

SHIP PC	MARK	ASSM PC	DESCRIPTION	LENGTH MM	SPEC	D
2	20-30		PL SK X 10 (3/8)			C
1	20-31		PL SK X 13 (1/2)			C
4	20-32		BOLT 6 (1/4) DIA HEX W/ NUT	76 (3)	A307	Ac
2	20-33		SET SCREW 6 (1/4) DIA - 20 UNC	13 (1/2)	CS	C
			SELF LOCKING CUP POINT			
2	20-36		BEARING DIXON CJ32E40-16			C
2	20-38		COUPLING 25 (1" DIA - 8 UNC	76 (3)	****	C
			W/ INTERNAL STOP			
			* = SA479-TP304L			
			** = 4140 W/ ROCKWELL C32			
			*** = A325 TYPE 3 (NOT GALV.)			
			**** = ETD-150 ZINC PLATED			
			***** = A563- C3 OR DH3 (NOT GALV.)			
			M7 = SEE SPEC C-SUPT-1			

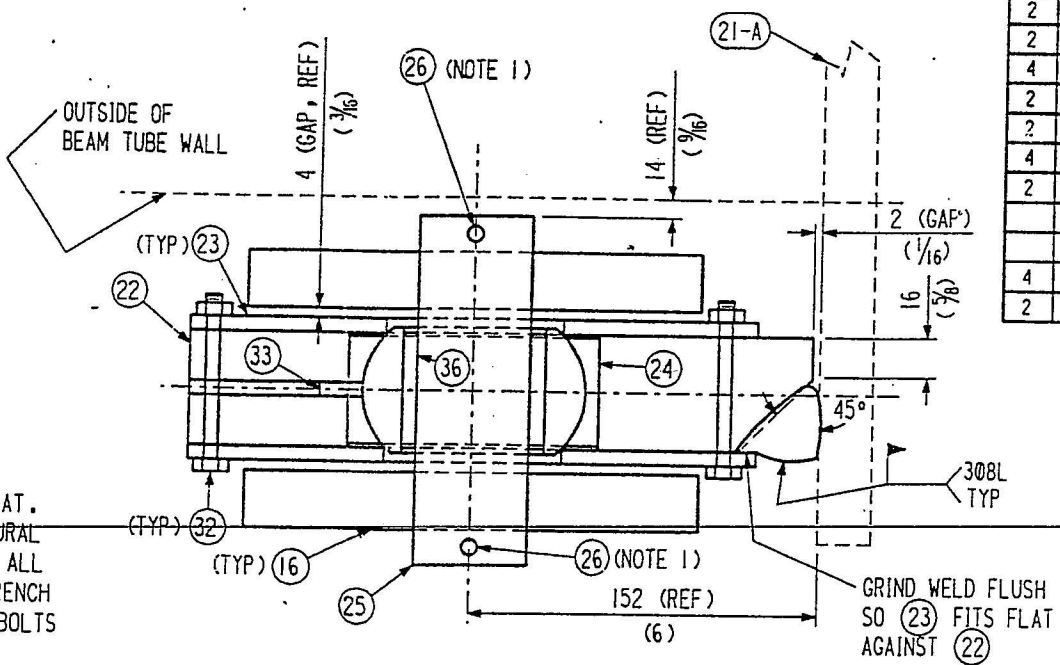
SHIP PC	MARK	ASSM PC	DESCRIPTION	LENGTH MM	SPEC	D
1	20-A		TERMINATION SUPPORT			M7
	20-C R/L	2	TERMINATION SUPPORT (HALF ASSEMBLY)			
	20-1	2	TUBE 254 X 254 X 16 (10 X 10 X 5/8)	1626	A500 GR.B	C
				(5'-4)		
	20-2	2	W254 X 45 (W10 X 45 X 3'-5 3/4 LG)	1060	A36	C
	20-3	2	W254 X 45 X SK (W10 X 45)		A36	C
	20-4	12	PL SK X 16 (5/8)		A36	C
	20-5	2	L 102 X 102 X 16 (4 X 4 X 5/8)	279 (11)	A36	C
	20-6	2	PL 102 X 16 (4 X 5/8)	229 (9)	A36	C
	20-12	4	PL 254 X 13 (10 X 1/2)	584	A36	C
				(1'-11)		
	20-15	4	PL SK X 32 (1 1/8)		A36	C
	20-34	4	PL SK X 16 (5/8)		A36	C
	20-35	4	PL 194 X 10 (7 5/8 X 3/8)	194	A36	C
				(7 5/8)		
	20-41	4	PL SK X 29 (1 1/8)		A36	C
	20-42	8	BOLT 29 (1 1/8) DIA - 7 UNC HEX	114	***	Ac
				(4 1/2)		
	20-43	8	NUT 29 (1 1/8) DIA - 7UNC HYV SF HEX		*****	Ac
2	20-B R/L		LATERAL CLAMP ASSEMBLY			
	20-7	2	PL SK X 25 (1")		A36	C
	20-8	4	BAR 13 X 6 (1/2 X 1/4)	25 (1")	A36	C
2	20-9		PL SK X 19 (3/4)		A36	C
8	20-10		ANCHOR BOLT 25 (1" DIA HILTI	737	A193-B7	C
			HY-150 314 (1'-0 3/8) EMBED.	(2'-5)	ZINC PL.	
			W/ WASHER, 2 NUTS AND ADHESIVE			
12	20-11		ANCHOR BOLT 22 (7/8) DIA HILTI	305	A193-B7	C
			HY-150 191 (7 1/2) EMBED.	(1'-0)	ZINC PL.	
			W/ WASHER, 2 NUTS AND ADHESIVE			
4	20-13		PL 76 X 13 (3 X 1/2)	381	A36	C
				(1'-3)		
4	20-14		PL SK X 32 (1 1/4)		A36	C
4	20-16		PL SK X 25 (1")		A514 GR.B	C
4	20-17		PL SK X 32 (1 1/4)		A36	C
4	20-18		PL SK X 32 (1 1/4)		**	C
24	20-19		BELLEVILLE WASHERS 25 (1" DIA		SS	C
			SPEC PART # B2000-065-5			
8	20-20		BOLT 29 (1 1/8) DIA HYV HEX HD	191	***	Ac
				(7 1/2)		
2	20-21		WASHER 19 (3/4) DIA		F436	Ac
2	20-22		BAR 254 (10) X 51 (2) X SK		*	C
4	20-23		SHEET SK X 3 (1/8) YOROLITE		G-11	C
2	20-24		BEARING SPHERICAL SKF GEZ 208 ES			C
2	20-25		BAR 51 (2) DIA X SK	303	SS	C
4	20-26		COTTER PIN 6 (1/4) DIA	76 (3)	316 SS	C
2	20-27		CABLE 10 (3/8) DIA (7 X 19 OR	914	CS	C
			6 X 19) GALV. W/ TWO 19 (3/4) DIA X	(3'-0)		
			102 (4) LONG THREADED PLUGS ZINC PL.			
4	20-28		NUT 19 (3/4) DIA HYV HEX		A307B	Ac
2	20-29		GROMMET X SK YOROLITE		GRADE G11	C

