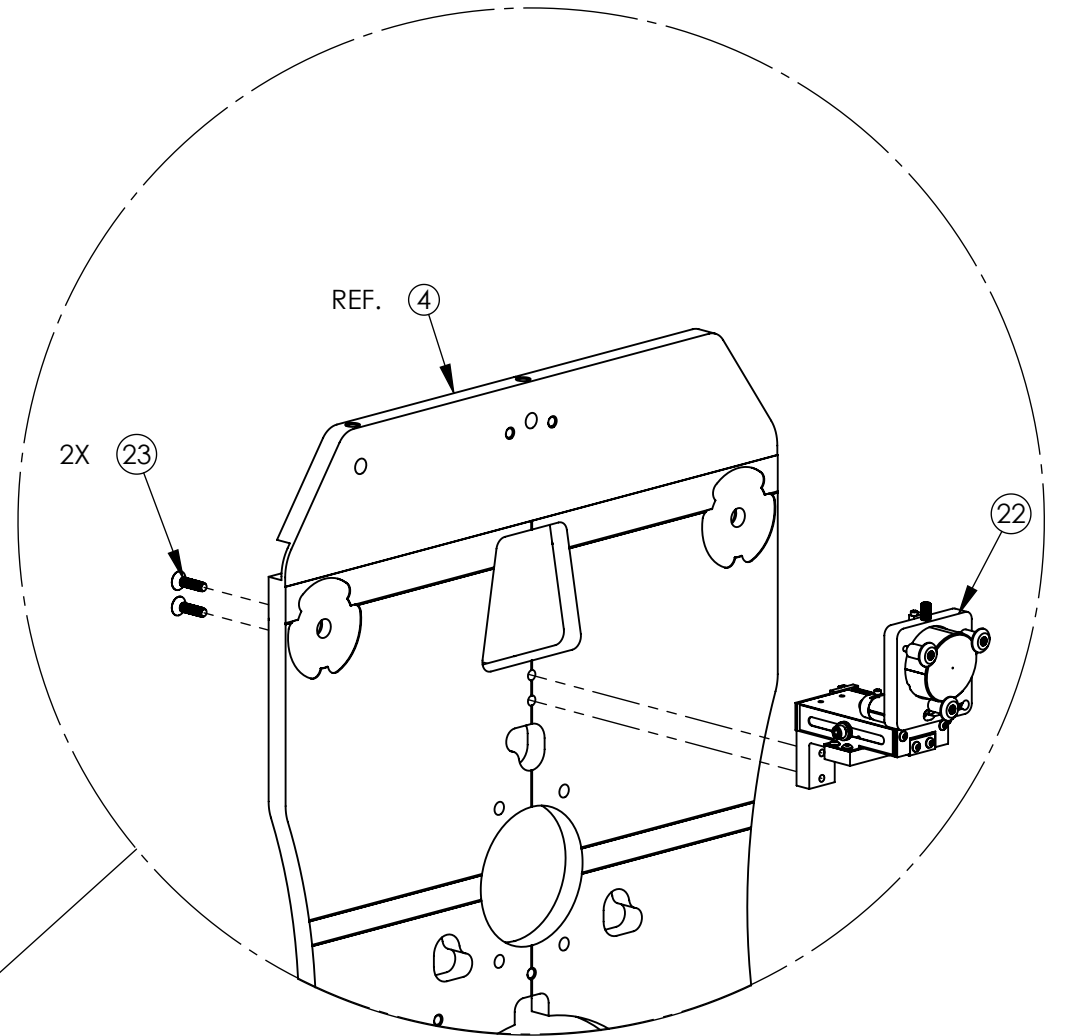
D1102361 dLIGO TMS Telescope Frame Assembly, PART PDM REV: X-064, DRAWING PDM REV: X-008



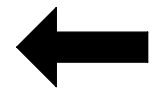
FOLDING MIRROR ASSEMBLY 'F1'
(TELE TUBE ASSY., NOT SHOWN FOR CLARITY)



**ISO VIEW, REAR-LEFT
(ASSEMBLED)**



SECONDARY MIRROR ASSEMBLY
(TELE TUBE ASSY., NOT SHOWN FOR CLARITY)

