

BEAM TUBE ENCLOSURE

SEE DETAIL 1  
DWG. 101 SH. 4

ENTRANCE

PLAN

**APPROVED**

*M. Jellison*      12-6-96  
CBI                      DATE

*S. Jones*              12/13/96  
CALTECH              DATE

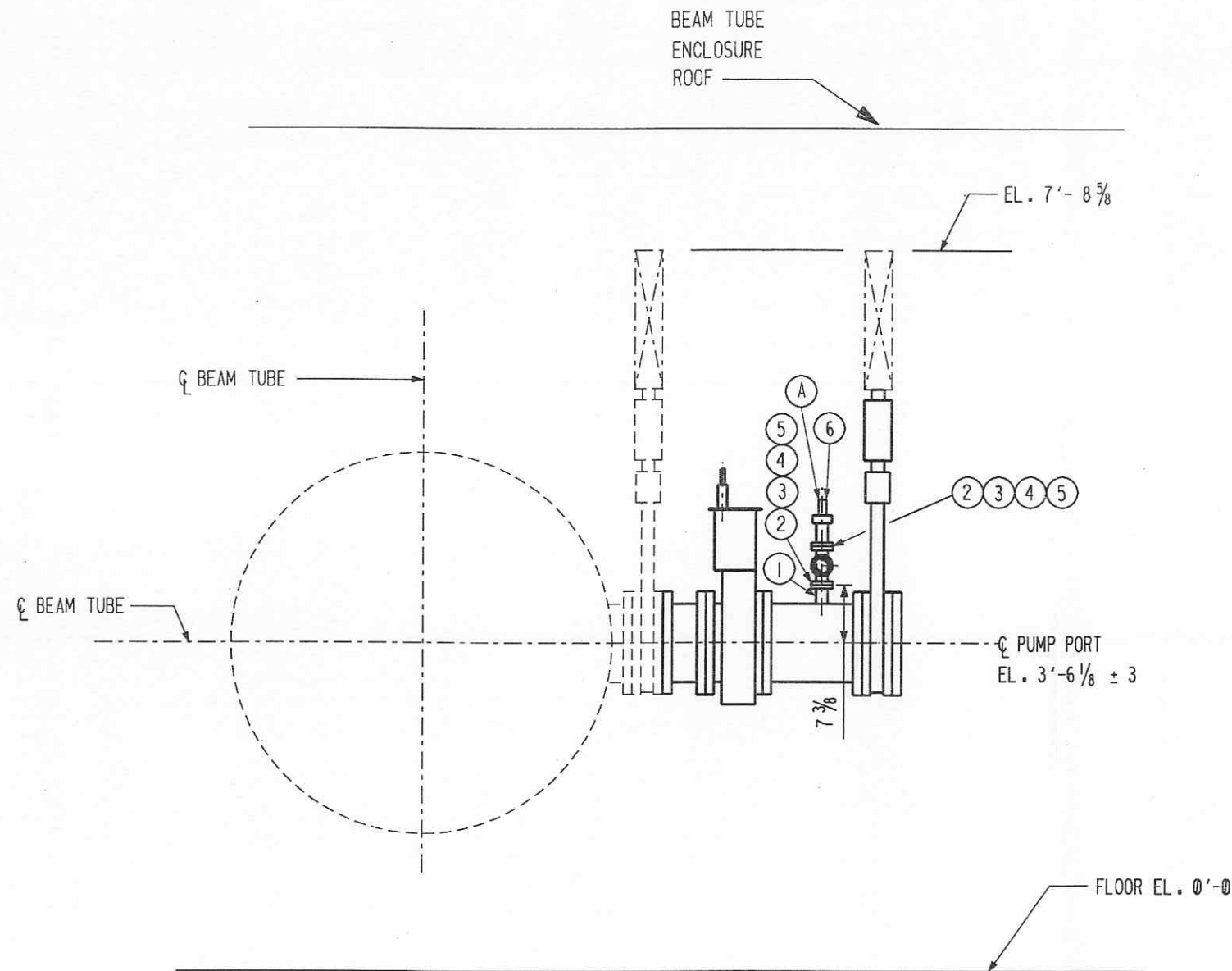
**NOTES:**

1. WORK WITH DRAWINGS 101 SH. 2 - 6.
2. NINE SKIDS REQUIRED. TEN SETS OF MAJOR COMPONENTS (VALVES, INSTRUMENTS, ETC.) ARE PROVIDED. THE SPARE MAJOR COMPONENTS WILL BE SHIPPED ALONG WITH THE SKIDS TO THE JOB SITE.

BY CHKD DATE	DIR DATE	REV. OTHER SHTS.	REVISIONS	REMARKS	<b>CBI</b>		SUPPLIER'S / PURCHASER'S NO	
					LIGO BEAM TUBE HANFORD, WA AND LIVINGSTON, LA PUMP PORT HARDWARE TYPE "B" PLAN "A"			CUSTOMER'S NO
BY DATE	CHKD DATE	WAC DATE	DATE	DATE	BY M.L. TELLALIAN	DATE 3/11/96	953571	
BY DATE	CHKD DATE	WAC DATE	DATE	DATE	ENGINEERING ASSIGNED	DATE		
LIGO-D961302-03-B							DWG 101	REV 3
							SHT 1	REV 3

INDICATES CHANGE FROM PREVIOUS ISSUE

SHIP PC	MARK	ASSM PC	DESCRIPTION	LENGTH		SPEC	ID
				FT	IN		
	101-2-A	9	TYPE "B" PUMP PORT HARDWARE SECTION "A-A" ASSEMBLY (SHOP ASSEMBLE TO 101-4-A)				
	101-2-1	9	HALF NIPPLE 2.75 DIA CF	0	2.46	SS	PA
	101-2-2	115	BOLT 1/4-28 (INCLUDES 7 SPARES)	0	1 1/2	*	PE
	101-2-3	60	PLATE NUT 1/4-28 UNF (INCLUDES 6 SPARES)			SS	PE
	101-2-4	20	GSKT 2.75 DIA CF (INCLUDES 2 SPARES)			COPPER	PA
	101-2-5	115	WASHER 1/4 DIA (INCLUDES 7 SPARES)			SS	PE
	101-2-6	10**	HPS COLD CATHODE GAGE				PC
			* = SILVER PLATED SS				
			** = ONE SPARE PROVIDED. SPARE TO SHIP WITH SKIDS.				



