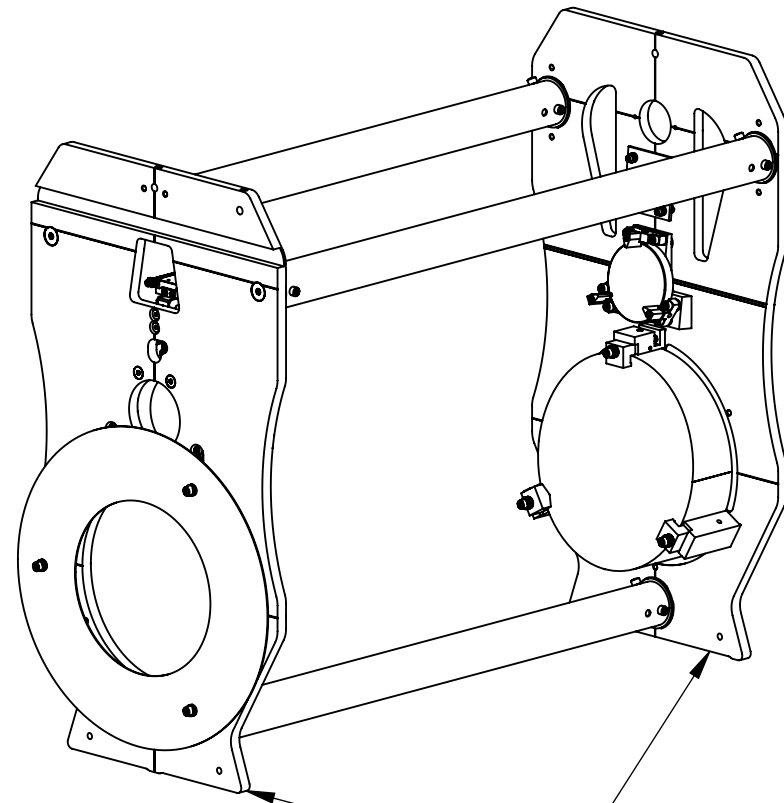


NOTES CONTINUED:

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.



ISO VIEW
ATTACH END PLATES TO LIGO D1100933 FOR STABILIZATION PURPOSES (REFER TO LIGO D1101064 FOR TOOLING DETAILS)

ADD TO PARTS LIST: D0901565 QTY = 1
ETM TELESCOPE SECONDARY PARABOLIC MIRROR

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

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
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

