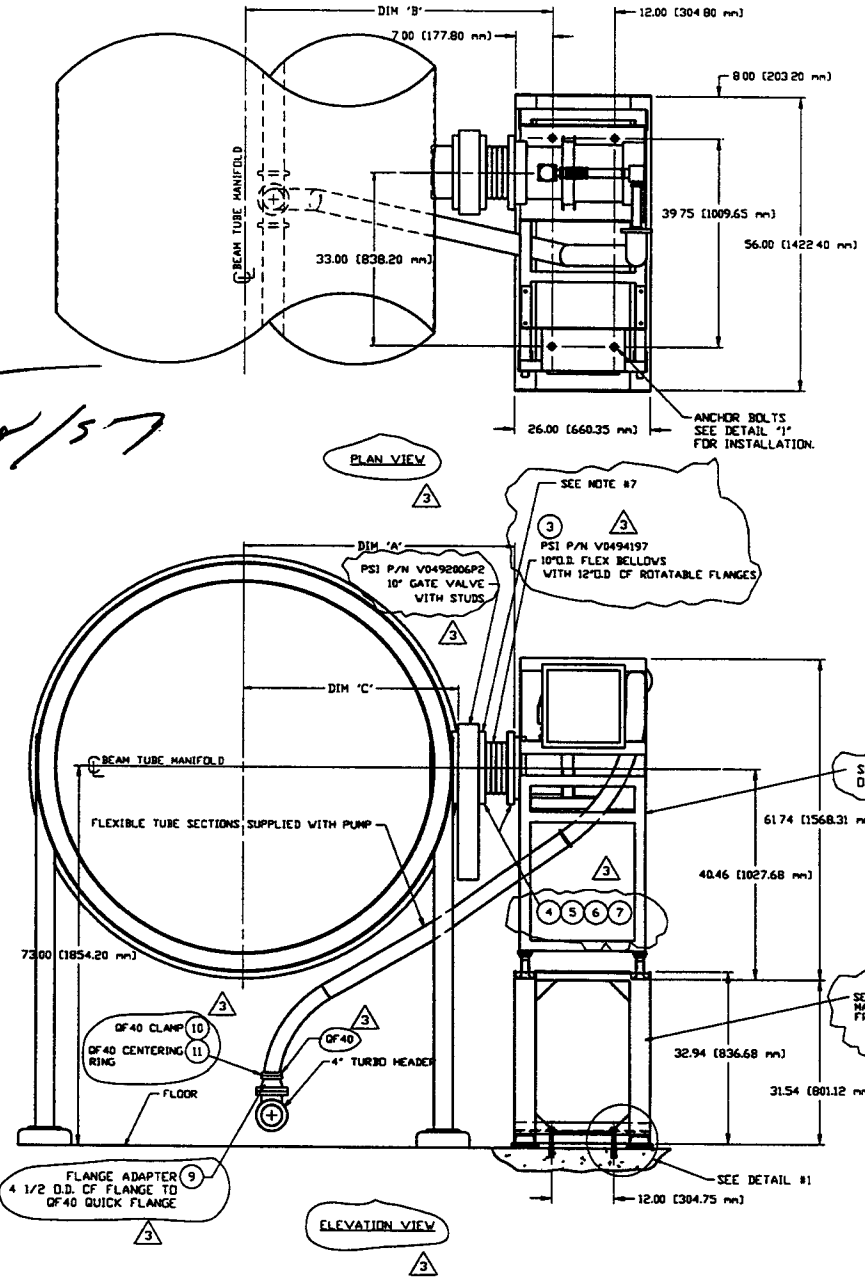
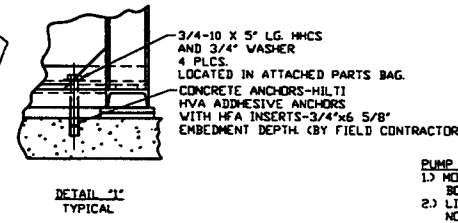
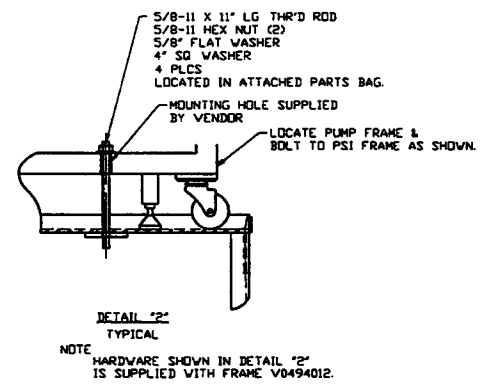