SECTION "A-A"

**APPROVED**

*M. Tellalian*      12-6-96  
**CBI**      DATE

*J. Jones*      12/13/96  
**CALTECH**      DATE

NOTES:  
 1. USE WITH DRAWINGS 101 SH. 1, 3 - 6

BY: <i>DK</i> DIR: <i>DK</i> DATE: 11/21/96		SHOWN BEAM TUBE, PUMP PORT AND VALVE AS DASHED LINES. CHKD: <i>WAC</i> DATE: 9/20/96 BY: <i>FLG</i> DIR: <i>DK</i> DATE: 7/1/96	<b>CBI</b>		SUPPLIER'S / PURCHASER'S NO
BY: <i>DK</i> DIR: <i>DK</i> DATE: 11/21/96			LIGO BEAM TUBE HANFORD, WA AND LIVINGSTON, LA PUMP PORT HARDWARE TYPE "B" SECTION "A-A"		
CUSTOMER'S NO BY: <i>RKZ</i> CHKD: <i>WAC</i> DATE: 3/11/96 M. L. TELLALIAN ENGINEERING ASSIGNED		CONTRACT NO 953571		DWG 101	REV 3
				SHT 2	
LIGO-D961302-03-B					

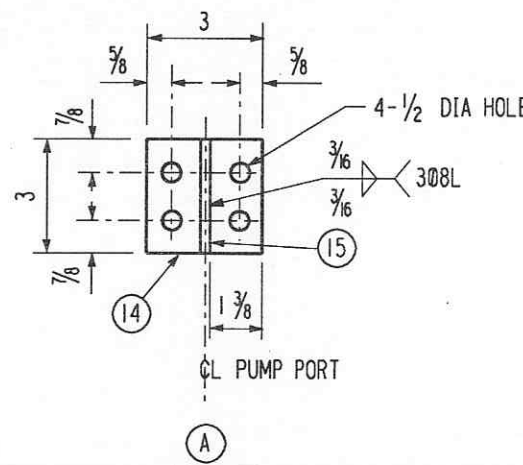
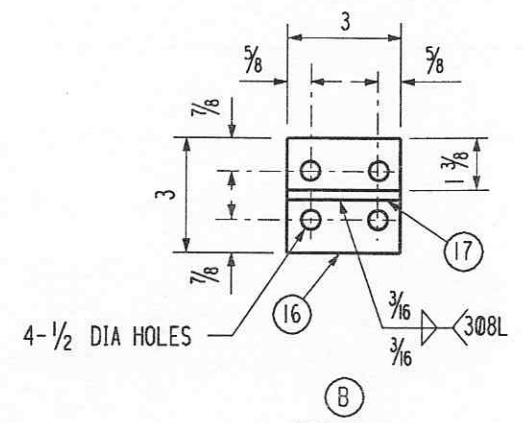
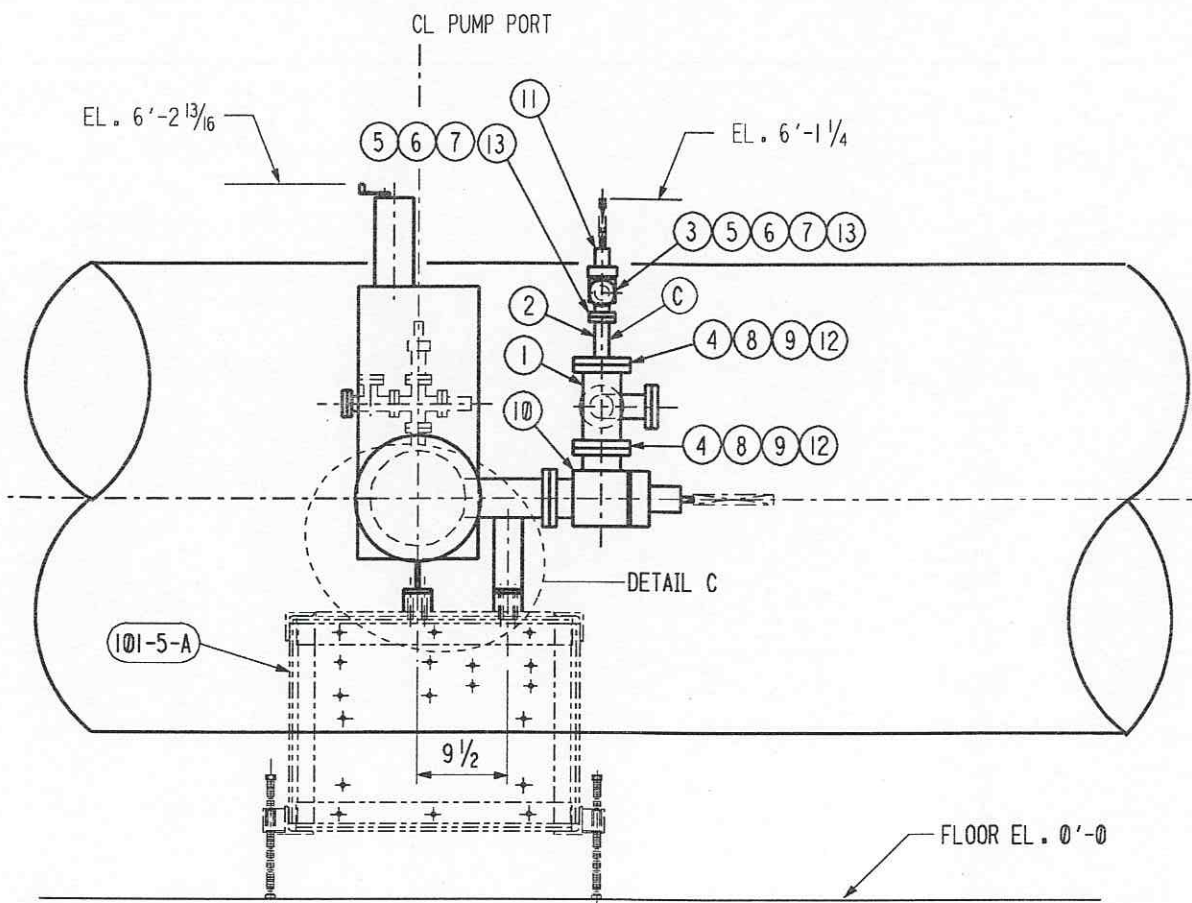
INDICATES CHANGE FROM PREVIOUS ISSUE