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
DRAFTER C. CONLEY 01 MAR 2012
CHECKER SEE DCC
APPROVAL SEE DCC

SIZE DWG. NO. B
D1102361

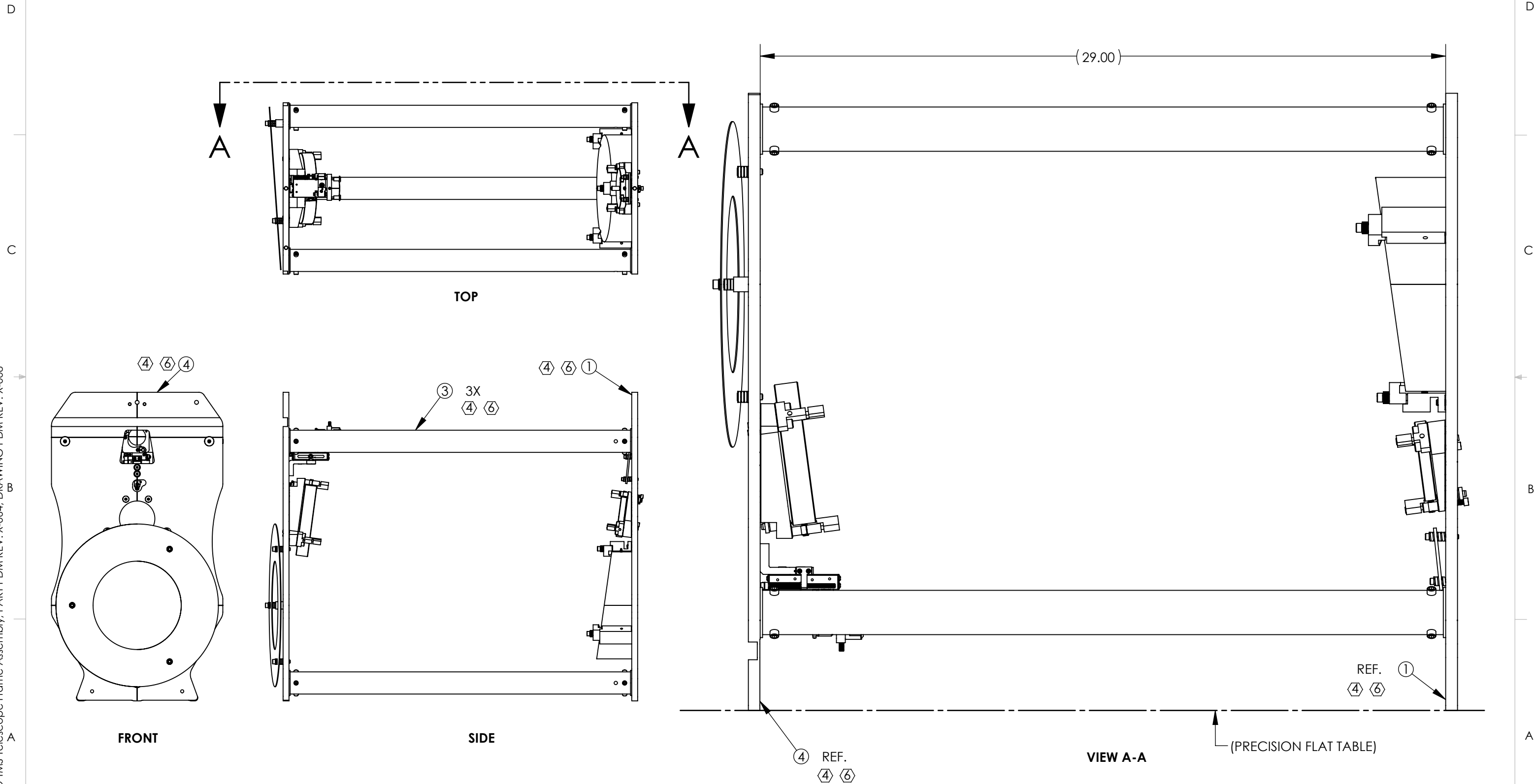
REV. v7