STATE OF LOUISIANA
 REGISTERED PROFESSIONAL ENGINEER
 RAYMOND D. CIATTO
 REG. No. 26750
 CIVIL ENGINEERING
 EXPIRES 8/5/97



	ITEM	PART NO.	QTY.	DESCRIPTION
SEE NOTE 8	1	V0494012	1	MAIN TURBO PUMP CART ASSY
SEE NOTE 8	2	V0492002	1	MAIN TURBOMOLECULAR CARTS
SEE NOTE 8	3	V0494197	1	TURBO PUMP VIBRATION BELLOWS
SEE NOTE 9	4	V049M785	100	WASHER, SST, 18-8, FLAT, 5/16"
SEE NOTE 9	5	V049M782	64	NUT, SILICON BRZ, HEX, 5/16"-18
SEE NOTE 9	6	V049M777	32	BOLT, SST 18-8, HEX HD, 5/16"-18x2 1/2" LG
SEE NOTE 9	7	202552 3	2	GASKET, CDP, CONFLAT 12" O.D. FLG
SEE NOTE 8	9	V049M661	1	FLG ADAPTER, 304 SST, 4 1/2" O.D. CF x QF40
SEE NOTE 8	10	V049M662	1	QUICK CLAMP, ALUM, 304 SST, WITH VITON O-RING QF40
SEE NOTE 8	11	V049M663	1	CENTERING RING ASSY, 304 SST, WITH O-RING QF40
SEE NOTE 8	12	V049M414 CWS/CWR	2	3/4" I.D. RUBBER HOSE, x 16'-0" LG, ONE END 3/8" MPT, ONE END 1/2" QUICK DISCONNECT x 1/2" NPT
BY SITE CONTRACTOR	13	AIR SUPPLY	AS REQ'D	1/4" O.D. DEKERON TUBING WITH 1/4" SWAGelok BRASS FITTINGS ONE END 1/4" NPT, ONE END 1/2" QUICK DISCONNECT



DIM 'A'	DIM 'B'	DIM 'C'	SPD.
48.625" (1235.00 MM)	35.625" (905.75 MM)	39.50" (1003.20 MM)	WB-3, WB6
49.75" (1263.65 MM)	36.75" (934.50 MM)	40.60" (1031.24 MM)	VA-7A, VA-7B VA-7C, VA-7D
28.625" (727.08 MM)	35.625" (905.75 MM)	19.48" (494.67 MM)	WB-SA
36.65" (930.91 MM)	43.65" (1108.71 MM)	27.50" (699.50 MM)	WB-7