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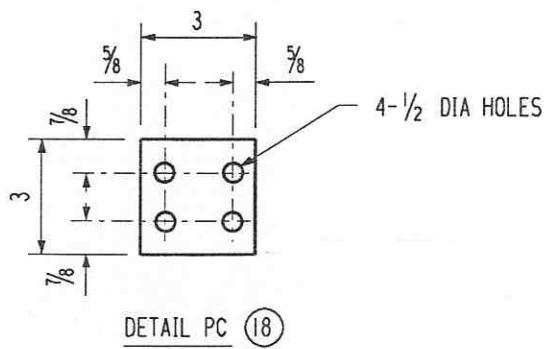
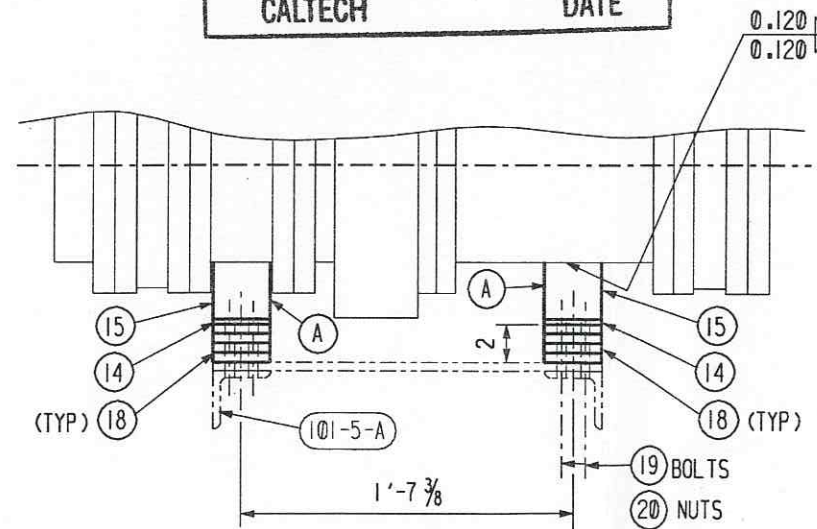
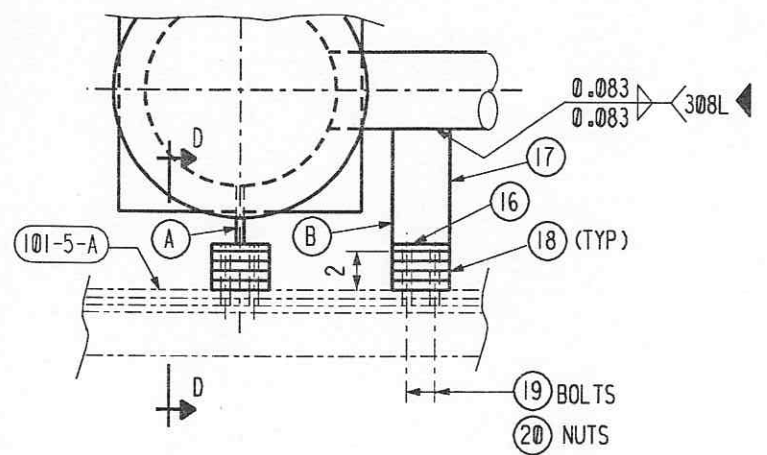
SHIP PC	MARK	ASSM	DESCRIPTION	LENGTH		SPEC	ID
				FT	IN		
	101-3-A	18	ASSEMBLY A (SHOP ATTACH TO 101-4-A)				
	101-3-14	18	PL 3 X 1/4 X SK	0	3	SS	PE
	101-3-15	18	PL 3 X 1/4	0	3	SS	PE
	101-3-B	9	ASSEMBLY B (SHOP ATTACH TO 101-4-A)				
	101-3-16	9	PL 3 X 1/4 X SK	0	3	SS	PE
	101-3-17	9	PL 3 X 1/4	0	6	SS	PE
	101-3-C	9	TYPE "B" PUMP PORT HARDWARE SECTION "B-B" ASSEMBLY (SHOP ATTACH TO 101-4-A)				
	101-3-1	9	6 X 4 1/2 CF REDUCING TEE	0	8.64	SS	PA
	101-3-2	9	6 X 2.75 CF REDUCING NIPPLE	0	5	SS	PA
	101-3-3	9	BLD FLG 2.75 DIA CF			SS	PA
	101-3-4	300	BOLT 5/16-24 (INCLUDES 12 SPARES)	0	2 1/4	*	PE
	101-3-5	115	BOLT 1/4-28 (INCLUDES 7 SPARES)	0	1 1/2	*	PE
	101-3-6	60	PLATE NUT 1/4-28 UNF (INCLUDES 6 SPARES)			SS	PE
	101-3-7	20	GSKT 2.75 DIA CF (INCLUDES 2 SPARES)			COPPER	PA
	101-3-8	149	PLATE NUT 5/16-24 UNF (INCLUDES 5 SPARES)			SS	PE
	101-3-9	20	GSKT 6 DIA CF (INCLUDES 2 SPARES)			COPPER	PA
	101-3-10	**10	100 MM VAT ANGLE VALVE WITH 6 DIA CF FLG			SS	PC
	101-3-11	**10	40 MM NOR-CAL ANGLE VALVE OR EQUAL WITH 2.75 DIA CF FLG			SS	PC
	101-3-12	303	WASHER 5/16 DIA (INCLUDES 15 SPARES)			SS	PE
	101-3-13	115	WASHER 1/4 DIA (INCLUDES 7 SPARES)			SS	PE
	101-3-18	108	SILICONE BLOCKS 3 X 1/2 X SK MCMASTER-CARR CATALOGUE NO. 8632K48, 40 DUROMETER	0	3		PE
	101-3-19	110	BOLT 3/8-16 HEX (INCLUDES 2 SPARES)	0	3 1/2	A307B GALV	PE
	101-3-20	110	NUT 3/8-16 HEX (INCLUDES 2 SPARES)			A307B GALV	PE
			* = SILVER PLATED SS				
			** = ONE SPARE PROVIDED. SPARE TO SHIP WITH SKIDS.				



APPROVED

*M. Tellalian* 12-6-96  
CBI DATE

*J. [Signature]* 12/13/96  
CALTECH DATE



NOTES :

1. USE WITH DRAWINGS 101 SH. 1, 2, 4, 5 AND 6

REV. WELD SIZE OF PC. 19 TO 10		REV. BILLING, ADDED ASSY. C.	
DATE	BY	DATE	BY
11/27/96	DIR	9/20/96	WAC
7/22/96	DIR	7/22/96	WAC
REVISIONS		REMARKS	
3		REVISED ENTIRE SHIT.	
BY CHD		DATE	
DATE		DATE	
11/27/96		3/11/96	
BY CHD		DATE	
DATE		DATE	
11/27/96		3/11/96	
BY CHD		DATE	
DATE		DATE	
11/27/96		3/11/96	
BY CHD		DATE	
DATE		DATE	
11/27/96		3/11/96	

**CBI**

LIGO BEAM TUBE  
HANFORD, WA AND LIVINGSTON, LA  
PUMP PORT HARDWARE TYPE "B"  
SECTION "B-B"