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

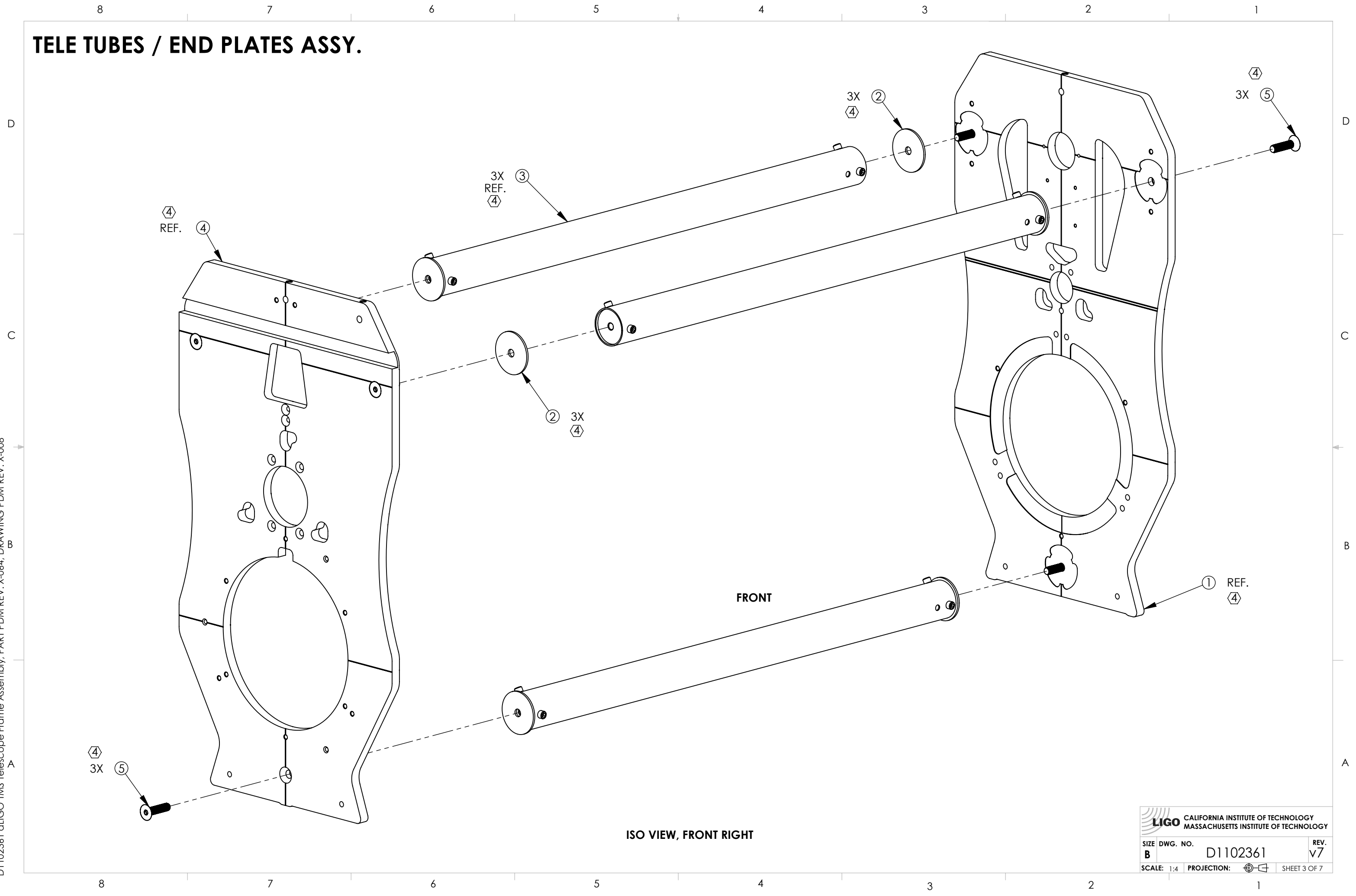
D1102361 dLIGO TMS Telescope Frame Assembly, PART PDM REV: X-064, DRAWING PDM REV: X-008



CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE B	DWG. NO. D1102361	REV. 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

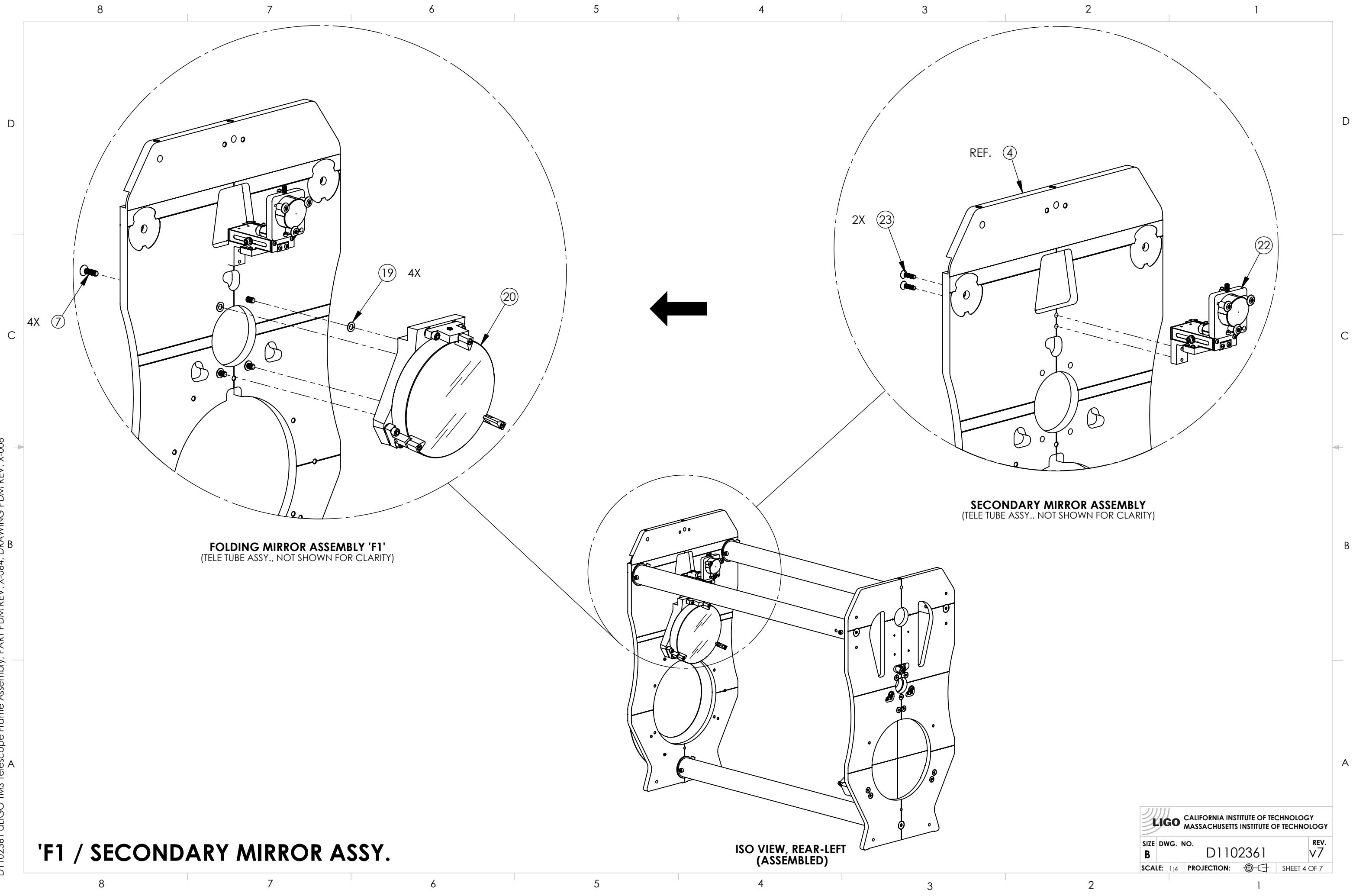


FRONT

