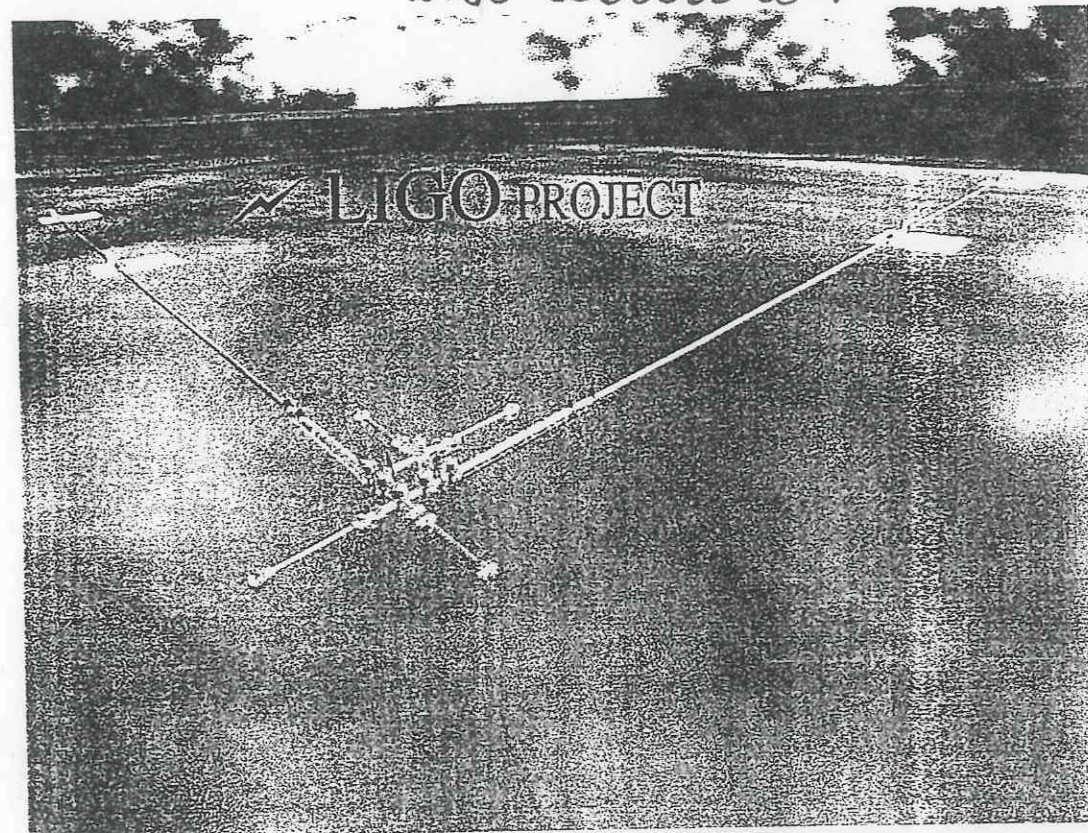



LIGO VACUUM EQUIPMENT FINAL DESIGN REPORT

VOLUME V DRAWINGS - ELECTRICAL LOUISIANA SITE

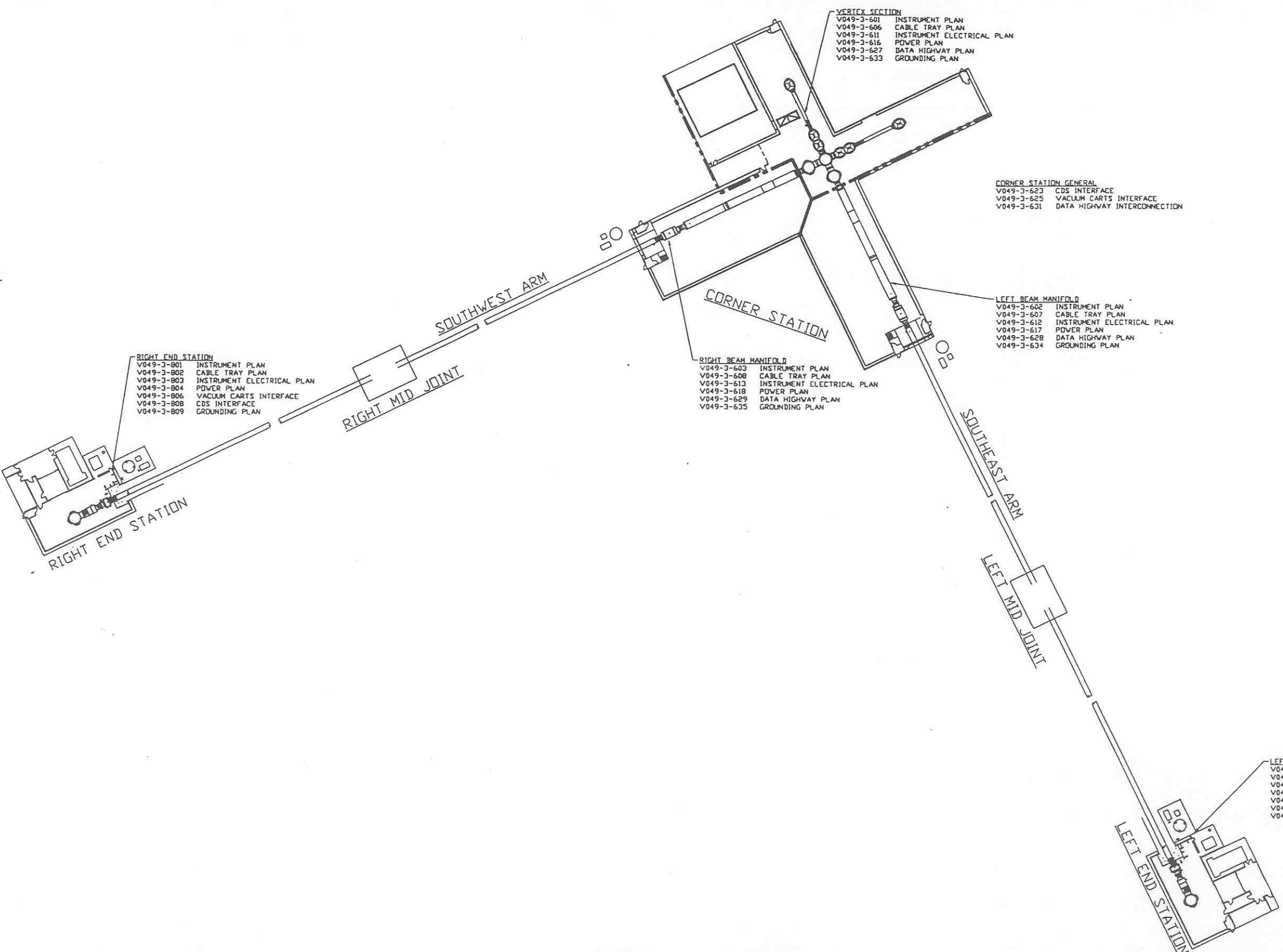
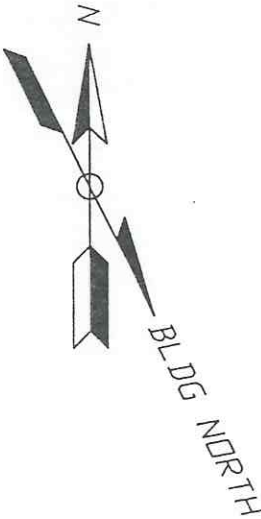
CONTRACT NO: PC17573
CDRL NO: 03

LIGO-C960969-00-V



CALIFORNIA INSTITUTE OF TECHNOLOGY  LIGO PROJECT
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PROCESS SYSTEMS INTERNATIONAL, INC.
20 WALKUP DRIVE
WESTBOROUGH, MASSACHUSETTS 01581