CUSTOMER'S NO: BY RKZ CHD WAC DATE 3/11/96  
M. L. TELLALIAN  
ENGINEERING ASSIGNED

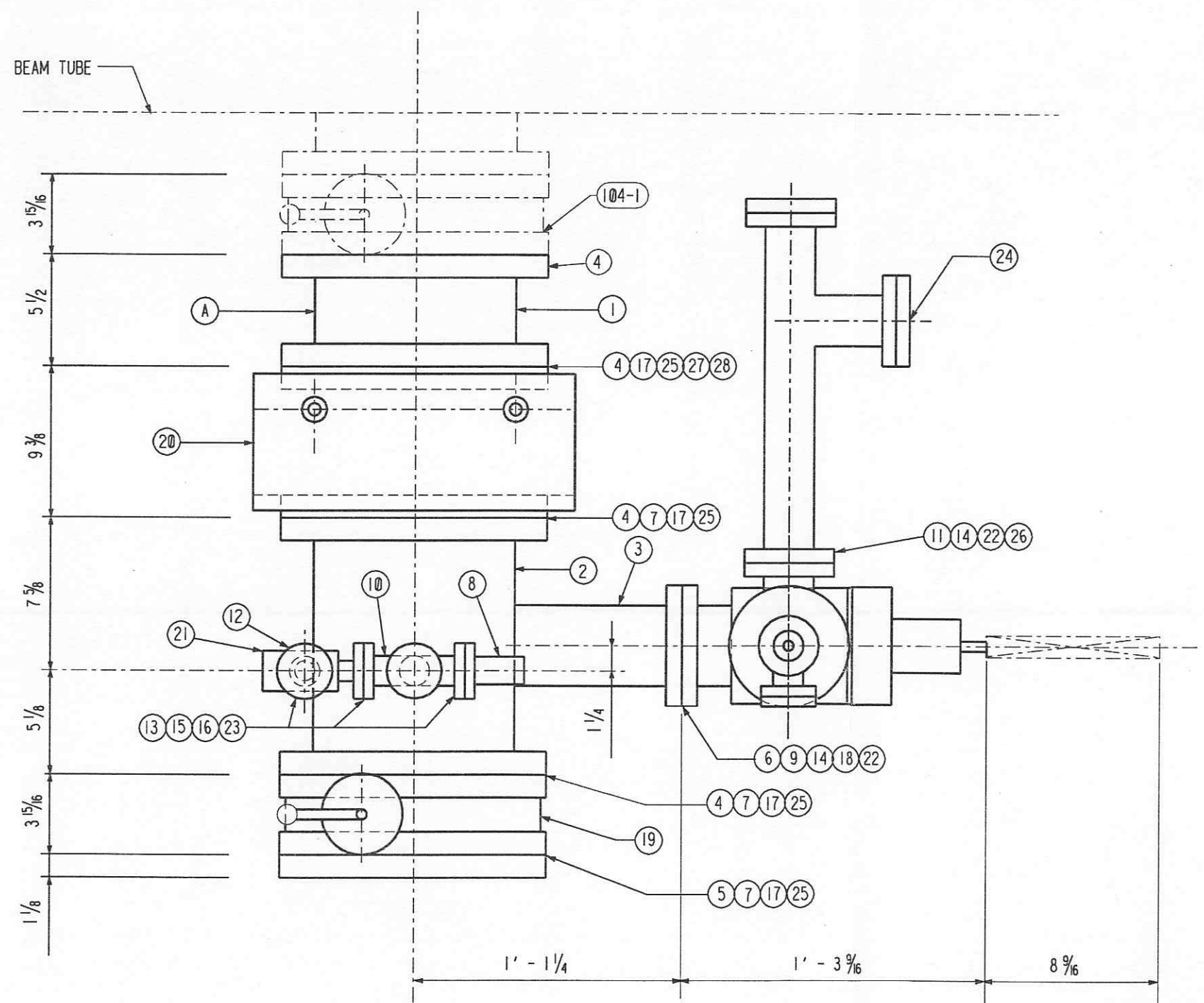
CONTRACT NO: 953571  
DWG 101 REV 3  
SHT 3

L100-D961302-03-B

INDICATES CHANGE FROM PREVIOUS ISSUE

57103101.DGN





DETAIL I

SHIP PC	MARK	ASSM PC	DESCRIPTION	LENGTH		SPEC	ID
				FT	IN		
9	101-4-A		PUMP PORT HARDWARE TYPE "B" ASSEMBLY				
	101-4-1	9	TUBE 10 OD X .120 WALL	0	4 1/2	SS	PA
	101-4-2	9	TUBE 10 OD X .120 WALL	0	11 3/4	SS	PA
	101-4-3	9	TUBE 4 OD X .083 WALL	0	8 3/8	SS	PA
	101-4-4	36	FLG 13.25 DIA CF ROTATABLE			SS	PA
	101-4-5	9	BLD FLG 13.25 DIA CF			SS	PA
	101-4-6	9	FLG 6 DIA CF ROTATABLE			SS	PA
	101-4-7	850	BOLT 3/8-24	0	1 5/8	*	PE
			(INCLUDES 40 SPARES)				
	101-4-8	**10	HPS CONVECTION GAGE WITH 2.75 DIA CF FLG			SS	PC
	101-4-9	154	BOLT 5/16-24	0	2 1/4	*	PE
			(INCLUDES 10 SPARES)				
	101-4-10	9	FOUR WAY CROSS 2.75 DIA CF			SS	PA
	101-4-11	11	GSKT 4.5 DIA CF (INCLUDES 2 SPARES)			COPPER	PA
	101-4-12	9	BLD FLG 2.75 DIA CF			SS	PA
	101-4-13	172	BOLT 1/4-28	0	1 1/2	*	PE
			(INCLUDES 10 SPARES)				
	101-4-14	118	PLATE NUT 5/16-24			SS	PE
			(INCLUDES 10 SPARES)				
	101-4-15	90	PLATE NUT 1/4-28 UNF			SS	PE
			(INCLUDES 9 SPARES)				
	101-4-16	30	GSKT 2.75 DIA CF			COPPER	PA
			(INCLUDES 3 SPARES)				
	101-4-17	40	GSKT 13.25 DIA CF			COPPER	PA
			(INCLUDES 4 SPARES)				
	101-4-18	10	GSKT 6 DIA CF (INCLUDES 2 SPARES)			COPPER	PA
	101-4-19	**10	250MM SERIES 10 VAT VALVE WITH 13.25 DIA CF FLG			SS	PC
	101-4-20	**10	GNB LN2 TRAP 10 DIA WITH 13.25 DIA CF FLG			SS	PC
	101-4-21	**10	40 MM NOR-CAL ANGLE VALVE NUMBER AMV-1502-CF (OR EQUAL)			SS	PC
	101-4-22	230	WASHER 5/16 DIA (INCLUDES 14 SPARES)			SS	PE
	101-4-23	170	WASHER 1/4 DIA (INCLUDES 8 SPARES)			SS	PE
	101-4-24	**10	BALZERS RGA				PC
	101-4-25	1130	WASHER 3/8 DIA (INCLUDES 50 SPARES)			SS	PE
	101-4-26	80	BOLT 5/16-24 (INCLUDES 8 SPARES)	0	2	*	PE
	101-4-27	280	NUT 3/8-24 UNF (INCLUDES 10 SPARES)			SS	PE
	101-4-28	280	BOLT 3/8-24 (INCLUDES 10 SPARES)	0	3	*	PE
	101-2-A	9	SECTION "A-A" ASSEMBLY				
	101-3-A	18	ASSEMBLY A				
	101-3-B	9	ASSEMBLY B				
	101-3-C	9	SECTION "B-B" ASSEMBLY				
	101-5-A	9	PUMP PORT HARDWARE FRAME ASSEMBLY				
			* = SILVER PLATED SS				
			** = ONE SPARE PROVIDED. SPARE TO SHIP WITH SKIDS.				