APPROVED

M. Tellalian 3-7-97
CBI DATE

J. [Signature] 10/2/97
CALTECH DATE

- NOTES:**
- 1) COTTER PIN TO HAVE BOTH LEGS BENT UP TO PREVENT ROTATION OF COTTER PIN.
 - 2) POSITION TERMINATION SUPPORT IN PROPER LOCATION BEFORE INSTALLING (13).
 - 3) ROUGHEN THE FOUNDATION SURFACE BY CHIPPING, SAND BLASTING OR OTHER MECHANICAL MEANS TO REMOVE ANY LAITANCE OR WEAK SURFACE LAYER.
 - 4) CLEAN BOTTOM OF BASE PLATE (9) TO REMOVE DIRT AND CONTAMINATION. WIPE SURFACE WITH ISOPROPYL ALCOHOL TO DECREASE THE SURFACE.
 - 5) POSITION AND LEVEL THE BASE PLATE (9). A MINIMUM CLEARANCE BETWEEN THE BASE PLATE AND THE FOUNDATION OF 13 (1/2) IS REQUIRED OVER THE ENTIRE BASE PLATE.
 - 6) PROVIDE FORMS OR RESTRAINTS TO CONTAIN THE GROUT UNDER THE BASE PLATE. THE FORMS SHALL PRVIDE CHAMFERED EDGES AROUND THE PERIMETER OF THE BASE PLATE.
 - 7) USE "FIVE STAR SPEED EPOXY GROUT" OR EQUAL.
 - 8) ENSURE THAT THE GROUT FILLS THE SPACES BETWEEN THE ANCHOR BOLTS AND THE BASE PLATE TO THE TOP SURFACE OF THE BASE PLATE.
 - 9) OUTER EDGES OF (12) TO BE PARALLEL WITHIN 2 (1/16).
 - 10) AFTER STACKING THREE BELLEVILLE WASHERS PER ANCHOR BOLT, FINGER TIGHTEN NUTS ON PC. (10). TIGHTEN NUTS IN INCREMENTS OF 1/2 TURN MAKING SURE TO ALTERNATE BETWEEN THE NUTS ON EACH END OF PC. (14). STOP TIGHTENING NUTS AS SOON AS BELLEVILLE WASHERS ARE COMPLETELY FLAT.
 - 11) TIGHTEN BOLTS (PC. (20)) USING TURN OF THE NUT METHOD (1/2 TURN) PER RCSC SPEC. FOR STRUCTURAL JOINTS (11/13/85) IN AISC. SNUG TIGHTEN ALL BOLTS IN A SYSTEMATIC MANNER AS NECESSARY UNTIL ALL BOLTS ARE SIMULTANEOUSLY SNUG TIGHT. SNUG TIGHT IS DEFINED AS A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. AFTER ALL BOLTS ARE SNUG, THE BOLTS SHALL BE TIGHTENED USING AN ADDITIONAL 1/2 OF A TURN PAST SNUG.
 - 12) BOLTS (PC. (42)) CAN BE INSERTED THRU PC. (41) IN EITHER DIRECTION.
 - 13) PC. (41) THRU (43) CAN BE LOCATED AT OPPOSITE CORNERS OF TERMINATION SUPPORT.