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)

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

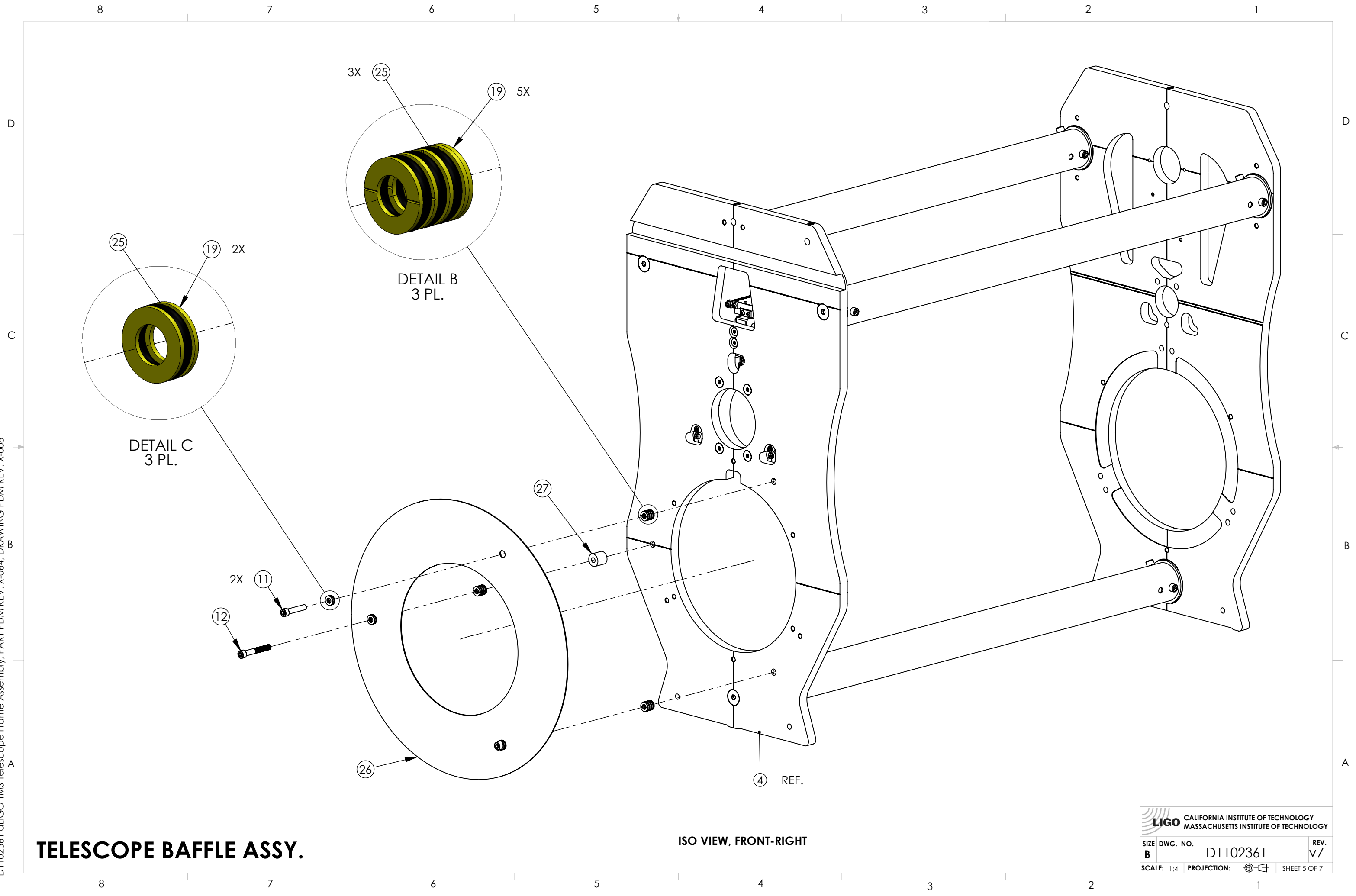
ISO VIEW, REAR-LEFT
(ASSEMBLED)