NOTES:  
1. USE WITH DRAWING 101 SH. 1, 2, 3, 5 AND 6

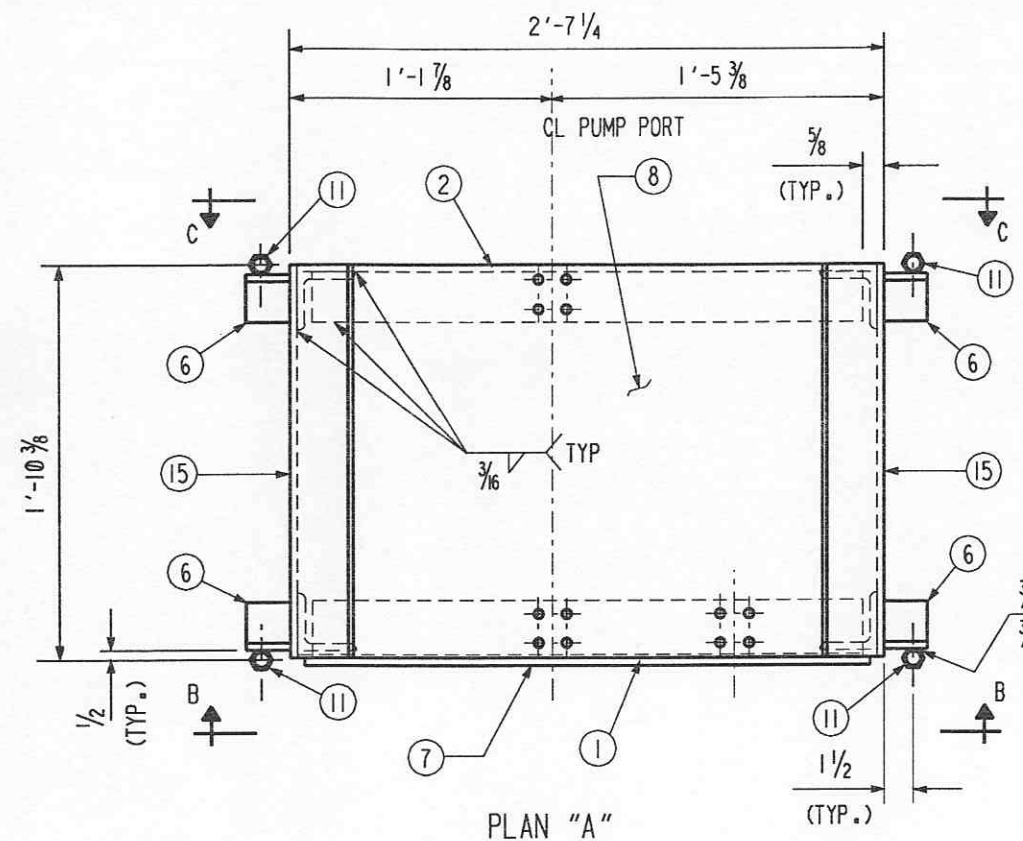
APPROVED  
M. Tellalian 12-6-96  
CBI DATE  
S. J. 12/13/96  
CALTECH DATE

CBI		SUPPLIER'S / PURCHASER'S NO	
LIGO PROJECT HANFORD, WA AND LIVINGSTON, LA PUMP PORT HARDWARE TYPE "B" PLAN "A" - DETAIL I			
BY CHKD DATE 11/27/96	BY CHKD DATE 9/30/96	BY CHKD DATE 7/22/96	REVISIONS
CUSTOMER'S NO BY RKZ_CHKD_WAC DATE 3/11/96 M. L. TELLALIAN ENGINEERING ASSIGNED		CONTRACT NO 953571 DWG 101 SHT 4 REV 3	
L190-2961302-03-B			