DETAILED AND BILLED FOR (1), (16) REQUIRED

CBI

LIGO BEAM TUBE
HANFORD, WA & LIVINGSTON, LA
BEAM TUBE TERMINATION SUPPORT
ELEVATION

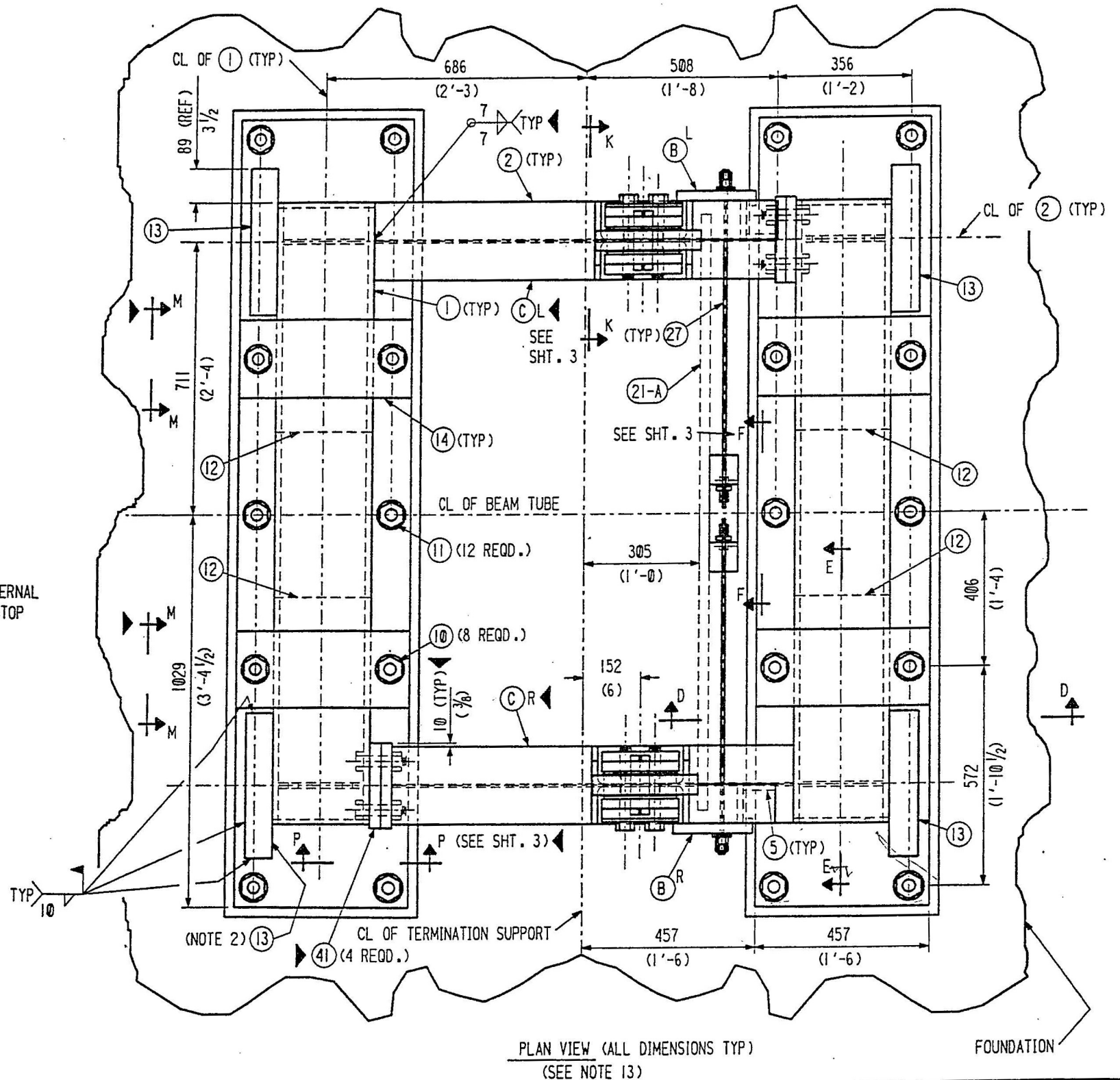
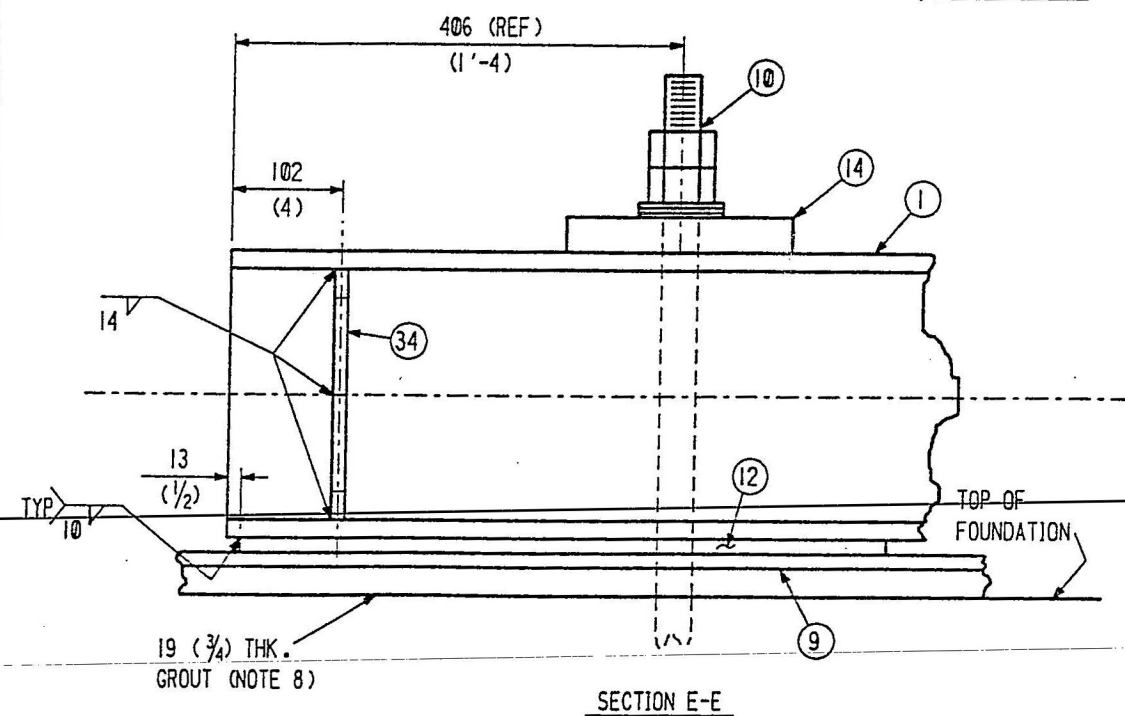
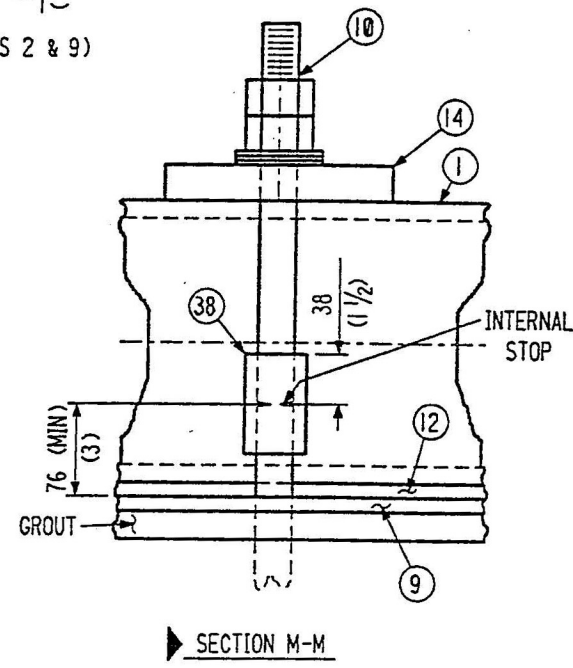
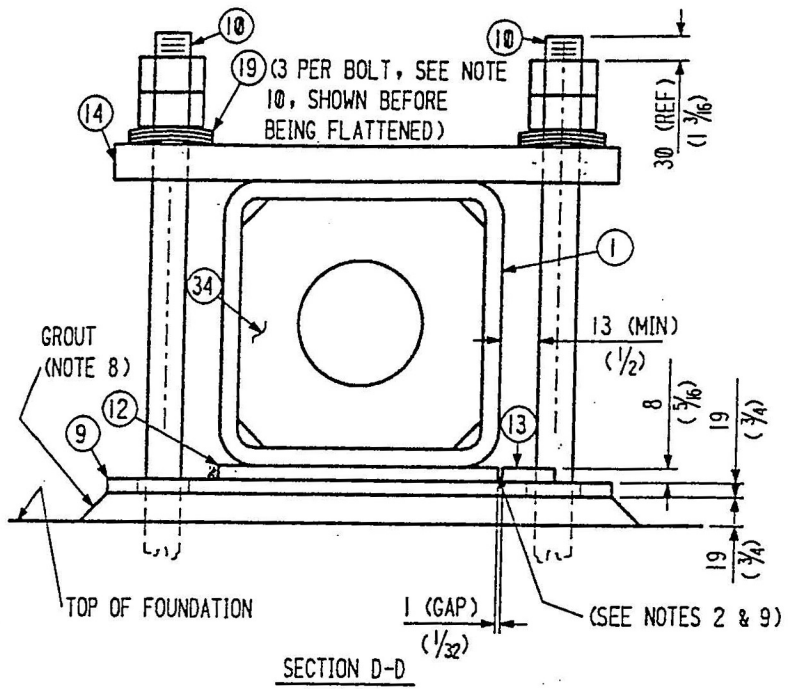
CUSTOMER'S NO. _____ CONTRACT NO. 953571
BY DTR CHKD ARL DATE 3-11-96
M.L. TELLALIAN
ENGINEERING ASSIGNED