VERTEX SECTION
 V049-3-601 INSTRUMENT PLAN
 V049-3-606 CABLE TRAY PLAN
 V049-3-611 INSTRUMENT ELECTRICAL PLAN
 V049-3-616 POWER PLAN
 V049-3-627 DATA HIGHWAY PLAN
 V049-3-633 GROUNDING PLAN

CORNER STATION GENERAL
 V049-3-623 CDS INTERFACE
 V049-3-625 VACUUM CARTS INTERFACE
 V049-3-631 DATA HIGHWAY INTERCONNECTION

LEFT BEAM MANIFOLD
 V049-3-602 INSTRUMENT PLAN
 V049-3-607 CABLE TRAY PLAN
 V049-3-612 INSTRUMENT ELECTRICAL PLAN
 V049-3-617 POWER PLAN
 V049-3-628 DATA HIGHWAY PLAN
 V049-3-634 GROUNDING PLAN

RIGHT BEAM MANIFOLD
 V049-3-603 INSTRUMENT PLAN
 V049-3-608 CABLE TRAY PLAN
 V049-3-613 INSTRUMENT ELECTRICAL PLAN
 V049-3-618 POWER PLAN
 V049-3-629 DATA HIGHWAY PLAN
 V049-3-635 GROUNDING PLAN

RIGHT END STATION
 V049-3-801 INSTRUMENT PLAN
 V049-3-802 CABLE TRAY PLAN
 V049-3-803 INSTRUMENT ELECTRICAL PLAN
 V049-3-804 POWER PLAN
 V049-3-806 VACUUM CARTS INTERFACE
 V049-3-808 CDS INTERFACE
 V049-3-809 GROUNDING PLAN

LEFT END STATION
 V049-3-701 INSTRUMENT PLAN
 V049-3-702 CABLE TRAY PLAN
 V049-3-703 INSTRUMENT ELECTRICAL PLAN
 V049-3-704 POWER PLAN
 V049-3-706 VACUUM CARTS INTERFACE
 V049-3-708 CDS INTERFACE
 V049-3-709 GROUNDING PLAN

LIGO-D970154-00-V

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

OVERALL I/E SITE PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE

CAD FILE	SIZE	DWG. NO.	REV.
V0493003	D	V049-3-003	0

SCALE: NONE SHEET: 1 OF 1

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES:
 FRACTIONAL: ±
 ANGULAR/RADIUS: 1°-30' ROUNDS 1/2°
 TWO PLACE DECIMAL: ± 0.01
 THREE PLACE DECIMAL: ± 0.005
 FINISHED SURFACE: DIMS
 BREAK CORNERS: 1/4" OUT
 REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING

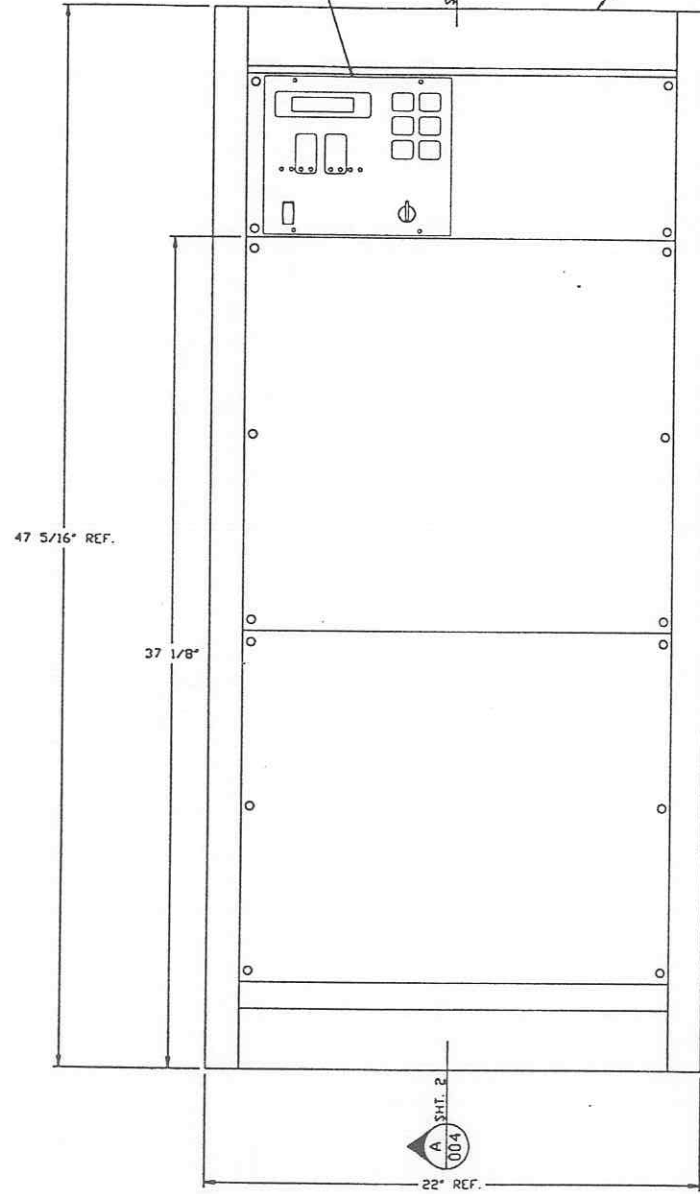
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DCDB
	0	ISSUE FOR LA DESIGN REVIEW			02.24.97	04.30

VARIAN MULTIVAC
FURNISHED BY PSI

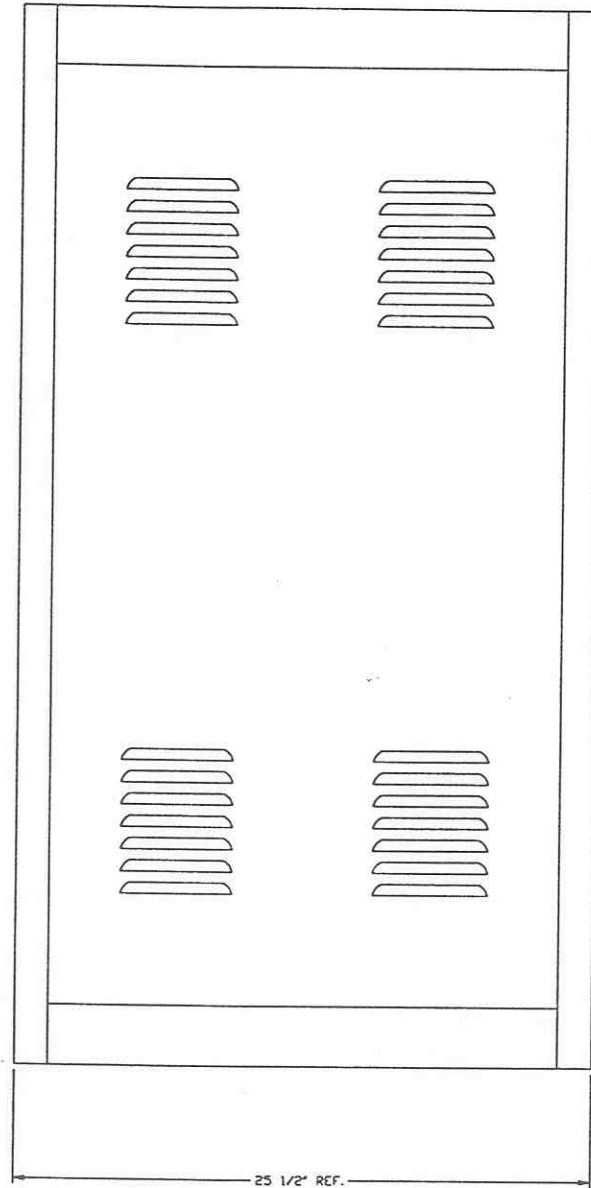
19" RACK BUD #ER-16512
W/MOUNTING RAILS BUD #PMR-9450
PLEXIGLASS DOOR W/KEY LOCK BUD #V-9063-L
(2)-BLANK PANELS 19" x 17 1/2"