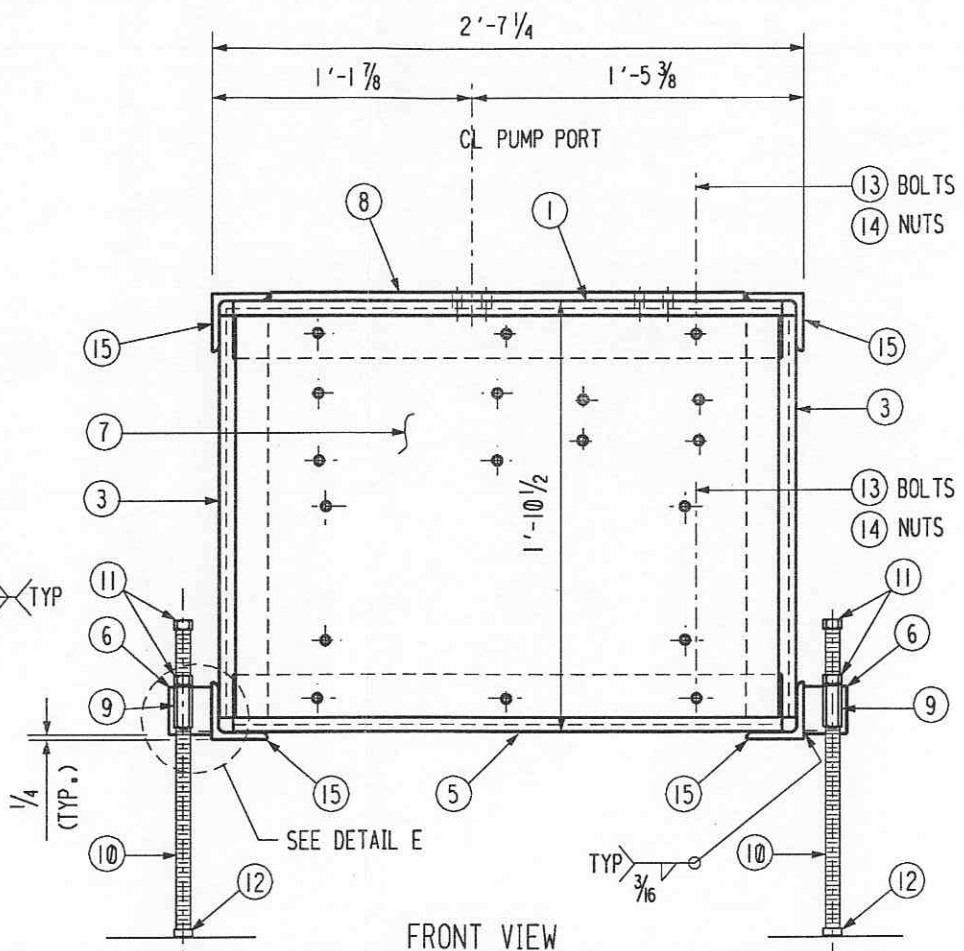
INDICATES CHANGE FROM PREVIOUS ISSUE

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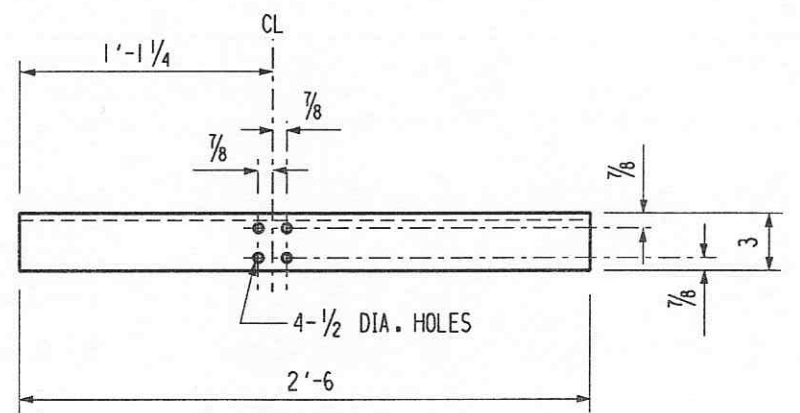




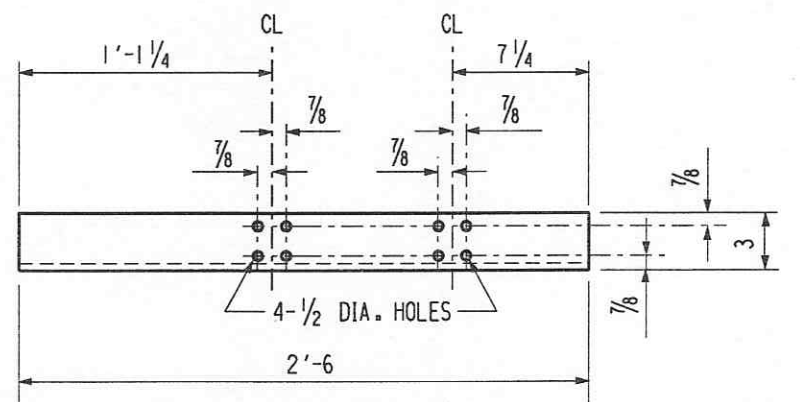
PLAN "A"



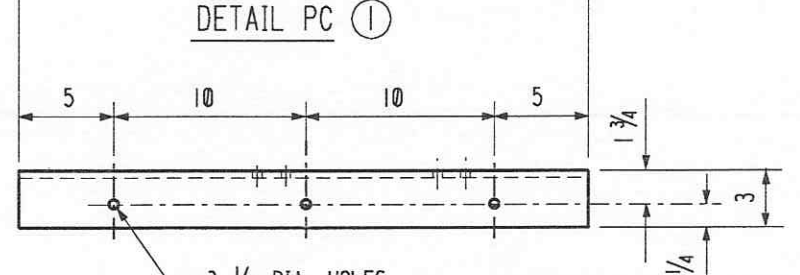
FRONT VIEW  
ELEVATION "B" - "B"



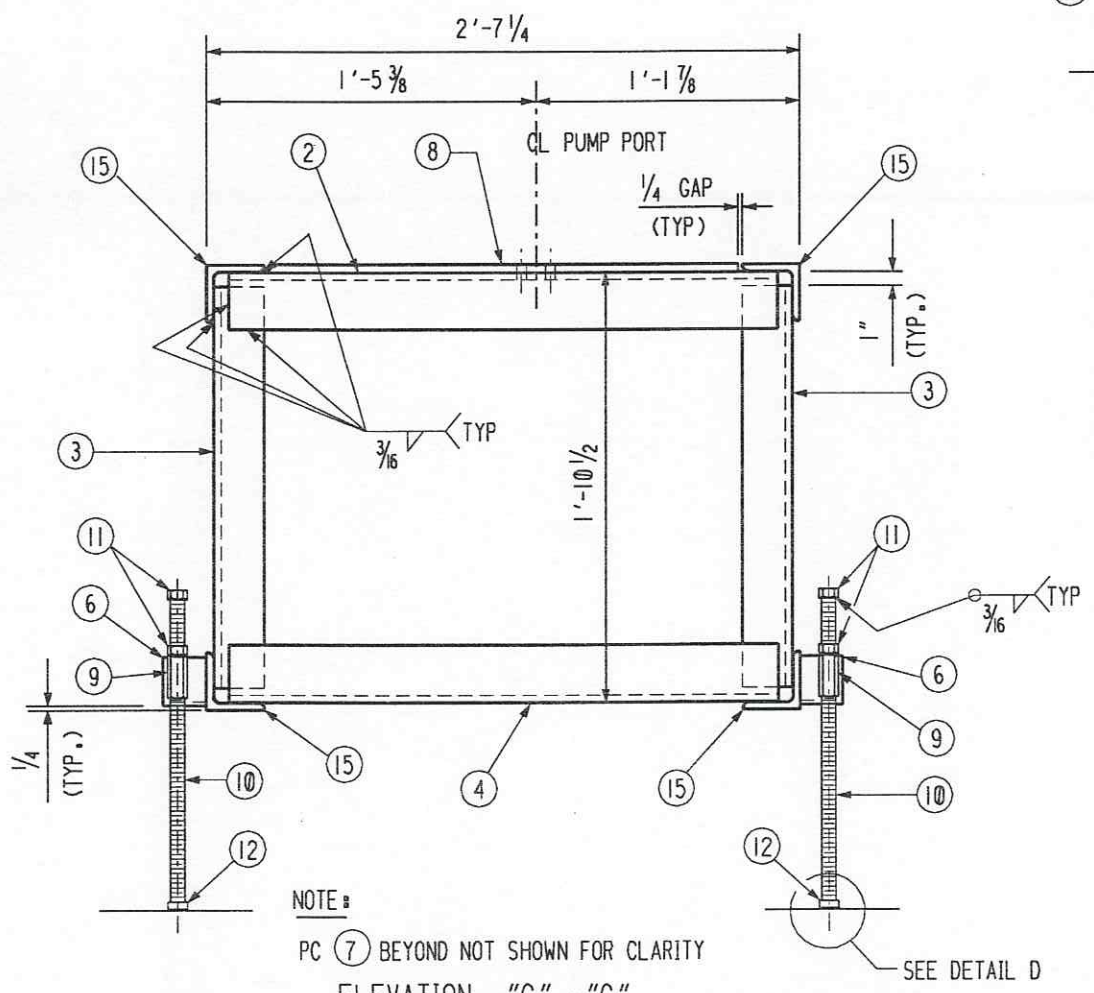
DETAIL PC (2)