DWG 20 REV 4
SHT 1

LIGO-D960512-04-B

55710120.DGN

INDICATES CHANGE FROM PREVIOUS ISSUE

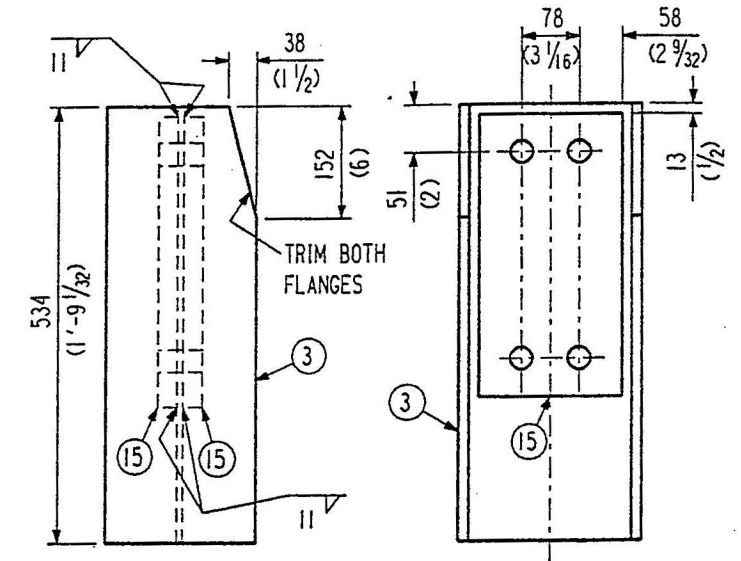
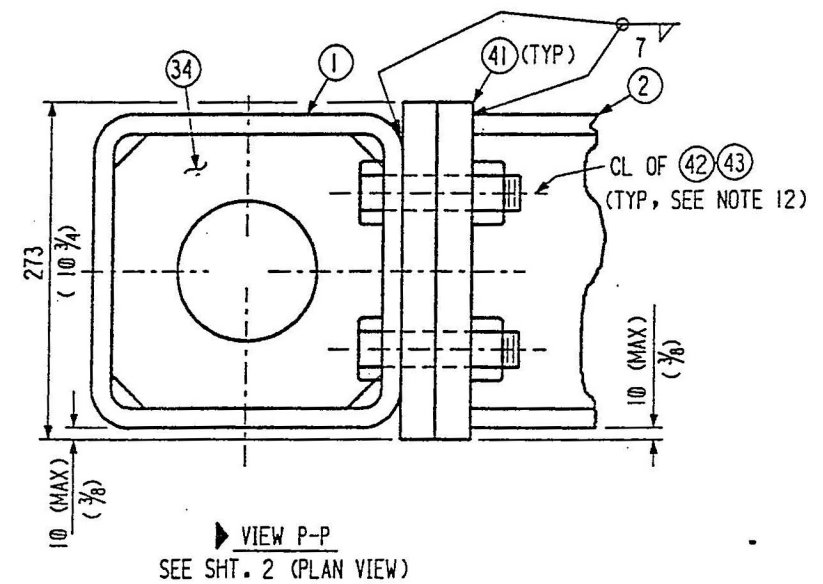