TERMINAL BLOCKS PHOENIX #BK4
END COVER PHOENIX #D-UK 4/10
END BRACKET PHOENIX #E/UK
MOUNTING RAIL PHOENIX #RS 35/7.5 PERFORATED

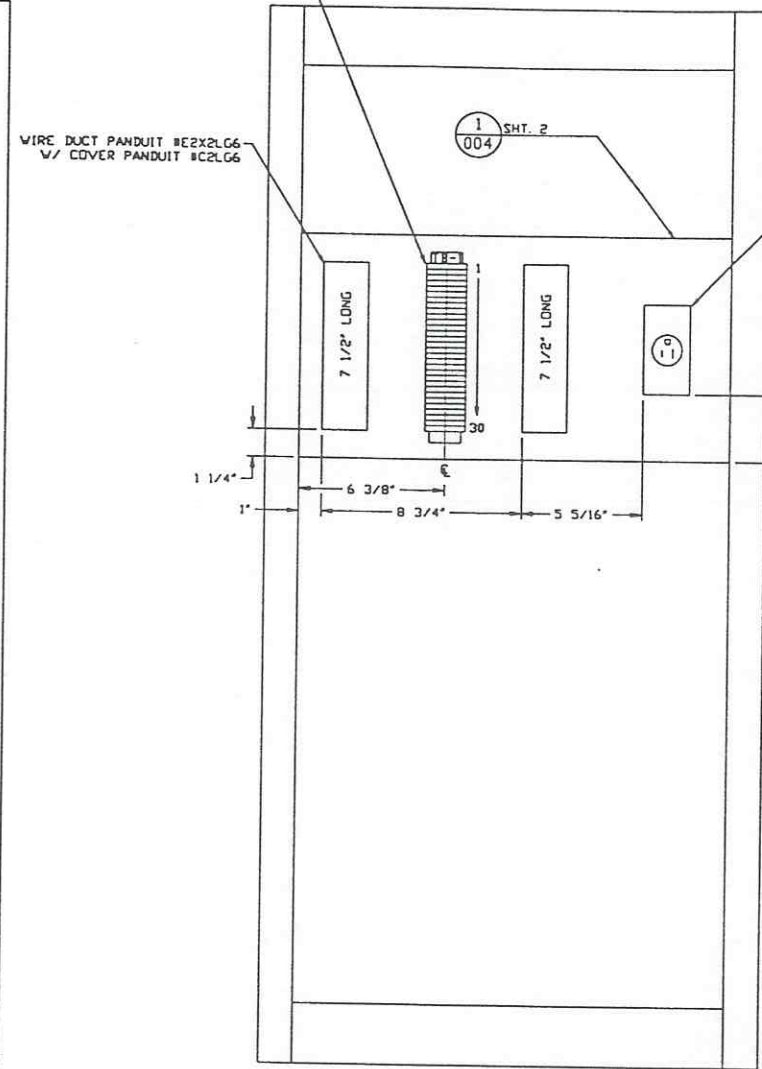
RECEPTACLE HUBBELL #5361
HANDY BOX APPLETON #4CS1/2
COVER APPLETON #2539



FRONT
SHOWN WITH DOOR REMOVED



SIDE



BACK
SHOWN WITH PANEL REMOVED

PRELIMINARY NOT FOR CONSTRUCTION
FADI AZIZ BARK
WA REG. #33057

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

PNL-200,300,400,500,700,800 ASSEMBLY
LIGO VACUUM EQUIPMENT
WASHINGTON SITE &
LOUISIANA SITE

CAB FILE V0493004\300451 SIZE D DWG. NO. V049-3-004 REV. 1

SCALE 1/4" = 1" SHEET 1 OF 2

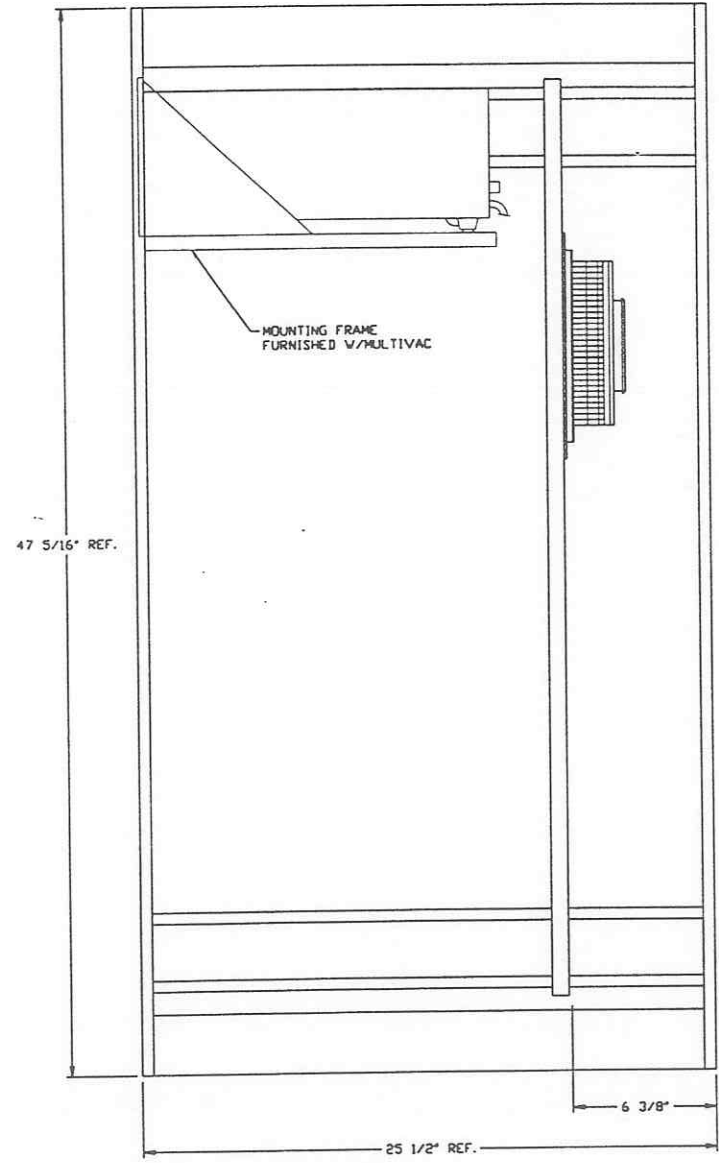
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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR ±0.01°
HOLE ±0.005"
HOLE ±0.005"
HOLE ±0.005"
FINISHED SURFACE ±0.005"
BREAK CORNERS ±0.005"
REMOVE ALL BURS

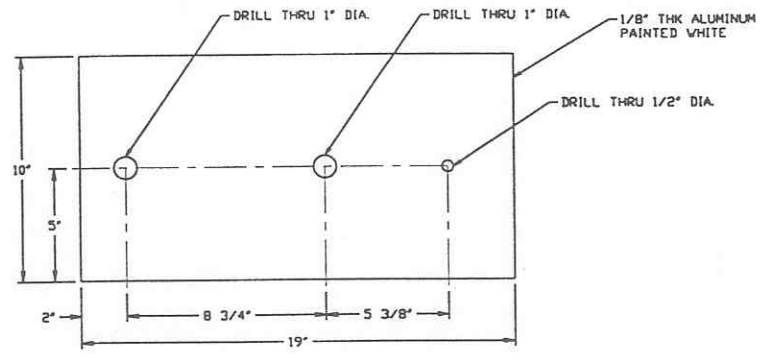
DO NOT SCALE THIS DRAWING
USED ON:
NEXT ASS'Y:

REV	DESCRIPTION	DATE	DEDR	CHKD	DRWN	DATE	DEDR
1	ISSUE FOR FDR UPDATE & BID	11.25.96	0355				
0	ISSUE FOR FDR	04.26.96	0129				

DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
8		7	
	REFERENCE DRAWINGS	6	
		5	
		4	
		3	
		2	
		1	



SECTION A REF.
SCALE: 1/4" = 1'-0" V049-3-104 SHT. 1



DETAIL 1 REF.
SCALE: 1/4" = 1'-0" V049-3-104 SHT. 1

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FADI AZIZ BARK
WA REG. #33057
SEE SHEET 1 FOR REVISIONS

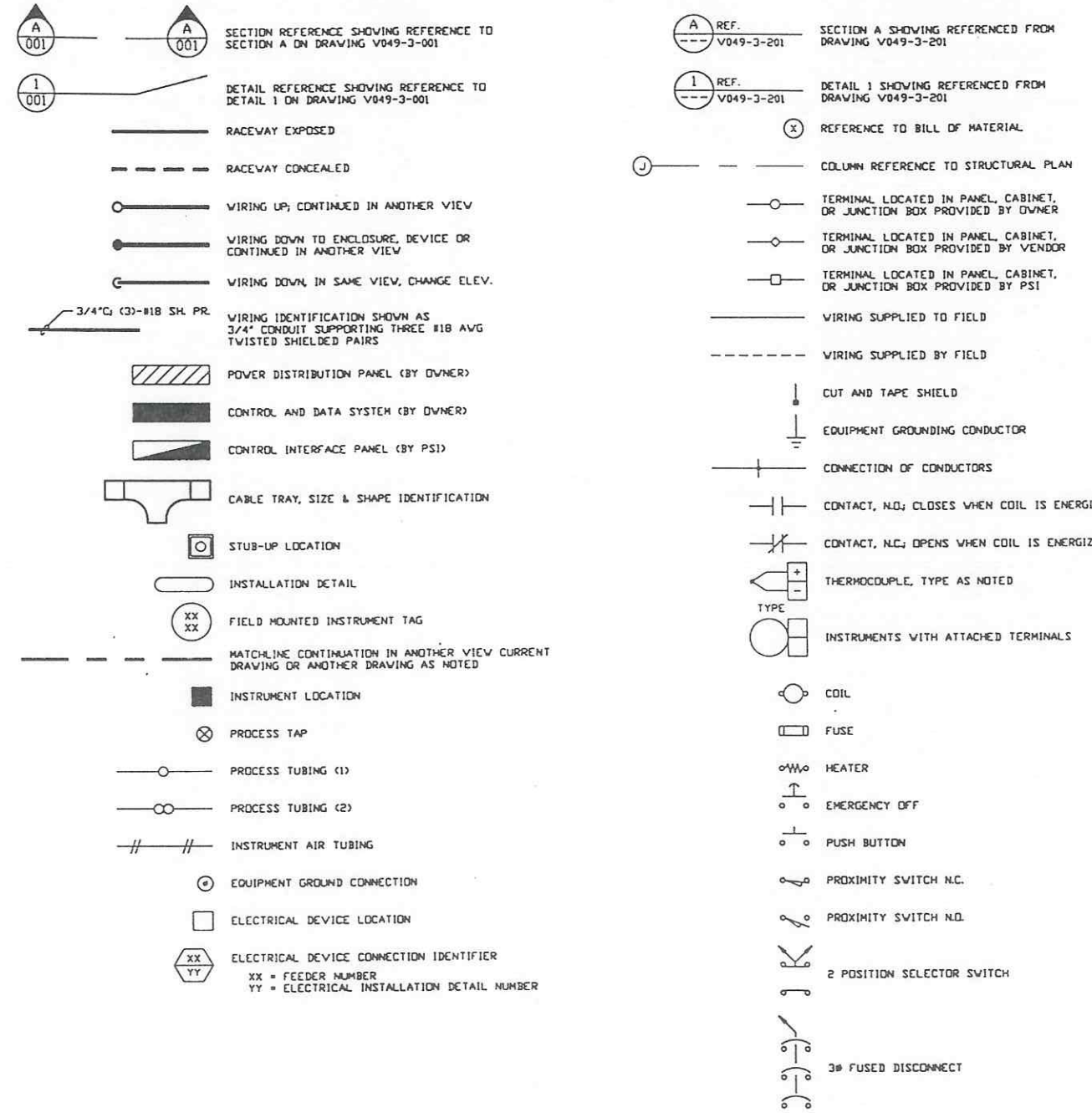
PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
PNL-200,300,400,500,700,800 ASSEMBLY LIGO VACUUM EQUIPMENT WASHINGTON SITE CORNER STATION			
CAD FILE V0493004\3004S2	SIZE D	DWG. NO. V049-3-004	REV. 1
SCALE AS NOTED	SHEET 2 OF 2		

1160-D970547-01-V

DRAWING LIST

REV.	DWG. NUMBER	TITLE
0	V049-3-003	OVERALL SITE PLAN; LOUISIANA
1	V049-3-004	PNL-200, 300, 400, 500, 700, 800 ASSEMBLY
	V049-3-005	INSTR/ELEC LEGEND & DRAWING LIST; LOUISIANA
	V049-3-006	ELECTRICAL INSTALLATION DETAILS
0	V049-3-007	INSTRUMENT ELECTRICAL INSTALLATION DETAILS
0	V049-3-008	INSTRUMENT INSTALLATION DETAILS
0	V049-3-009	GROUNDING DETAILS
-	V049-3-010	NOT USED
LOUISIANA CORNER STATION		
0	V049-3-601	INSTRUMENT PLAN VERTEX SECTION
0	V049-3-602	INSTRUMENT PLAN LEFT BEAM MANIFOLD
0	V049-3-603	INSTRUMENT PLAN RIGHT BEAM MANIFOLD
-	V049-3-604	NOT USED
-	V049-3-605	NOT USED
0	V049-3-606	CABLE TRAY PLAN VERTEX SECTION
0	V049-3-607	CABLE TRAY PLAN LEFT BEAM MANIFOLD
0	V049-3-608	CABLE TRAY PLAN RIGHT BEAM MANIFOLD
-	V049-3-609	NOT USED
0	V049-3-610	CABLE TRAY DETAILS CORNER STATION
0	V049-3-611	INSTRUMENT ELECTRICAL PLAN VERTEX SECTION
0	V049-3-612	INSTRUMENT ELECTRICAL PLAN LEFT BEAM MANIFOLD
0	V049-3-613	INSTRUMENT ELECTRICAL PLAN RIGHT BEAM MANIFOLD
-	V049-3-614	NOT USED
-	V049-3-615	NOT USED
0	V049-3-616	POWER PLAN VERTEX SECTION
0	V049-3-617	POWER PLAN LEFT BEAM MANIFOLD
0	V049-3-618	POWER PLAN RIGHT BEAM MANIFOLD
-	V049-3-619	NOT USED
0	V049-3-620	DISTRIBUTION SYSTEM FEEDER SCHEDULE
0	V049-3-621	PNL-600 ASSEMBLY
0	V049-3-622	PNL-600 WIRING DIAGRAM
0	V049-3-623	CONTROL & DATA SYSTEM INTERFACE DIAGRAM
1	V049-3-624	CORNER STATION STUB-UP PLAN
0	V049-3-625	VACUUM CARTS INTERFACE PLAN
-	V049-3-626	NOT USED
0	V049-3-627	DATA HIGHWAY PLAN VERTEX SECTION
0	V049-3-628	DATA HIGHWAY PLAN LEFT BEAM MANIFOLD
0	V049-3-629	DATA HIGHWAY PLAN RIGHT BEAM MANIFOLD
-	V049-3-630	NOT USED
0	V049-3-631	DATA HIGHWAY INTERCONNECTION DIAGRAM
-	V049-3-632	NOT USED
0	V049-3-633	GROUNDING PLAN VERTEX SECTION
0	V049-3-634	GROUNDING PLAN LEFT BEAM MANIFOLD
0	V049-3-635	GROUNDING PLAN RIGHT BEAM MANIFOLD
LOUISIANA LEFT END STATION		
0	V049-3-701	INSTRUMENT PLAN LEFT END STATION
0	V049-3-702	CABLE TRAY PLAN LEFT END STATION
0	V049-3-703	INSTRUMENT ELECTRICAL PLAN LEFT END STATION
0	V049-3-704	POWER PLAN LEFT END STATION
1	V049-3-705	STUB-UP PLAN LEFT END STATION
0	V049-3-706	VACUUM CARTS INTERFACE PLAN LEFT END STATION
0	V049-3-707	PNL-700 WIRING DIAGRAM LEFT END STATION
0	V049-3-708	CONTROL & DATA SYSTEM INTERFACE DIAG. LEFT END STAT.
0	V049-3-709	GROUNDING PLAN LEFT END STATION
LOUISIANA RIGHT END STATION		
0	V049-3-801	INSTRUMENT PLAN RIGHT END STATION
0	V049-3-802	CABLE TRAY PLAN RIGHT END STATION
0	V049-3-803	INSTRUMENT ELECTRICAL PLAN RIGHT END STATION
0	V049-3-804	POWER PLAN RIGHT END STATION
1	V049-3-805	STUB-UP PLAN RIGHT END STATION
0	V049-3-806	VACUUM CARTS INTERFACE PLAN RIGHT END STATION
0	V049-3-807	PNL-800 WIRING DIAGRAM RIGHT END STATION
0	V049-3-808	CONTROL & DATA SYSTEM INTERFACE DIAG. RIGHT END STAT.
0	V049-3-809	GROUNDING PLAN RIGHT END STATION