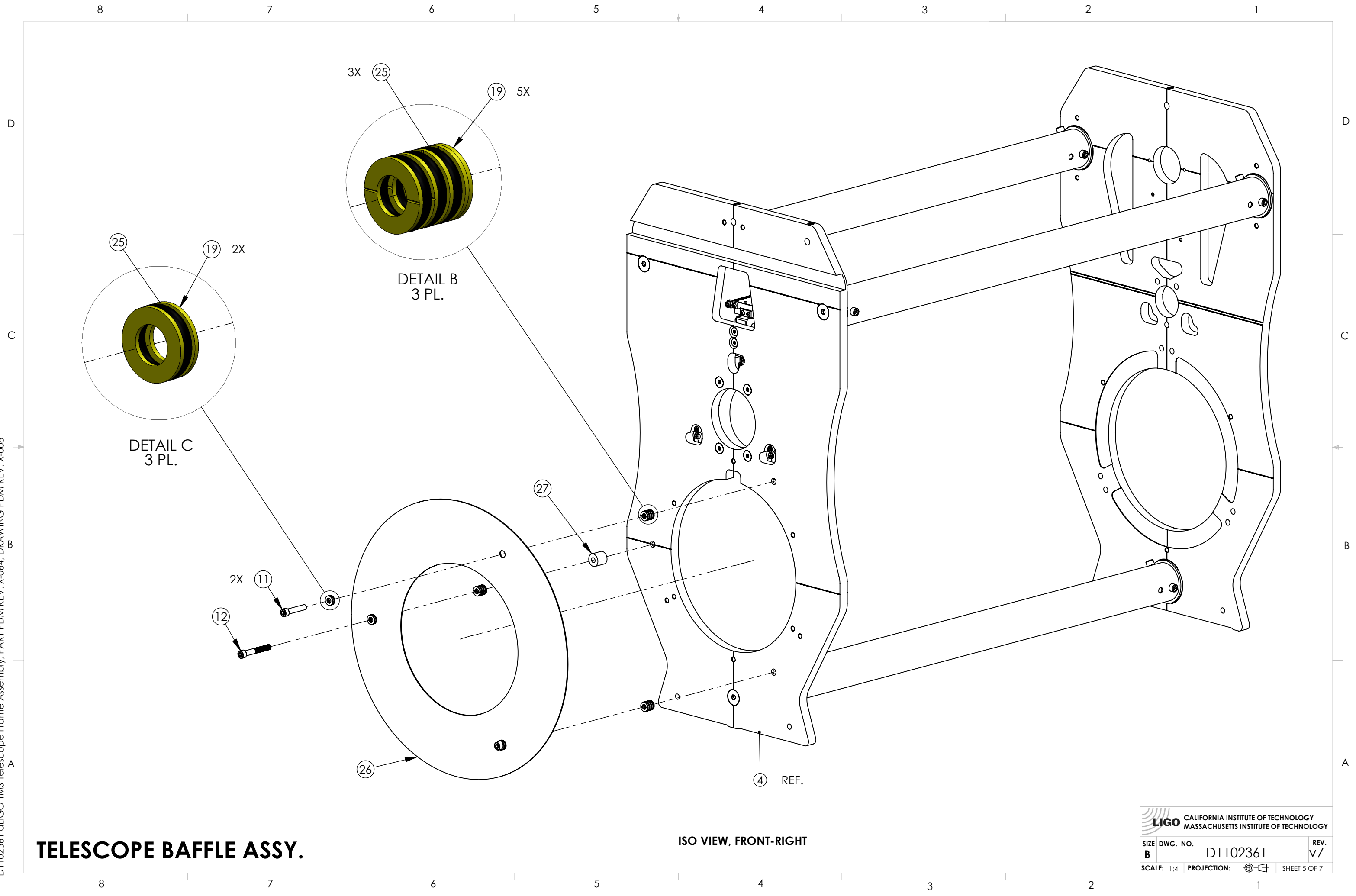


'F1' / SECONDARY MIRROR ASSY.

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SIZE	DWG. NO.	REV.
B	D1102361	v7
SCALE: 1:4		PROJECTION:
		SHEET 4 OF 7

D1102361 aLIGO TMS Telescope Frame Assembly, PART PDM REV: X-064, DRAWING PDM REV: X-008



TELESCOPE BAFFLE ASSY.