DETAIL PC (1)

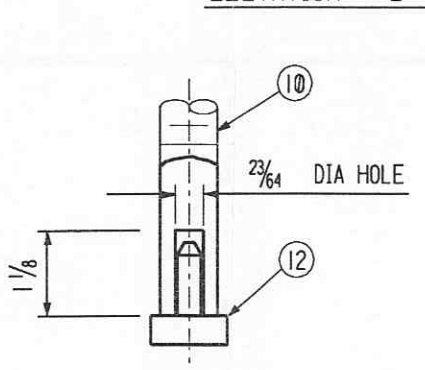


DETAIL PC (1)

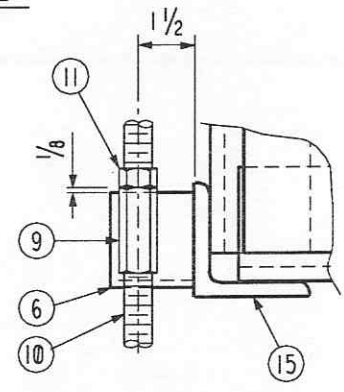


ELEVATION "C" - "C"

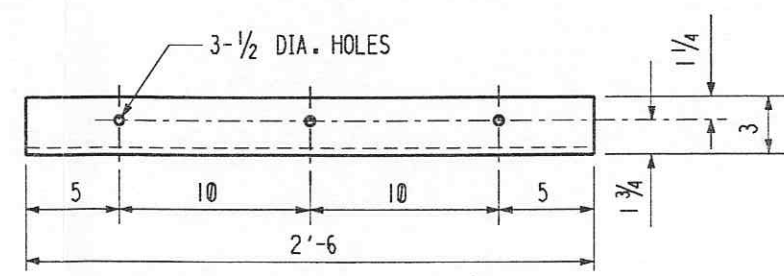
NOTE: PC (7) BEYOND NOT SHOWN FOR CLARITY



DETAIL "D"



DETAIL "E"



DETAIL PC (5)

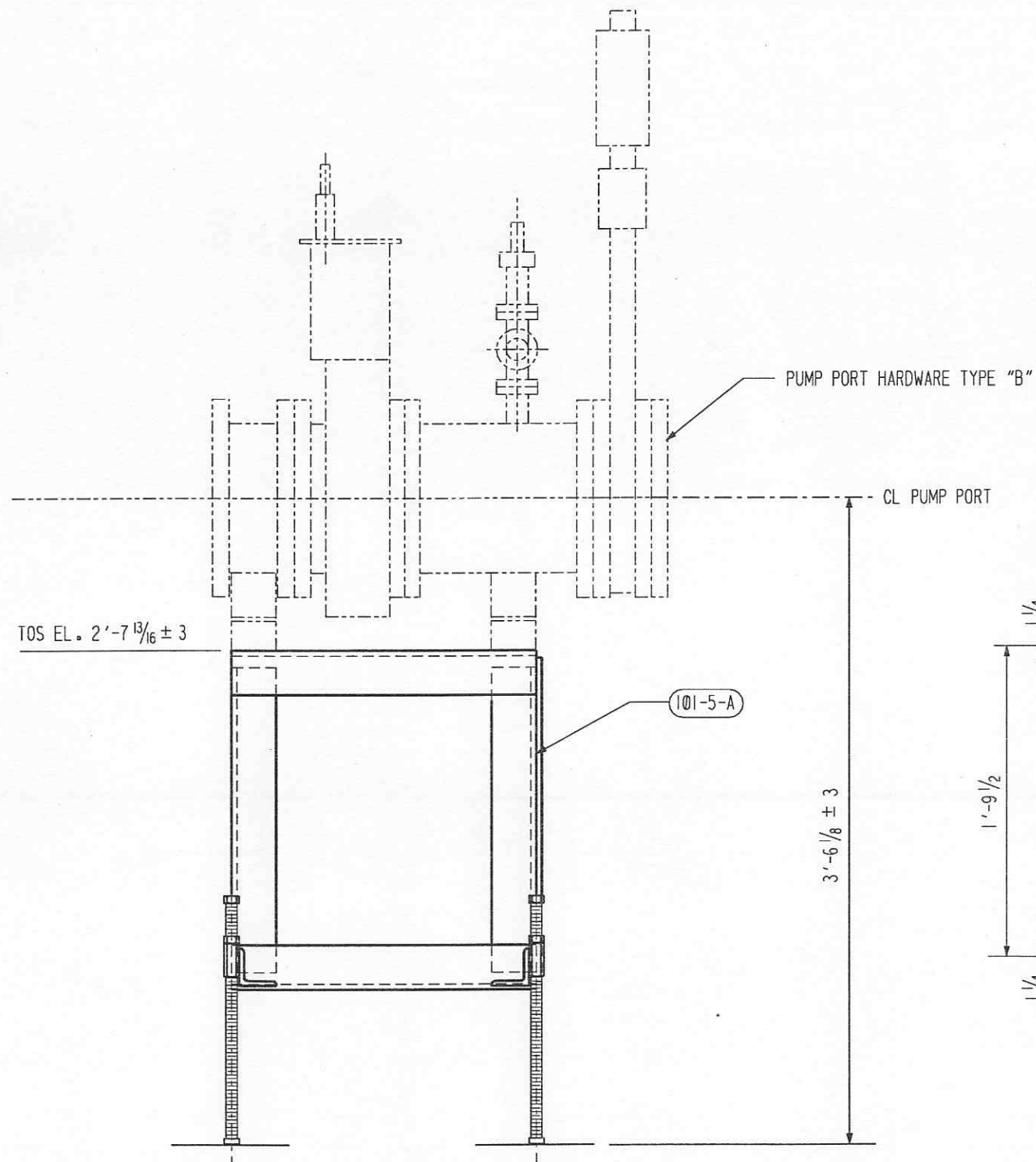
APPROVED	
<i>M. Tellalian</i>	12-6-96
CBI	DATE
<i>J. [Signature]</i>	12/13/96
CALTECH	DATE