- PUMP CART INSTALLATION:**
- 1) MOUNT BASE FRAME TO FLOOR USING 30 FT-LB OF TORQUE ON 3/4" DIA BOLTS INSERTED INTO CONCRETE ANCHORS EMBEDDED IN THE FLOOR.
 - 2) LIFT TURBO PUMP CART INTO POSITION, LEVEL AND ALIGN PUMP CART NOZZLE WITH VALVE ON THE BEAM TUBE MANIFOLD. (NOTE: DO NOT DISCONNECT CART FROM CRANE RIGGING UNTIL CART WEIGHT IS RESTING FIRMLY ON THE LEVELING LEGS.) CART LEVELING LEGS ARE TO BE ADJUSTED UNTIL WHEELS ARE CLEAR FROM RESTING ON THE BASE FRAME.
 - 3) BOLT PUMP CART INLET FLEXIBLE CONNECTOR TO FLANGE FACE ON VALVE LOCATED ON BEAM TUBE MANIFOLD.
 - 4) BOLT PUMP CART BASE TO BASE FRAME EXTENSION USING 5/8" DIA RODS.
 - 5) CONNECT FLEXIBLE HOSE BETWEEN TURBO PUMP DISCHARGE AND STUB CONNECTION ON TURBO HEADER.
 - 6) SEE VACUUM PUMP FIELD INSTALLATION PROCEDURE V049-2-175.
 - 7) WHEN PUMP CART IS NOT CONNECTED TO GATE VALVE, BLANK-OFF GATE VALVE WITH 12" O.D. CF. BLANK x 25 KF, PSI P/N V0494195.
 - 8) REFER TO BOM V0494011G.
 - 9) REFER TO APPLICABLE BUILDING BOM. REF. DRAWING TREE/BOM STRUCTURE. DWG. V049-0-100.
 - 10) AIR COOLING WATER SUPPLY AND RETURN MUST BE CONNECTED TO PIPING HEADERS BEFORE OPERATING UNIT.

APPROX. TOTAL WT. = 1600#

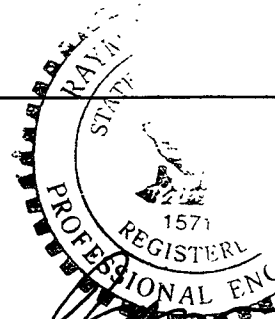
DWG. NO.	DESCRIPTION	REV	DESCRIPTION	DATE	BY	CHKD	DATE	REV	DESCRIPTION
V049-0-100	DRAWING TREE / B.O.M. STRUCTURE	3	REISSUED FOR CONSTRUCTION	4/26/97	GS	RDC	02/20/97	0387	
		2	ISSUED FOR FABRICATION & INSTALLATION		DMV	RDC	REC	12/16/96	
		1	FDR DESIGN UPDATE / ISSUED FOR BID		DMV	RDC	REC	4/25/96	0150
		0	ISSUED FOR FDR		DMV	RDC	REC	TOV	4/25/96

PROCESS SYSTEMS INTERNATIONAL, INC.
 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