ISO VIEW, FRONT-RIGHT

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SIZE	DWG. NO.	REV.
B	D1102361	v7
SCALE: 1:4	PROJECTION:	SHEET 5 OF 7

D1102361 LIGO TMS Telescope Frame Assembly, PART PDM REV: X-064, DRAWING PDM REV: X-008

8 7 6 5 4 3 2 1

D

D

C

C

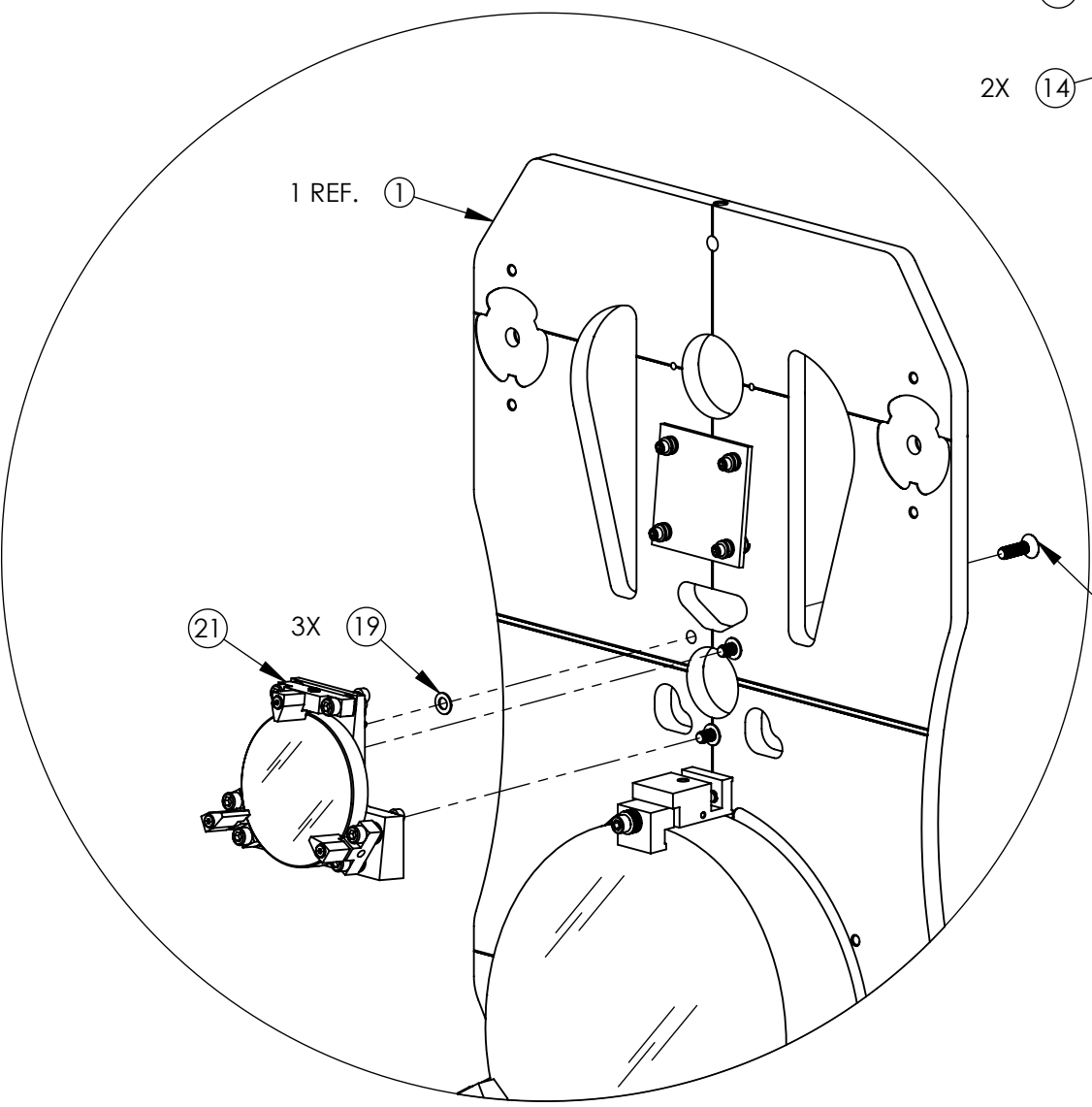
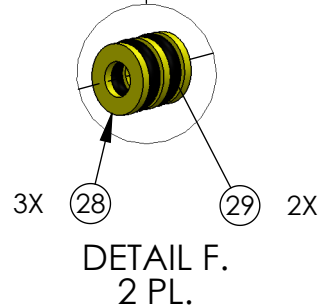
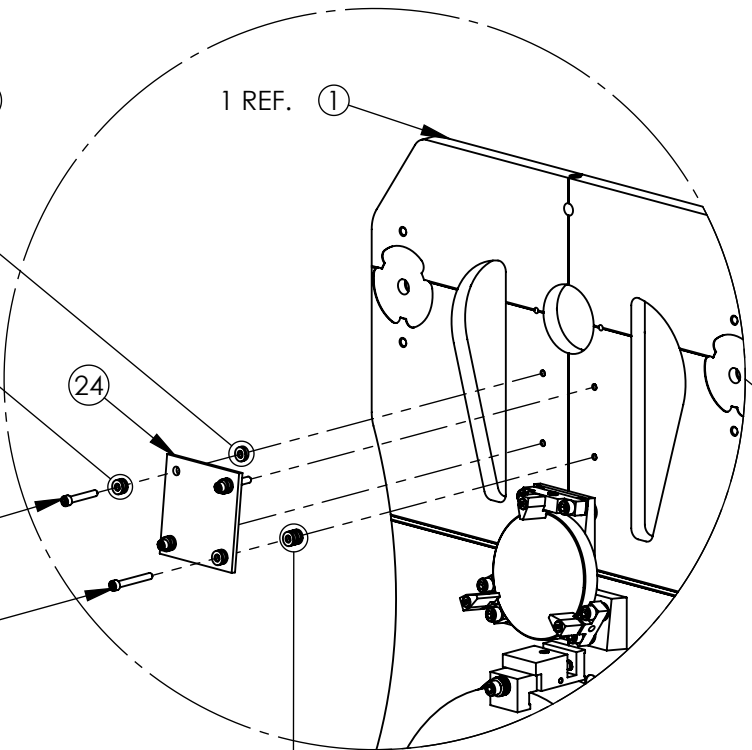
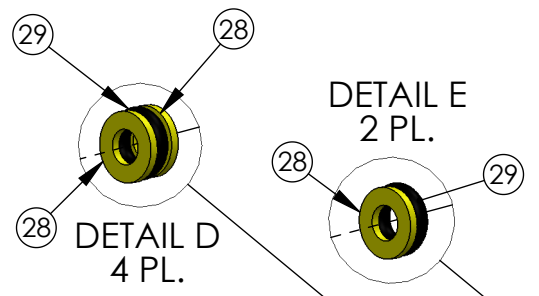
B