LEGEND



GENERAL NOTES

- 1.) CONSTRUCTOR SHALL PROVIDE CONDUIT BODIES, FITTINGS AND SUPPORTS NOT SHOWN ON THE DRAWINGS BUT REQUIRED BY JOB CONFIGURATION OR N.E.C.
- 2.) ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE NOTED.
- 3.) DO NOT SPLICE ANY CONDUCTORS.
- 4.) CDS-VE INTERFACE RACKS ARE SHOWN FOR REFERENCE ONLY AND ARE PROVIDED AND INSTALLED BY OTHERS.

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L160-D970155-CO-V

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

INSTR/ELEC LEGEND & DRAWING LIST
 L160 VACUUM EQUIPMENT
 LOUISIANA SITE

CAB FILE: V0493005\3005S1 | SIZE: D | DWG. NO: V049-3-005 | REV: 0

DATE: 02-24-97 | DEOB: 0430

SCALE: NONE | SHEET: 1 OF 2

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UNLESS OTHERWISE SPECIFIED	DO NOT SCALE THIS DRAWING	USED ON	NEXT ASS'Y	REV	DESCRIPTION	ISSUE DESCRIPTION	CHKD	DRWN	DATE	DEOB
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ± ANGULAR: 10°-30° BEND ±2° TWO PLACE DECIMAL: ±.01 THREE PLACE DECIMAL: ±.005 FINISHED SURFACE DIMS BREAK CORNERS IN REMOVE ALL BURRS	0	ISSUE FOR LA DESIGN REVIEW							02-24-97	0430


PARSONS REFERENCE DRAWING LIST

REV.	DWG. NUMBER	TITLE
C	LA-E-001	ELECTRICAL STANDARD SYMBOLS, ABBREVIATIONS & ACRONYMS
C	LA-E-002	ELECTRICAL STANDARD PLAN SYMBOLS
C	LA-E-003	ELECTRICAL STANDARD SCHEMATIC & WIRING DIAGRAM SYMBOLS
C	LA-E-004	ELECTRICAL STANDARD ONE & THREE LINE DIAGRAM SYMBOLS
B	LA-E-008	ELECTRICAL TYPICAL END OR MID STATION SINGLE LINE DIAGRAM
B	LA-E-100	ELECTRICAL CORNER STATION LVEA AREAS 101, 103, 104 RECEPTACLE & POWER PLAN
C	LA-E-101	ELECTRICAL CORNER STATION LVEA AREAS 102, 105 RECEPTACLE & POWER PLAN
C	LA-E-103	ELECTRICAL CORNER STATION GROUNDING AND LIGHTNING PROTECTION PLAN
B	LA-E-114	ELECTRICAL CORNER STATION LVEA AREAS 101, 102, 103, 104 DETAILS
B	LA-E-117	ELECTRICAL CORNER STATION MECH. RM. LIGHTING AND POWER PANEL SCHEDULES
B	LA-E-118	ELECTRICAL CORNER STATION LVEA VEAC PANEL SCHEDULES
B	LA-E-119	ELECTRICAL CORNER STATION LVEA VEAC PANEL SCHEDULES
B	LA-E-120	ELECTRICAL CORNER STATION LVEA VEAC PANEL SCHEDULES
B	LA-E-121	ELECTRICAL CORNER STATION LVEA VEAC PANEL SCHEDULES
C	LA-E-202	ELECTRICAL MID & END A STATIONS LIGHTNING & GROUNDING PLAN
C	LA-E-203	ELECTRICAL MID & END A STATIONS UNDERGROUND PLAN
B	LA-E-204	ELECTRICAL MID & END A STATIONS ABOVEGROUND POWER PLAN
B	LA-E-205	ELECTRICAL MID & END A STATIONS PANEL SCHEDULES
B	LA-E-206	ELECTRICAL MID & END A STATIONS PANEL SCHEDULES
B	LA-E-212	ELECTRICAL MID & END B STATIONS LIGHTNING & GROUNDING PLAN
B	LA-E-213	ELECTRICAL MID & END B STATIONS UNDERGROUND PLAN
B	LA-E-214	ELECTRICAL MID & END B STATIONS ABOVEGROUND POWER PLAN
B	LA-E-400	ELECTRICAL CORNER STATION UNDERGROUND SECTIONS

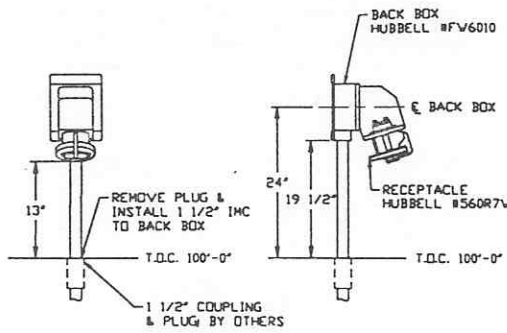
PRELIMINARY NOT FOR CONSTRUCTION

LIQO - D970155-00-V

SEE SHEET 1 FOR REVISIONS


PROCESS SYSTEMS INTERNATIONAL INC.
20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA
INSTR/ELEC LEGEND & DRAWING LIST
LIGO VACUUM EQUIPMENT
LOUISIANA SITE

CAD FILE V0493005\3005S2	SIZE D	DWG. NO. V049-3-005	REV. 0
SCALE NONE	SHEET 2 OF 2		

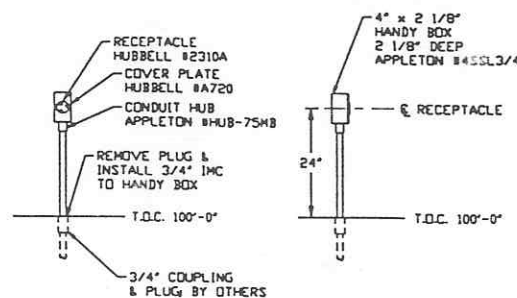


BACKOUT CART/CLEAN ROOM RECEPTACLE

DETAIL 1 REF.