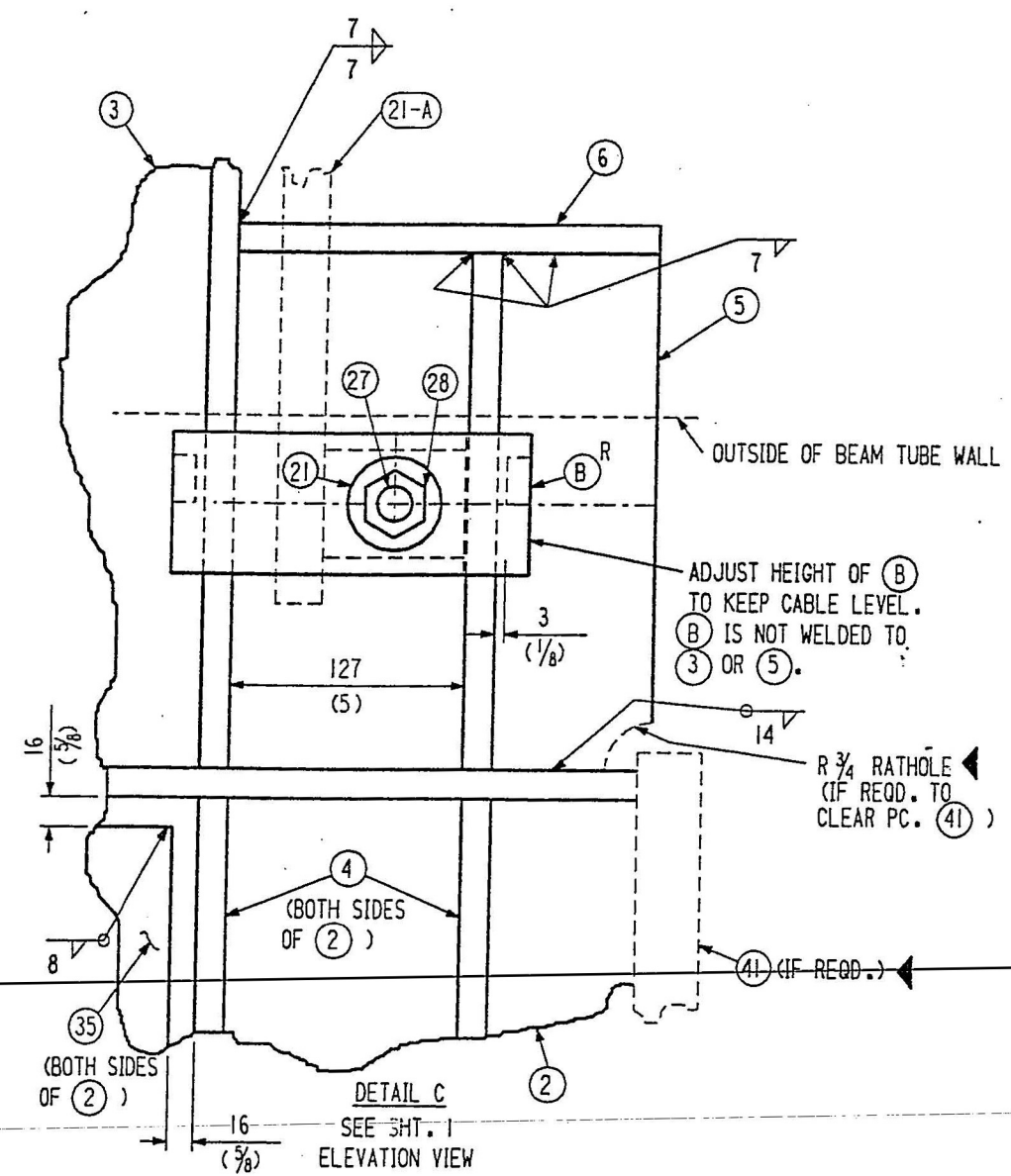
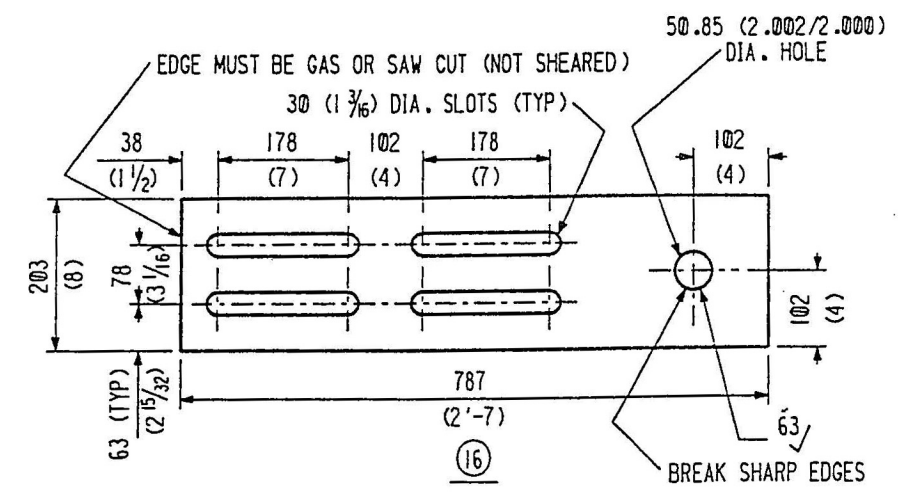
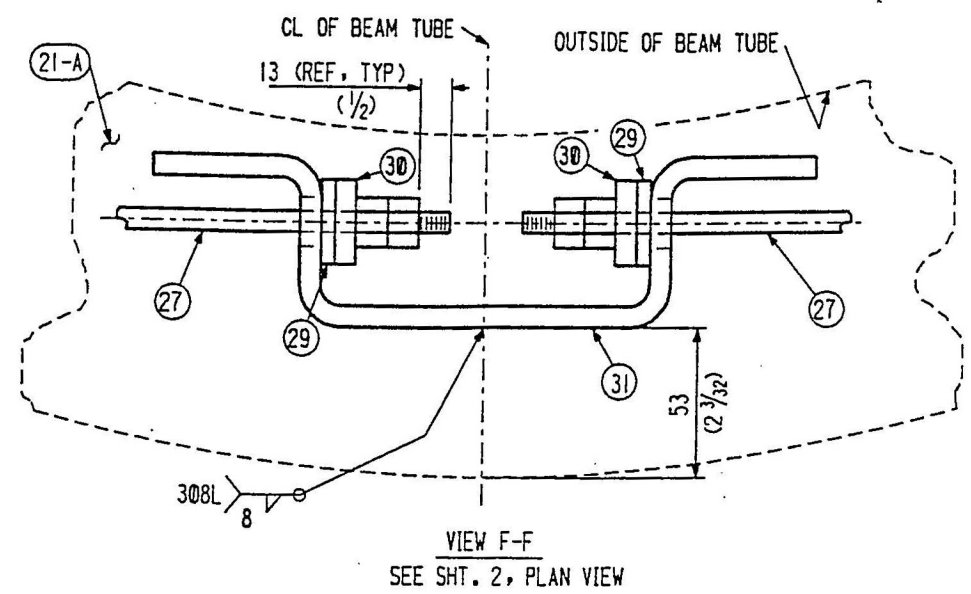
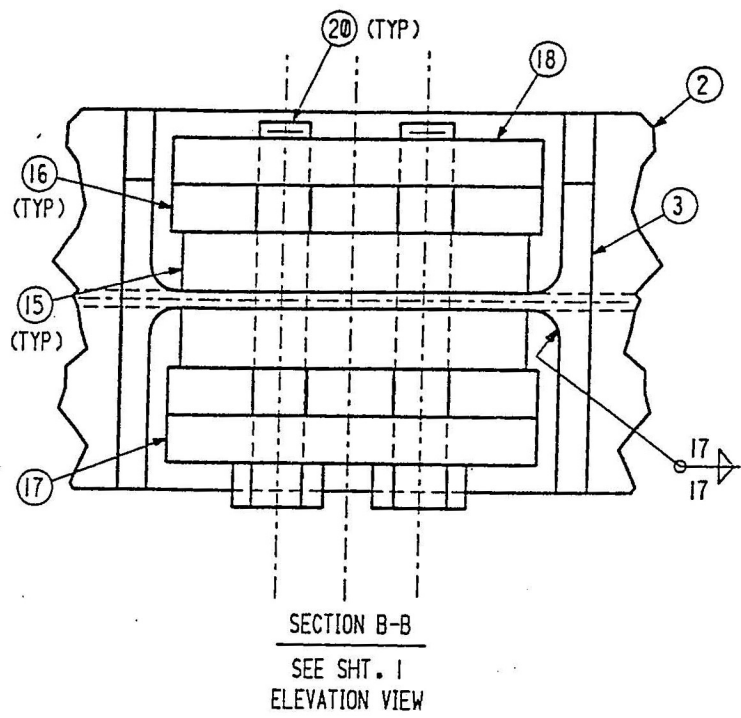