MAIN TURBO PUMP CART ASSY.
 LIGO VACUUM EQUIPMENT

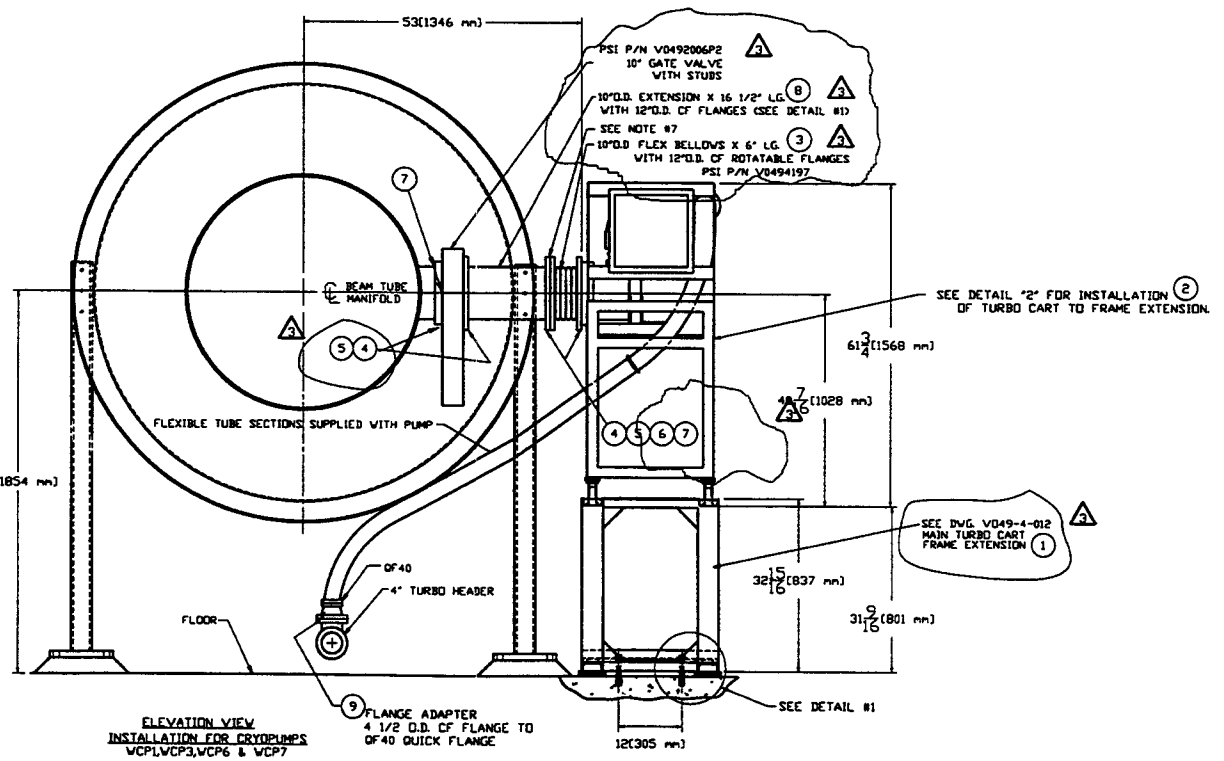
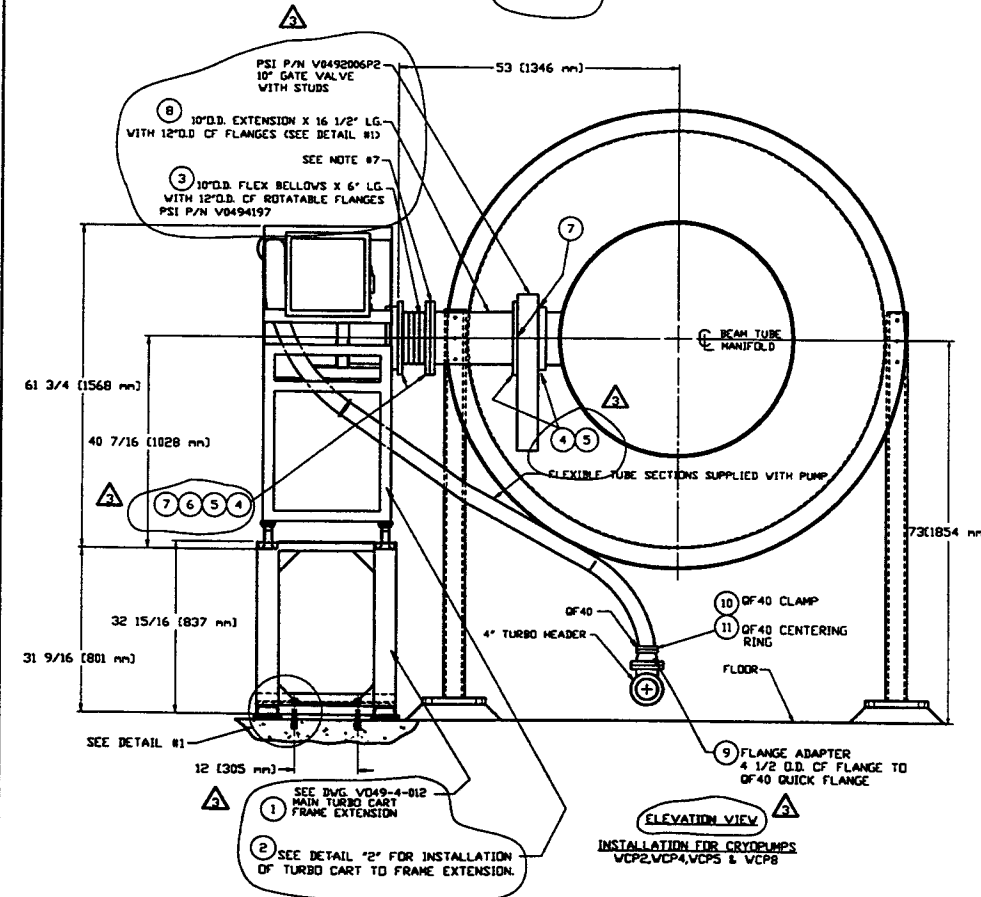
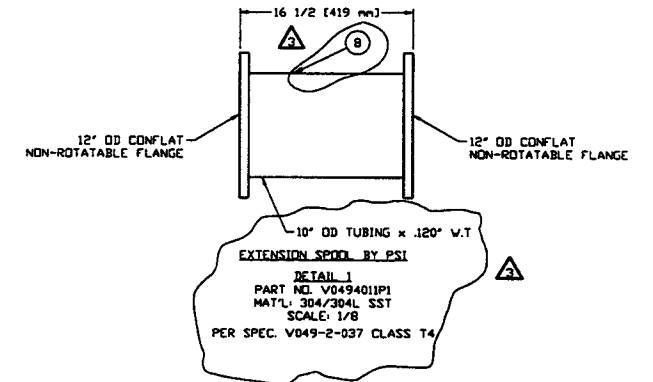