SCALE: 1" = 1'-0"

V049-3-116	V049-3-204	V049-3-616
V049-3-117	V049-3-304	V049-3-617
V049-3-118	V049-3-404	V049-3-618
V049-3-119	V049-3-504	V049-3-704
		V049-3-804

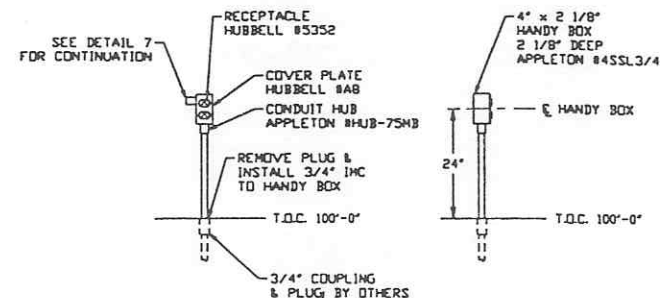


BACKOUT CART CONTROL RECEPTACLE

DETAIL 2 REF.

SCALE: 1" = 1'-0"

V049-3-116	V049-3-204	V049-3-616
V049-3-117	V049-3-304	V049-3-617
V049-3-118	V049-3-404	V049-3-618
V049-3-119	V049-3-504	V049-3-704
		V049-3-804

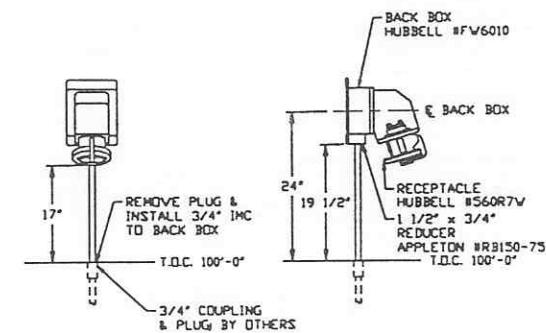


GENERAL/ION PUMP/AUX TURBO RECEPTACLE

DETAIL 3 REF.

SCALE: 1" = 1'-0"

V049-3-116	V049-3-204	V049-3-616
V049-3-117	V049-3-304	V049-3-617
V049-3-118	V049-3-404	V049-3-618
V049-3-119	V049-3-504	V049-3-704
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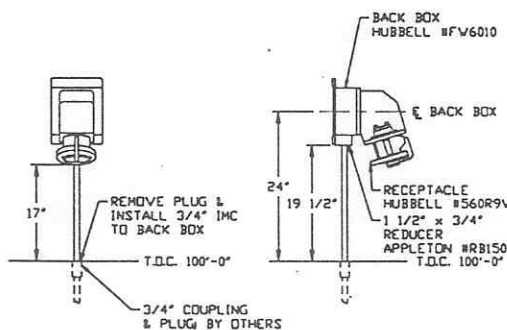


ROUGHING PUMP RECEPTACLE

DETAIL 4 REF.

SCALE: 1" = 1'-0"

V049-3-116	V049-3-118	V049-3-616
V049-3-117	V049-3-119	V049-3-617
		V049-3-618
		V049-3-804

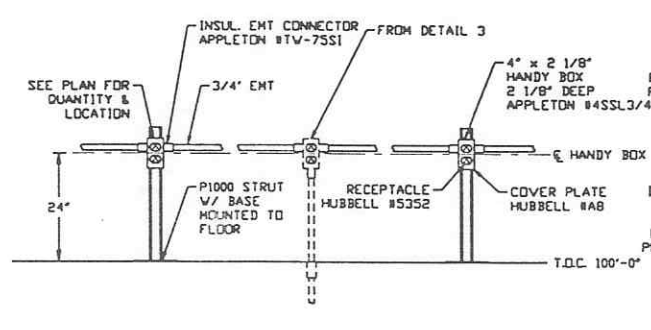


TURBO PUMP RECEPTACLE

DETAIL 5 REF.

SCALE: 1" = 1'-0"

V049-3-116	V049-3-204	V049-3-616
V049-3-117	V049-3-304	V049-3-617
V049-3-118	V049-3-404	V049-3-618
V049-3-119	V049-3-504	V049-3-704
		V049-3-804

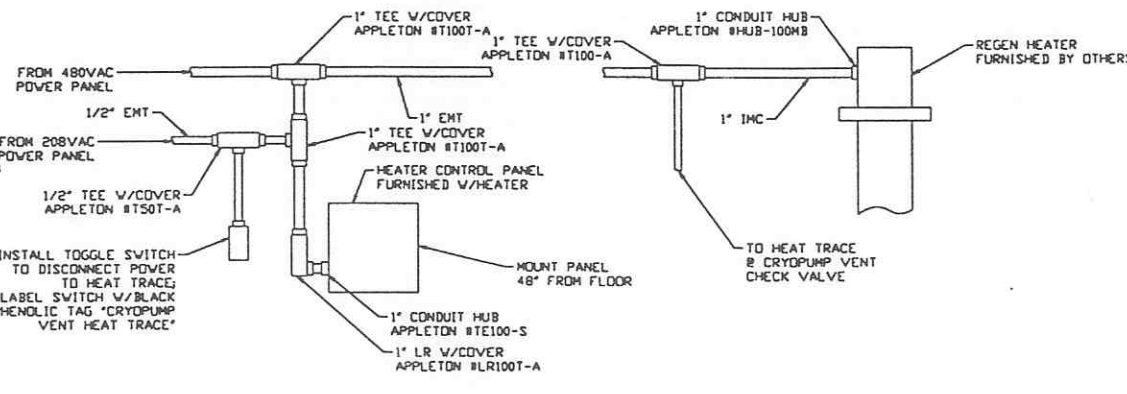


GENERAL/ION PUMP/AUX TURBO RECEPTACLE CONTINUATION

DETAIL 7 REF.

SCALE: 1" = 1'-0"

V049-3-116	V049-3-204	V049-3-616
V049-3-117	V049-3-304	V049-3-617
V049-3-118	V049-3-404	V049-3-618
V049-3-119	V049-3-504	V049-3-704
		V049-3-804