APPROVED	
<i>M. Tellalian</i>	3-7-97
CBI	DATE
<i>J. Davis</i>	10/2/97
CALTECH	DATE

SUPPLIER'S / PURCHASER'S NO. CBI LIGO BEAM TUBE HANFORD, WA & LIVINGSTON, LA BEAM TUBE TERMINATION SUPPORT PLAN VIEW	
CUSTOMER'S NO. BY DIR CHKD ARL DATE 3-11-96 M.L. TELLALIAN ENGINEERING ASSIGNED	CONTRACT NO. 953571 DWG 20 SHT 2 REV 4
LIGO-D960512-04-B	

55710220.DGN

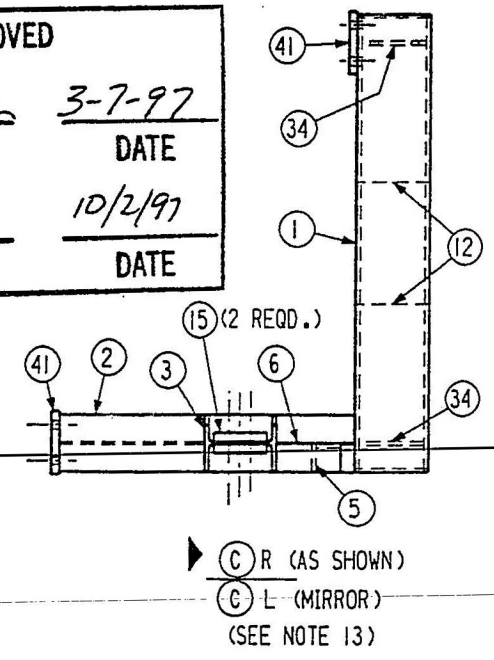
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APPROVED