NOTES:  
1. WORK THIS DWG. WITH DRAWING 101, SHT. 1-4 AND 6

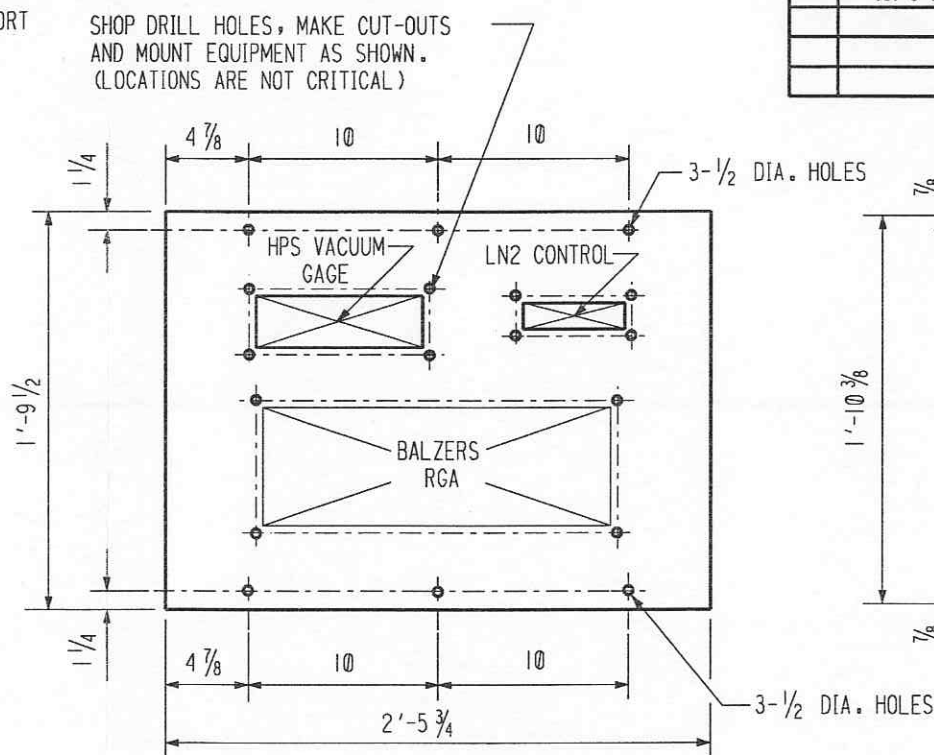
CBI		SUPPLIER'S / PURCHASER'S NO	
LIGO BEAM TUBE HANFORD, WA AND LIVINGSTON, LA			
PUMP PORT HARDWARE TYPE "B" SUPPORTS - PLAN "A"			
CUSTOMER'S NO		CONTRACT NO	
BY RKZ_CHKD_WAC DATE 3/11/96		953571	
M. L. TELLALIAN		DWG 101	REV 3
ENGINEERING ASSIGNED		SHT 5	
L190-D961302-03-B			

INDICATES CHANGE FROM PREVIOUS ISSUE

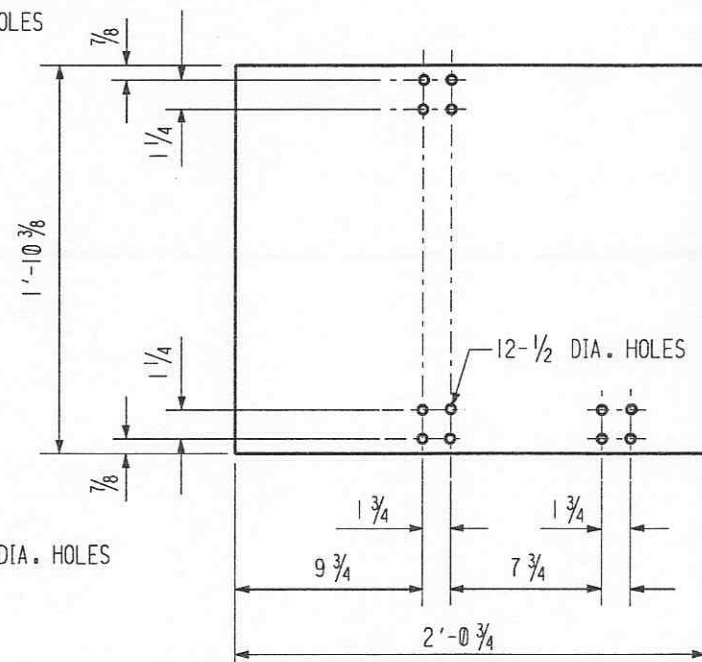




ELEVATION



DETAIL PC 101-5-7



DETAIL PC 101-5-8

NOTES:

1. WORK THIS DWG. WITH DRAWING 101, SH. 1-5

SHIP PC	MARK	ASSM PC	DESCRIPTION	LENGTH		SPEC	ID
				FT	IN		
101-5-A	9		PUMP PORT HARDWARE FRAME (SHOP ATTACH TO 101-4-A)				
101-5-1	9		L 3 X 3 X 3/16 W/HOLES	2	6	A36 GALV	PE
101-5-2	9		L 3 X 3 X 3/16 W/HOLES	2	6	A36 GALV	PE
101-5-3	36		L 3 X 3 X 3/16	1	8 1/2	A36 GALV	PE
101-5-4	9		L 3 X 3 X 3/16	2	6	A36 GALV	PE
101-5-5	9		L 3 X 3 X 3/16 W/HOLES	2	6	A36 GALV	PE
101-5-6	36		L 2 1/2 X 2 1/2 X 3/16	0	2 1/4	A36 GALV	PE
101-5-7	9		PL 1'-9 1/2 X 1/4 X SK	2	5 3/4	ALUMINUM	PE
101-5-8	9		PL 1'-10 3/8 X 1/4 X SK	2	0 3/4	ALUMINUM	PE
101-5-9	36		COUPLING NUT 3/4-5 ACME THREAD MCMASTER-CARR CATALOGUE NO. 93023A664 OR EQUAL				
101-5-10	36		ACME THREADED ROD 3/4-5 X SK MCMASTER-CARR CATALOGUE NO. 98935A218 OR EQUAL	1	6	CS	PE
101-5-11	72		NUT 3/4-5 ACME THREAD			CS	PE
101-5-12	36		BUMPER MCMASTER-CARR CATALOGUE NO. 9310K14 OR EQUAL			RUBBER	PE
101-5-13	54		BOLT 3/8-16 HEX	0	1	A307 GALV	PE
101-5-14	54		NUT 3/8-16 HEX			A307 GALV	PE
101-5-15	36		L 3 X 3 X 3/16	1	10 3/8	A36 GALV	PE

APPROVED

*M. Tellalian* 12-6-96  
CBI DATE

*S.J.* 12/13/96  
CALTECH DATE

REVISIONS

NO.	DATE	BY	DESCRIPTION
3	11/11/96	WAC	REMOVED GALV FROM PCS. 9-11.
2	11/11/96	WAC	REV. BILLING
1	9/20/96	WAC	REVISED ENTIRE SH. 1.

REMARKS

**CBI**

LIGO BEAM TUBE  
HANFORD, WA AND LIVINGSTON, LA

PUMP PORT HARDWARE TYPE "B"  
SUPPORT - ELEVATION

CUSTOMER'S NO. BY RKZ CHKD WAC DATE 3/11/96  
M. L. TELLALIAN  
ENGINEERING ASSIGNED

CONTRACT NO. 953571  
DWG 101 REV 6  
SHT 6 3

LIGO-D961302-03-B

INDICATES CHANGE FROM PREVIOUS ISSUE