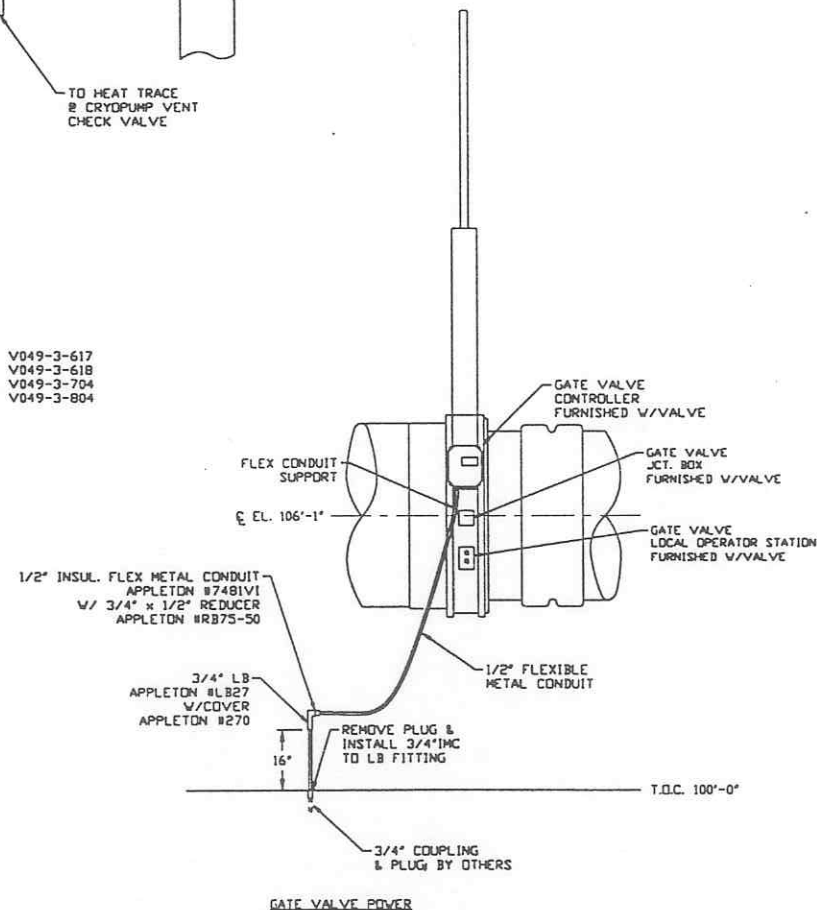


REGEN HEATER & CHECK VALVE HEAT TRACE

DETAIL 8 REF.

SCALE: NONE

V049-3-117	V049-3-304	V049-3-617
V049-3-118	V049-3-404	V049-3-618
V049-3-204	V049-3-504	V049-3-704
		V049-3-804



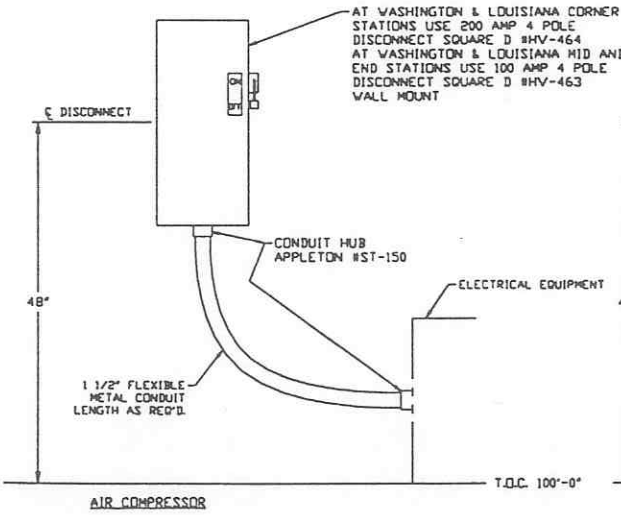
GATE VALVE POWER

DETAIL 6 REF.

SCALE: 1/2" = 1'-0"

V049-3-116	V049-3-304	V049-3-616
V049-3-119	V049-3-404	V049-3-704
V049-3-204	V049-3-504	V049-3-804

PRELIMINARY NOT FOR CONSTRUCTION
FADI AZIZ BARK
WA REG. #33057

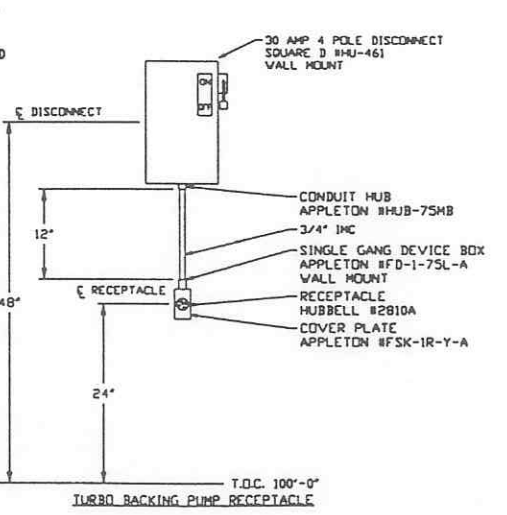


AIR COMPRESSOR

DETAIL 9 REF.

SCALE: 1" = 1'-0"

V049-3-116	V049-3-204	V049-3-616
V049-3-117	V049-3-304	V049-3-617
V049-3-118	V049-3-404	V049-3-618
V049-3-119	V049-3-504	V049-3-704
		V049-3-804

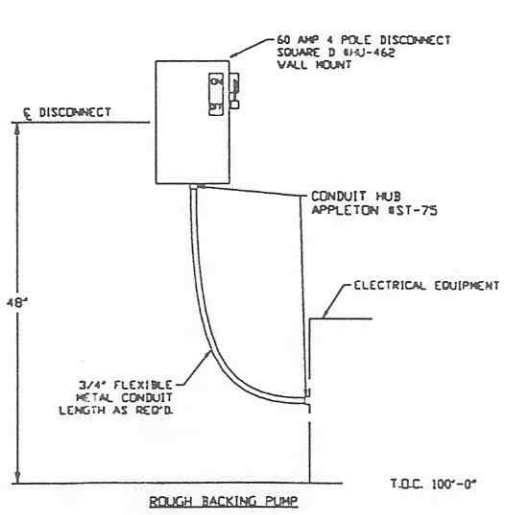


TURBO BACKING PUMP RECEPTACLE

DETAIL 10 REF.

SCALE: 1" = 1'-0"

V049-3-116	V049-3-204	V049-3-616
V049-3-117	V049-3-304	V049-3-617
V049-3-118	V049-3-404	V049-3-618
V049-3-119	V049-3-504	V049-3-704
		V049-3-804



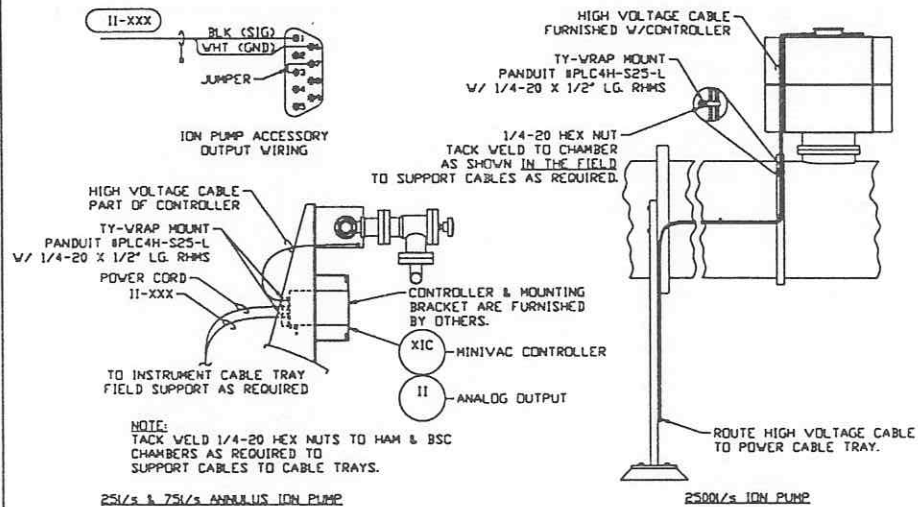
ROUGH BACKING PUMP

DETAIL 11 REF.