B

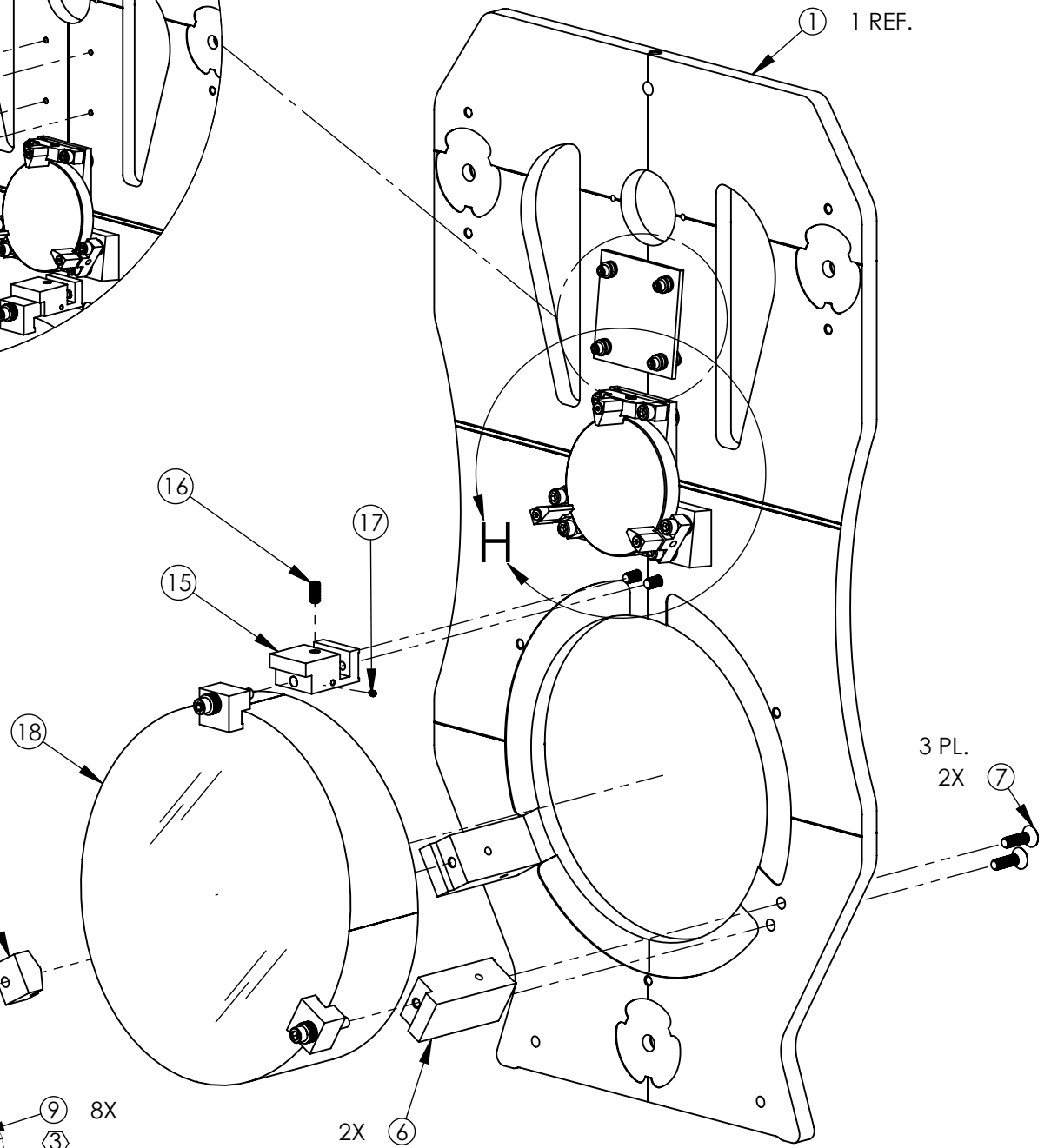
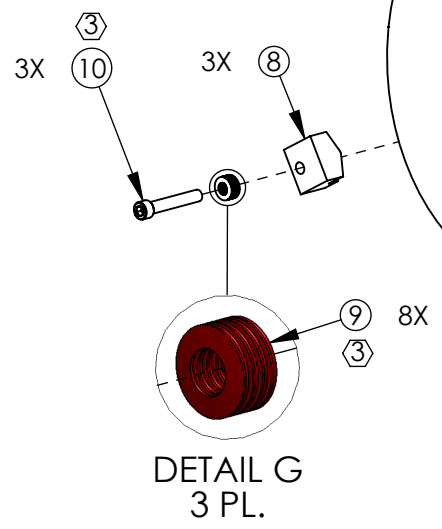
A

A

TELE BEAM DUMP ASSEMBLY
(TELE TUBE ASSY., NOT SHOWN FOR CLARITY)



DETAIL 'H': FOLDING MIRROR ASSEMBLY 'F2'
(TELE TUBE ASSY., NOT SHOWN FOR CLARITY)