'F1 / SECONDARY MIRROR ASSY.'

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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

D1102361 dLIGO 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. B	D1102361
SCALE: 1:4	PROJECTION:
REV. v7	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

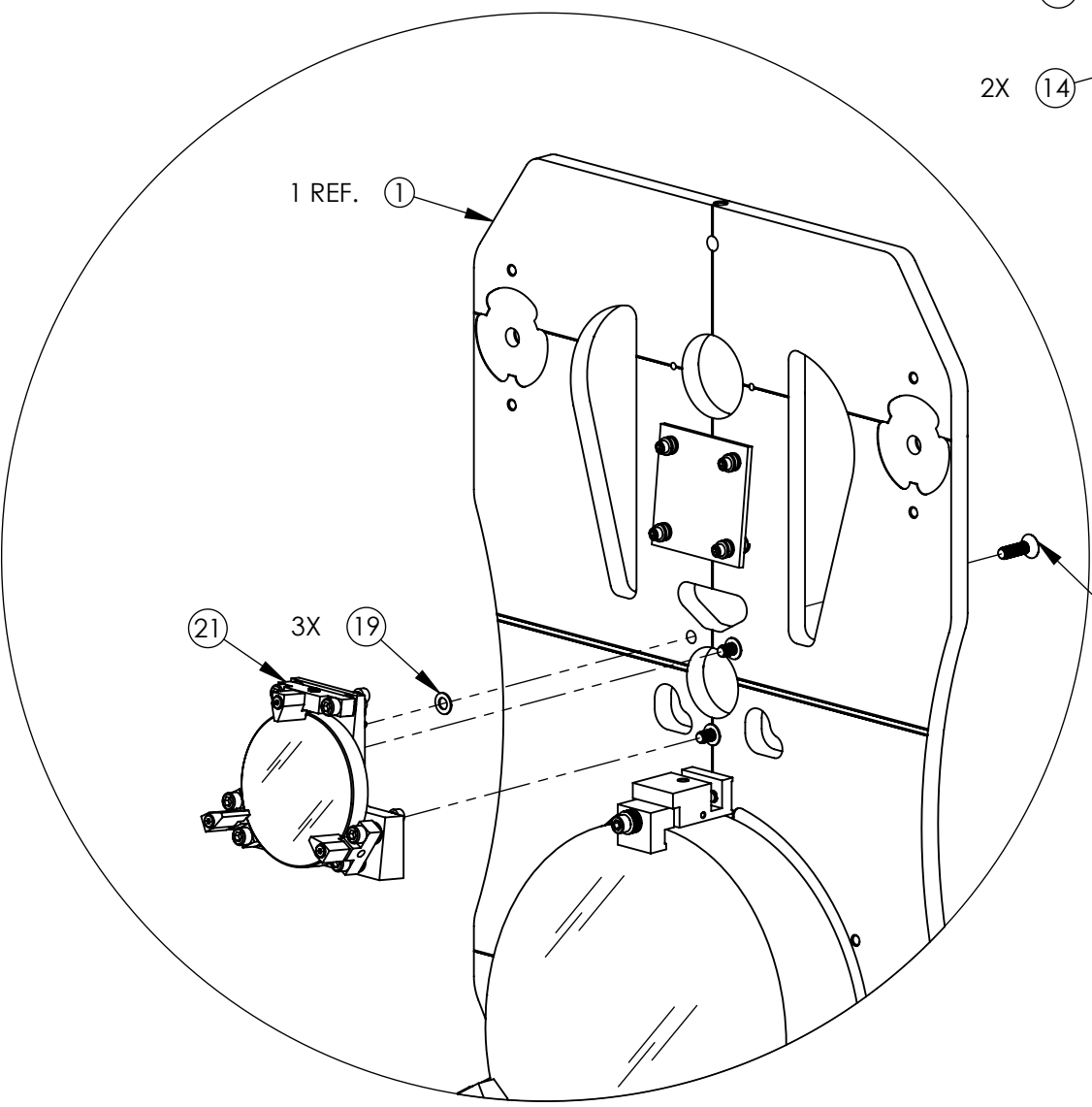
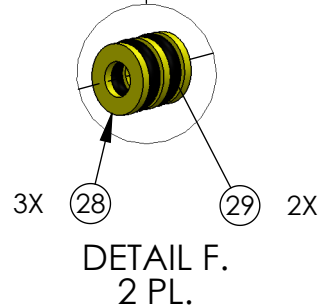
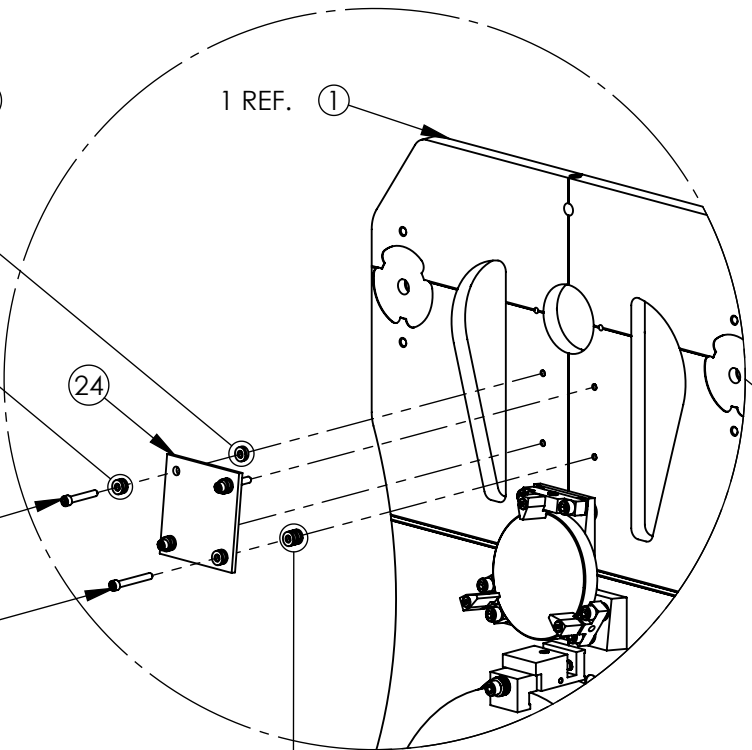
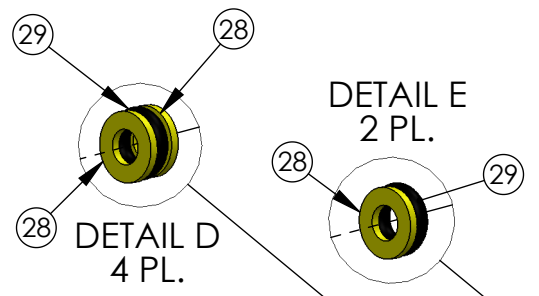
B