M. Tellalian 3-7-97
CBI DATE

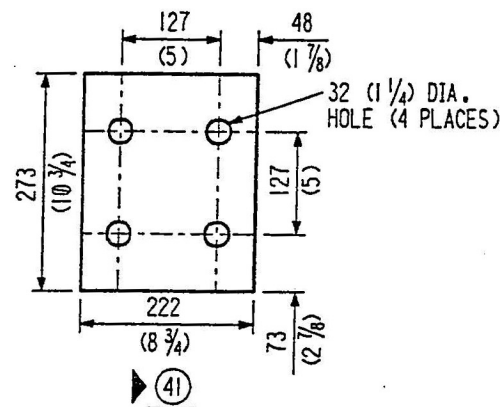
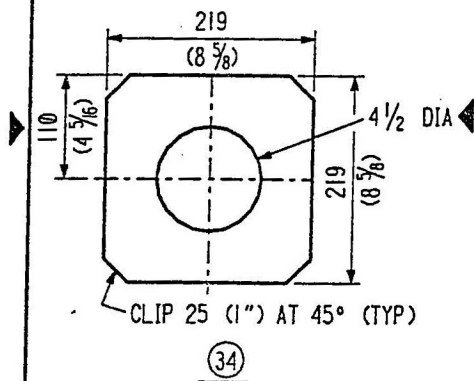
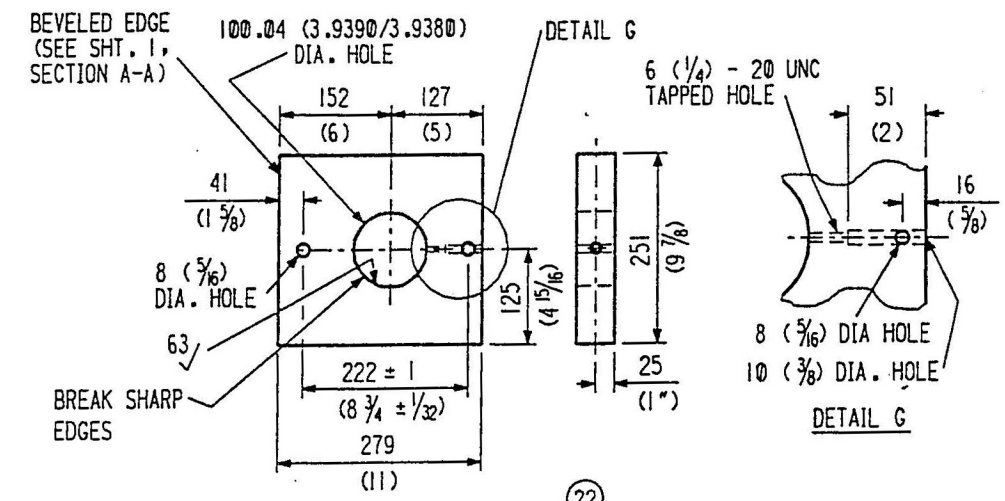
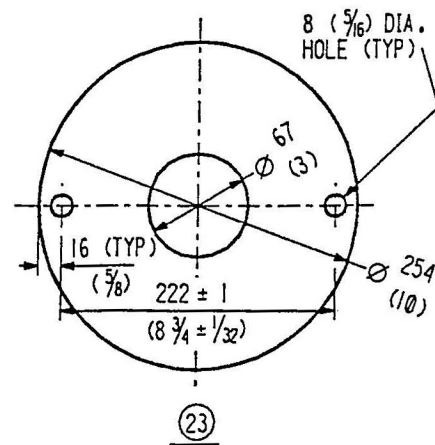
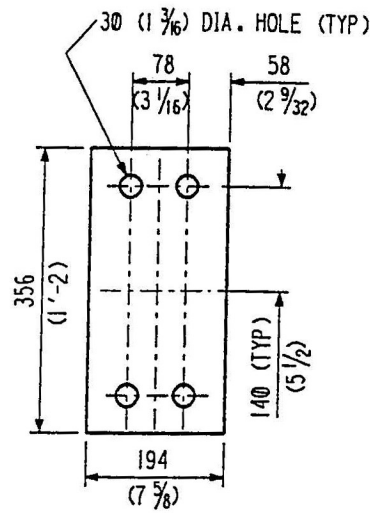
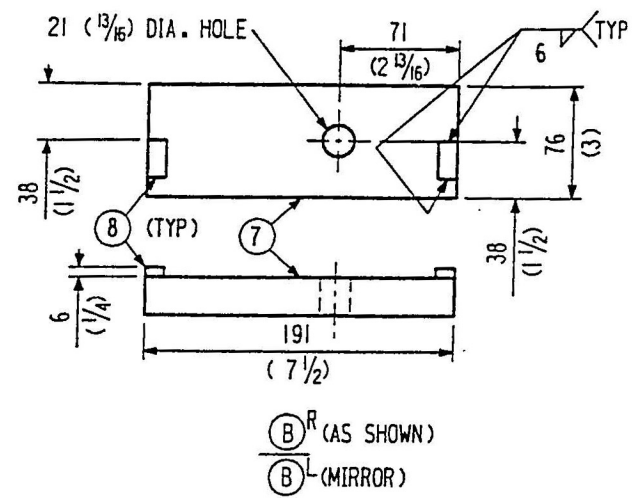
J. Jones 10/2/97
CALTECH DATE



REV. DIMENSIONING OF PC. 15.		REV. SHT. 1		REV. SHT. 1	
BY	DATE	BY	DATE	BY	DATE
CHKD	9-13-96	CHKD	6-20-96	CHKD	2-13-97
DATE		DATE		DATE	
REVISIONS		REVISIONS		REVISIONS	
ADDED VIEW P-P AND ASST. C.R.A. REV. DETAIL C.		ADDED VIEW P-P AND ASST. C.R.A. REV. DETAIL C.		ADDED VIEW P-P AND ASST. C.R.A. REV. DETAIL C.	
DATE 2-13-97		DATE 2-13-97		DATE 2-13-97	
BY DTR		BY DTR		BY DTR	
CHKD ARL		CHKD ARL		CHKD ARL	
DATE 3-11-96		DATE 3-11-96		DATE 3-11-96	
BY M.J. TELLALIAN		BY M.J. TELLALIAN		BY M.J. TELLALIAN	
ENGINEERING ASSIGNED		ENGINEERING ASSIGNED		ENGINEERING ASSIGNED	
CUSTOMER'S NO		CONTRACT NO		CONTRACT NO	
LIGO		953571		953571	
HANFORD, WA & LIVINGSTON, LA		DWG 20		REV 4	
BEAM TUBE TERMINATION SUPPORT		SHT 3		SHT 4	
PIECE DETAILS					
LIGO-D960512-04-B					