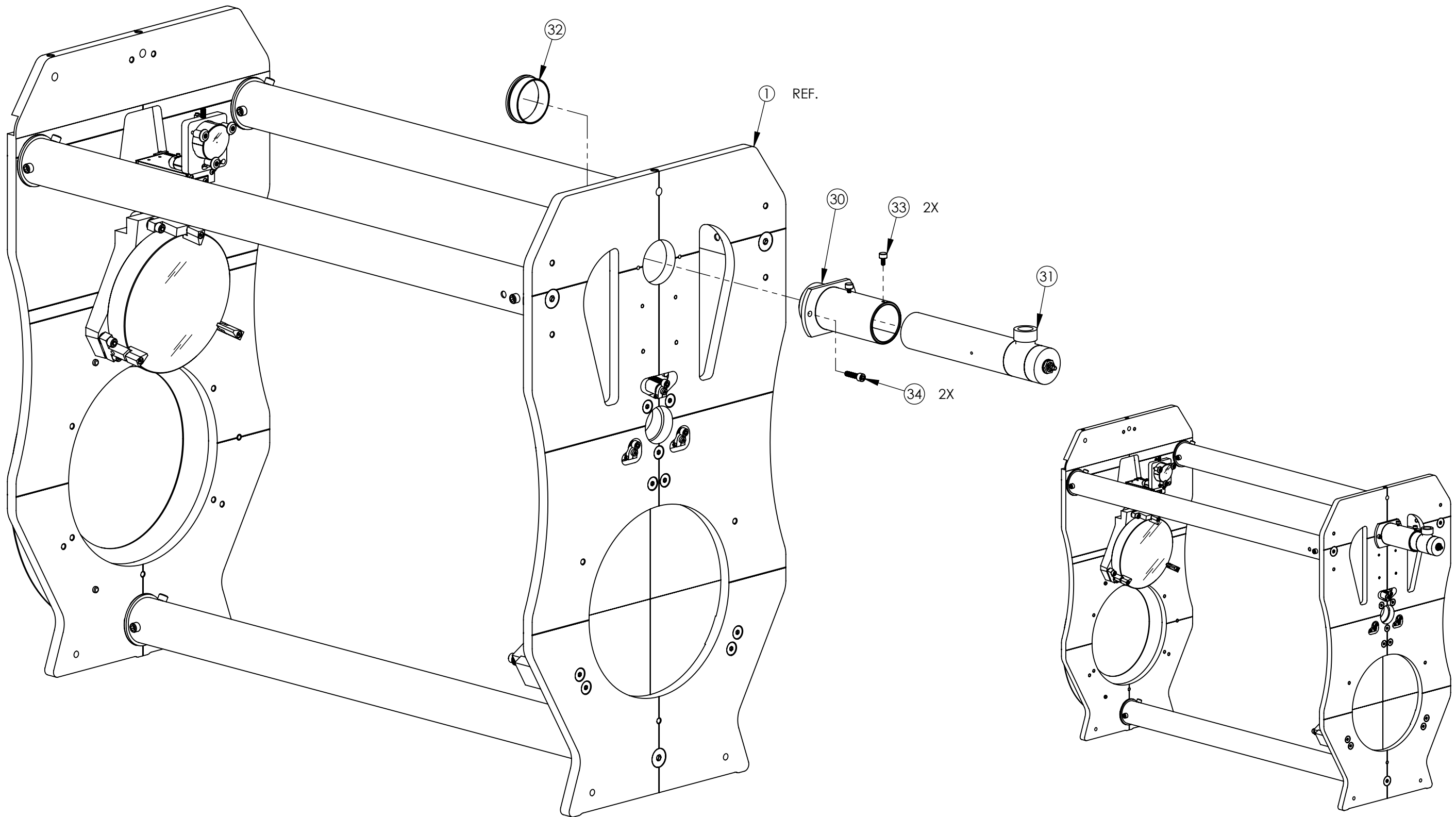
PRIMARY MIRROR ASSEMBLY
(TELE TUBE ASSY., NOT SHOWN FOR CLARITY)

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SIZE	DWG. NO.	REV.
B	D1102361	v7
SCALE: 1:4	PROJECTION:	SHEET 6 OF 7

8 7 6 5 4 3 2 1


ALIGNMENT TOOLING



ISO VIEW, REAR-LEFT

ISO VIEW, REAR-LEFT
(ASSEMBLED)

D1102361 aLIGO TMS Telescope Frame Assembly, PART PDM REV: X-064, DRAWING PDM REV: X-008

 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE	DWG. NO.	REV.
B	D1102361	v7
SCALE: 1:4	PROJECTION:	SHEET 7 OF 7