B

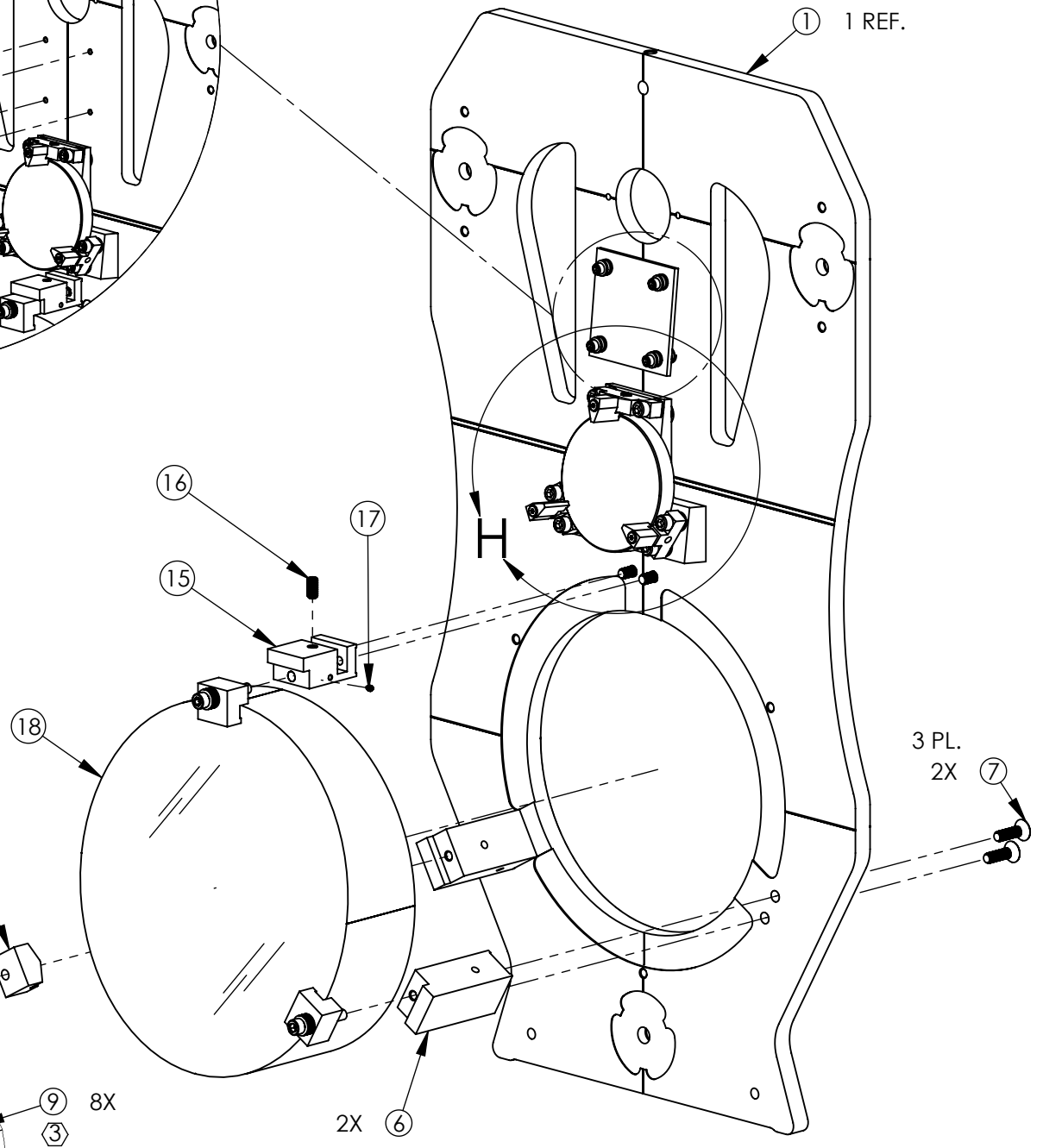
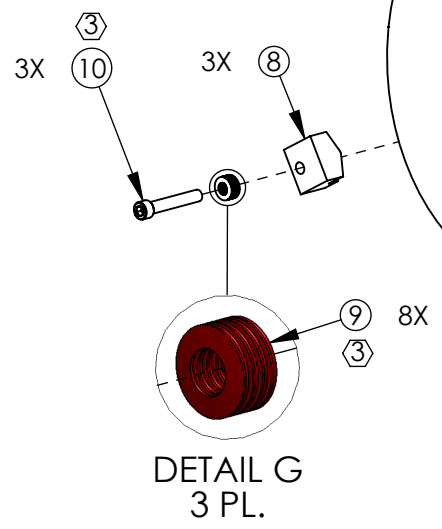
A