55710320 DGN

INDICATES CHANGE FROM PREVIOUS ISSUE



APPROVED

Dance F. Lewis 2 Oct 97

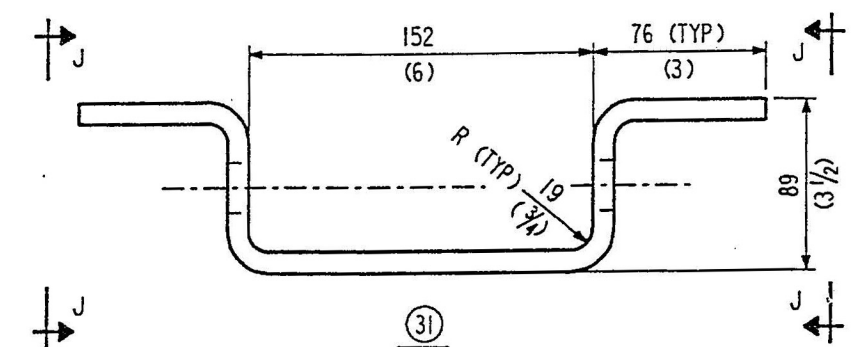
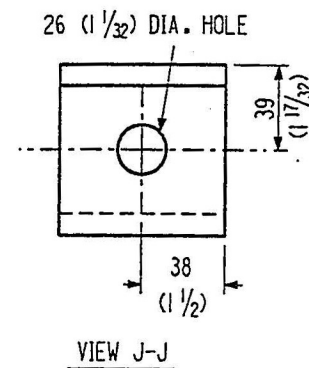
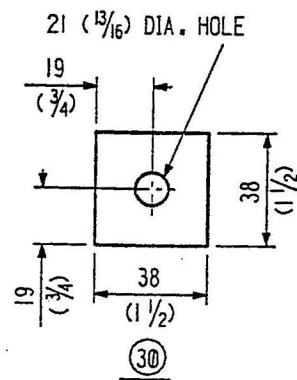
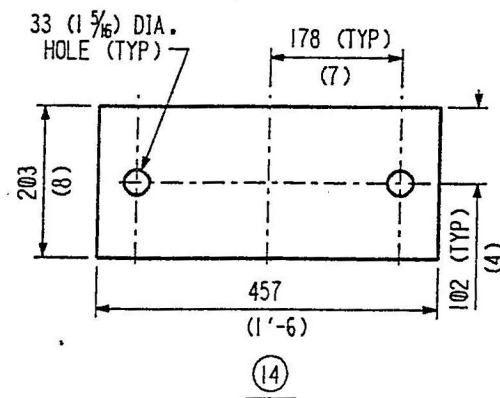
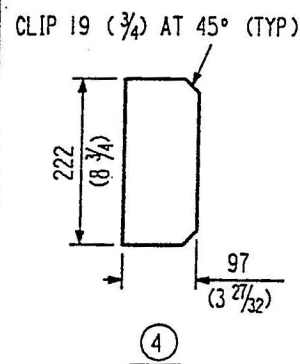
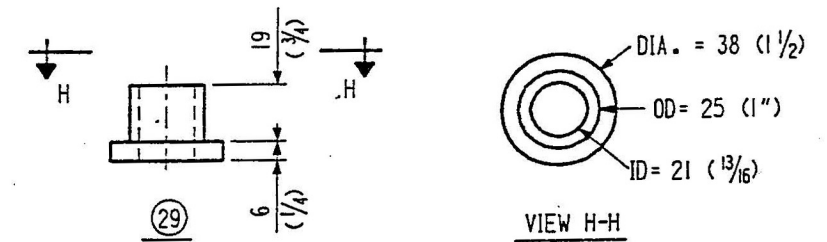
CBI DATE

Donna 10/2/97

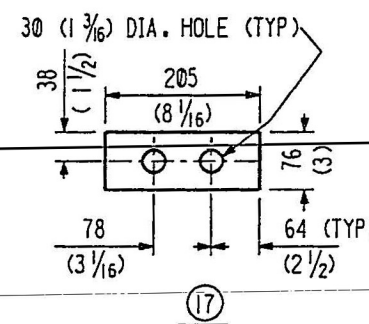
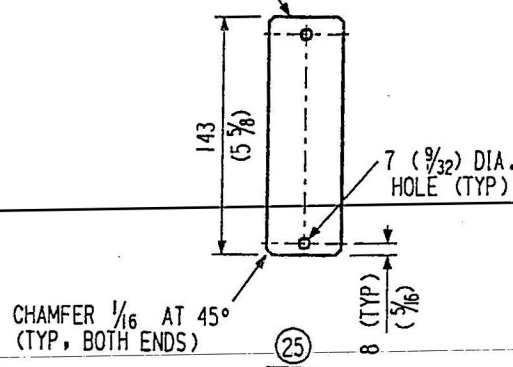
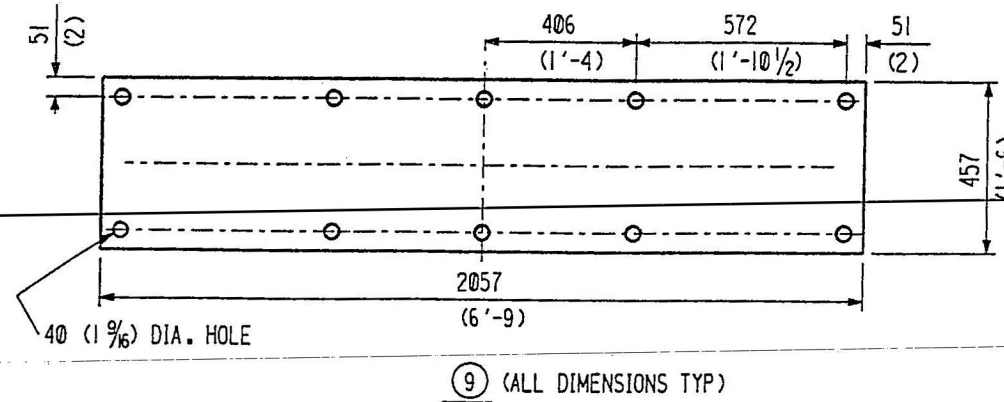
CALTECH DATE

29 (1 1/8) - 7 UNC 2B TAPPED HOLE (TYP)

(FABRICATOR TO SPRAY COLD GALV., TAKING CARE NOT TO SPRAY THE THREADS)



PIN TO BE ANNEALED AND CENTERLESS GROUND 50.76 (1.9995/1.9980) DIA.



INDICATES CHANGE FROM PREVIOUS ISSUE

BY: DTR		DATE: 9-13-96	REV: SHIT. 1	REVISIONS	
CHKD: M.L.	DATE: 9-13-96	BY: DTR	DATE: 9-13-96	REV: PG. 34, ADDED PG. 41.	
CHKD: M.L.	DATE: 9-13-96	BY: DTR	DATE: 9-13-96		
CHKD: M.L.	DATE: 9-13-96	BY: DTR	DATE: 9-13-96		
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CHKD: M.L.	DATE: 9-13-96	BY: DTR	DATE: 9-13-96		
CUSTOMER'S NO: 953571			CONTRACT NO: 953571		
BY: DTR - CHKD: ARL DATE: 3-11-96			M.L. TELLALIAN		
ENGINEERING ASSIGNED			DWG: 20	REV: 4	REV: 4
SHT: 4			LIGO-D960512-04-B		

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