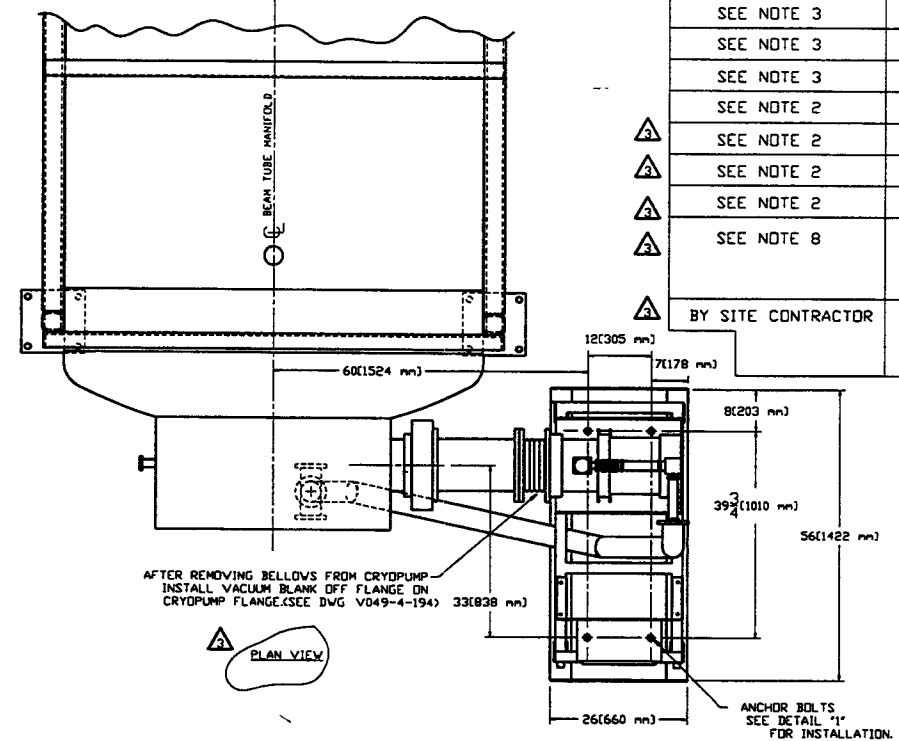
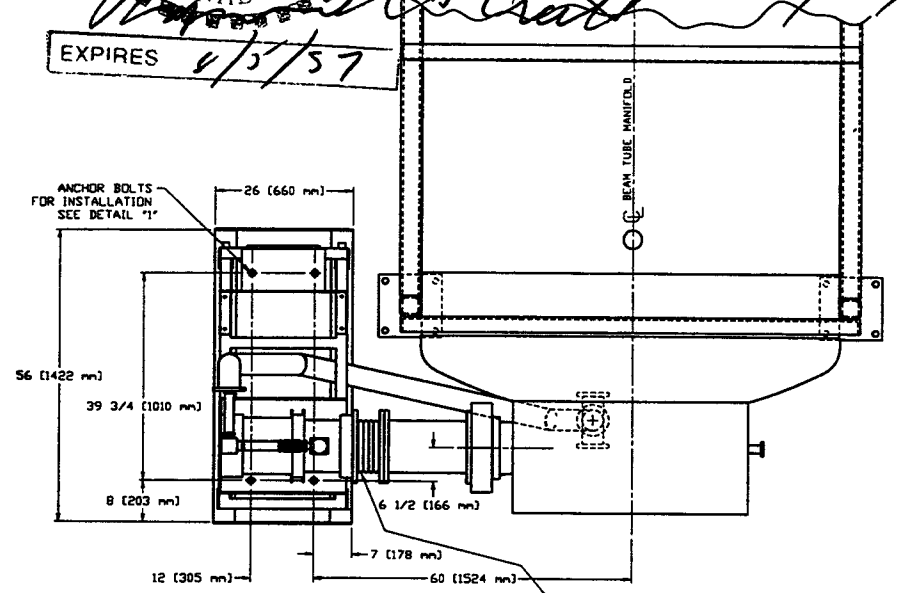
CAD FILE: V0494011
 SIZE: D
 DWG. NO.: V049-4-011
 SHEET: 1 OF 2