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)



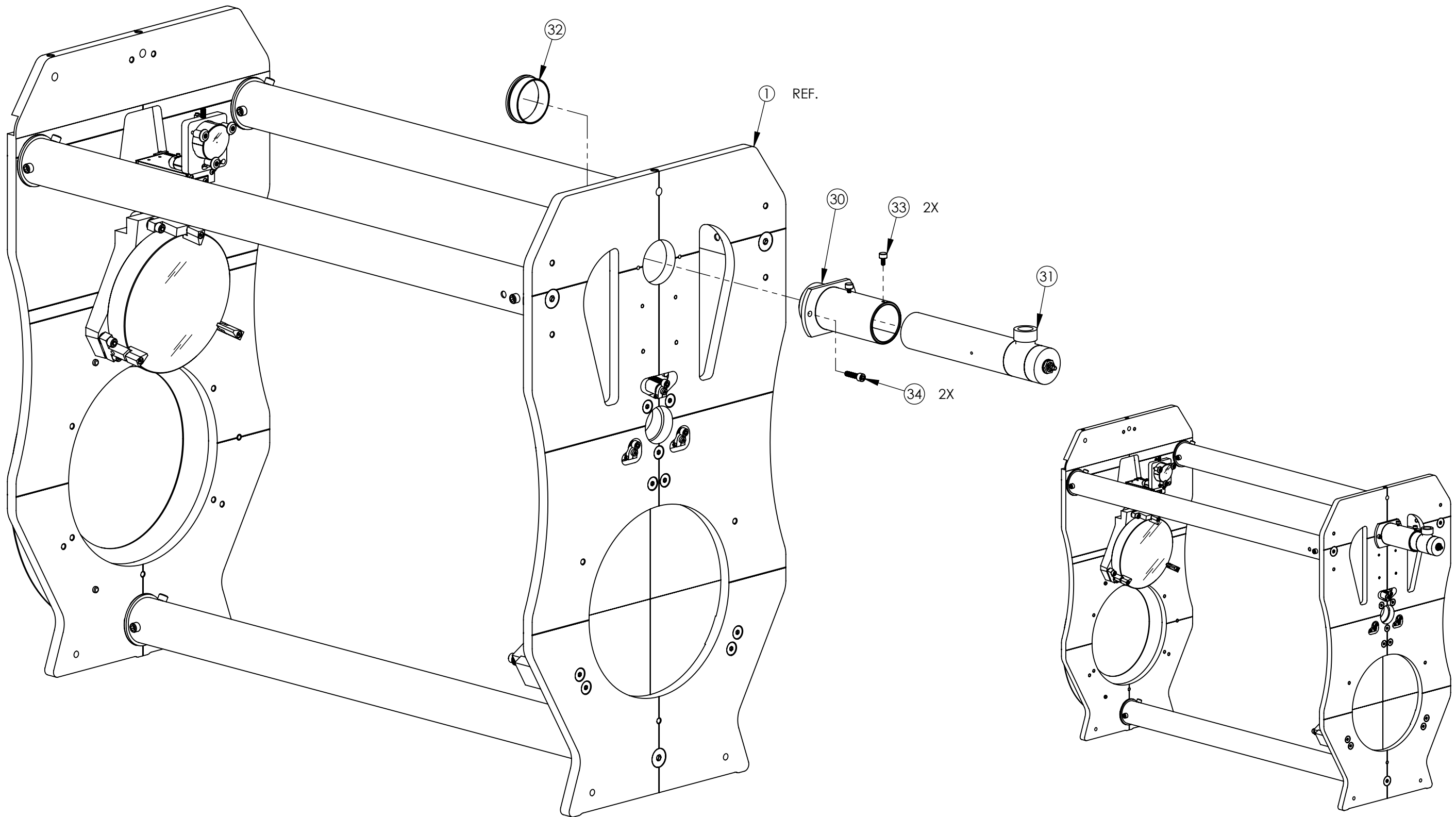
PRIMARY MIRROR ASSEMBLY
(TELE TUBE ASSY., NOT SHOWN FOR CLARITY)

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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