LIGO-D961098-03-V



EXPIRES 4/5/97

	ITEM	PART NO.	QTY.	DESCRIPTION
SEE NOTE 2	1	V0494012	1	MAIN TURBO PUMP CART ASSY.
SEE NOTE 2	2	V0492002	1	MAIN TURBOMOLECULAR CARTS
SEE NOTE 2	3	V0494197	1	TURBO PUMP VIBRATION BELLOWS
SEE NOTE 3	4	V049M785	170	WASHER, SST, 18-8, FLAT, 5/16"
SEE NOTE 3	5	V049M782	100	NUT, SILICON BRZ, HEX, 5/16"-18
SEE NOTE 3	6	V049M777	64	BOLT, SST 18-8, HEX HD, 5/16"-18x2 1/2" LG
SEE NOTE 3	7	202552 3	4	GASKET, COP, CONFLAT 12" O.D. FLG.
SEE NOTE 2	8	V0494011P1	1	EXTENSION SPODL, SST 304L, 12" O.D.
SEE NOTE 2	9	V049M661	1	FLG ADAPTER, 304 SST, 4 1/2" O.D. CF x QF40
SEE NOTE 2	10	V049M662	1	QUICK CLAMP, ALUM, WITH WING NUT, QF40
SEE NOTE 2	11	V049M663	1	CENTERING RING ASSY, 304 SST, W/ VITON O-RING QF40
SEE NOTE 8	12	V049M414 CWS/CWR	2	3/4" I.D. RUBBER HOSE, x 16'-0" LG, ONE END 3/8" MPT, ONE END 1/2" QUICK DISCONNECT x 1/2" NPT
BY SITE CONTRACTOR	13	AIR SUPPLY	AS REQ'D.	1/4" O.D. DEKERON TUBING WITH 1/4" SWAGELOK BRASS FITTINGS ONE END 1/4" NPT, ONE END 1/2" QUICK DISCONNECT



NOTE:
1) REFER TO SHT 1 FOR INSTALLATION NOTES.
2) REFER TO BOM V0494011G2.
3) REFER TO APPLICABLE BUILDING BOM.
REF. DWG. TREE/BOM STRUCTURE
DWG. V049-0-100.

SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL INC.
20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

MAIN TURBO PUMP CART ASSY.
WITH EXTENSION SPODLS
LIGO VACUUM EQUIPMENT

CAD FILE 4011S2	SIZE D	DWG. NO. V049-4-011	REV 3
SCALE 1/16"	SHEET 2	OF 2	

REV 08, 1997 - 11/17/95