SCALE: 1" = 1'-0"

V049-3-116		
V049-3-117		
V049-3-118		
V049-3-119		

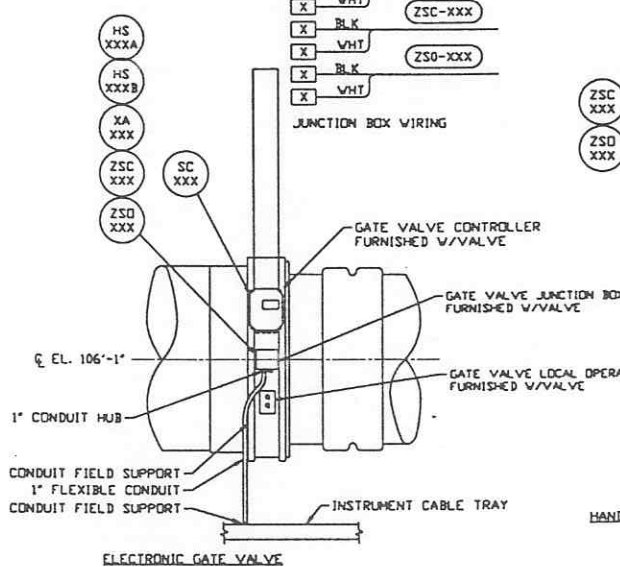
<p>PROPRIETARY AND CONFIDENTIAL</p> <p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO PROCESS SYSTEMS INTERNATIONAL, INC. OR ITS SUBSIDIARIES AND SHALL BE KEPT SECRET FOR THE PURPOSE OF THE CONTRACT UNDER WHICH IT WAS SUPPLIED. IT SHALL NOT BE REPRODUCED OR OTHERWISE USED IN ANY MANNER OR IN PART TO DISCLOSE OR IN ANY MANNER TO OTHERS WITHOUT THE WRITTEN CONSENT OF PROCESS SYSTEMS INTERNATIONAL, INC. AND SHALL BE RETURNED UPON REQUEST.</p>		<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES:</p> <p>FRACTIONAL ±</p> <p>ANGULAR ±</p> <p>FINISHED SURFACE ±</p> <p>BREAK CORNERS IN INDICATE ALL BURS</p>		<p>1 ISSUE FOR FDR UPDATE & BID</p> <p>2 ISSUE FOR FDR</p>		<p>11.25.96 0355</p> <p>04.26.96 0129</p>		<p>PROCESS SYSTEMS INTERNATIONAL INC.</p> <p>20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA</p> <p>ELECTRICAL INSTALLATION DETAILS</p> <p>LIGO VACUUM EQUIPMENT</p> <p>WASHINGTON SITE & LOUISIANA SITE</p>	
<p>V049-3-001 GENERAL NOTES, LEGEND & DRAWING LIST</p>		<p>DO NOT SCALE THIS DRAWING</p>		<p>1 ISSUE FOR FDR UPDATE & BID</p>		<p>11.25.96 0355</p>		<p>CAD FILE V0493006</p>	
DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION	REV	DESCRIPTION	CHKD	DRWN	DATE	DESN
REFERENCE DRAWINGS		DESCRIPTION		ISSUE DESCRIPTION		SCALE		AS NOTED	
								1 OF 1	



DETAIL 1 REF.

SCALE: 1" = 1'-0"

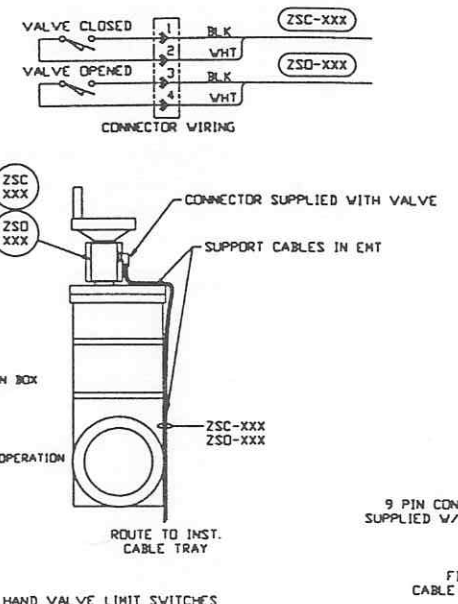
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V049-3-112	V049-3-303	V049-3-612
V049-3-113	V049-3-403	V049-3-613
V049-3-114	V049-3-503	V049-3-803



DETAIL 2 REF.

SCALE: 1" = 1'-0"

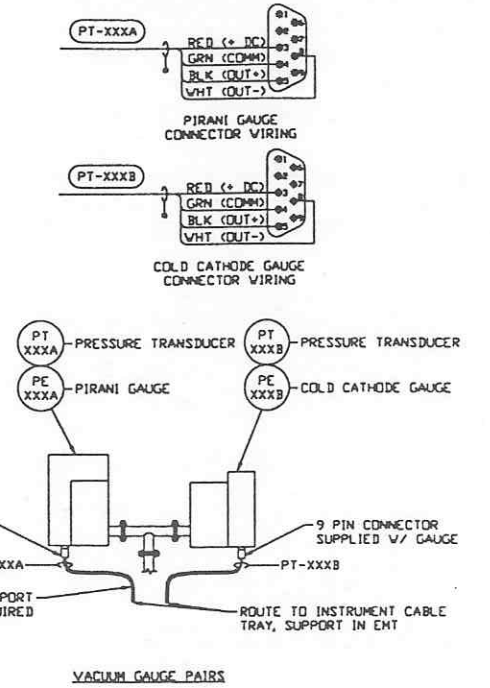
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V049-3-114	V049-3-403	V049-3-703
V049-3-203	V049-3-503	V049-3-803



DETAIL 3 REF.

SCALE: 1" = 1'-0"

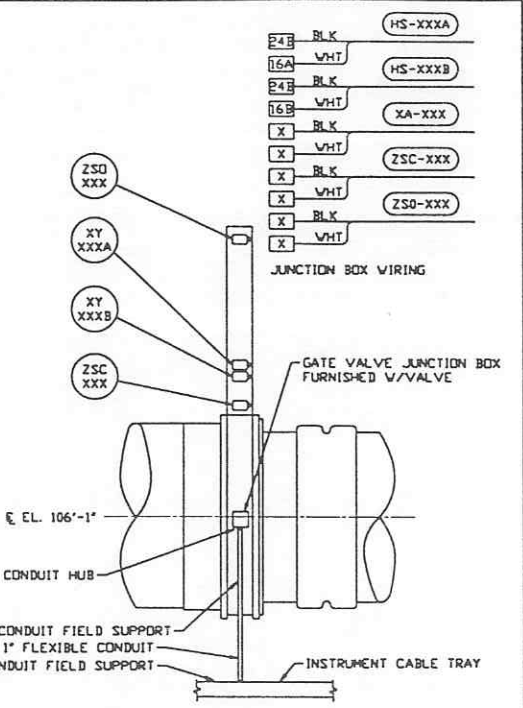
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V049-3-113	V049-3-403	V049-3-613
V049-3-114	V049-3-503	V049-3-803



DETAIL 4 REF.

SCALE: 1" = 1'-0"

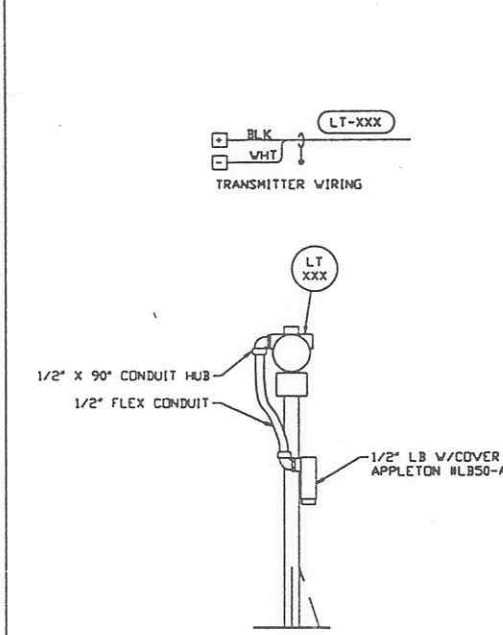
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V049-3-112	V049-3-303	V049-3-612
V049-3-113	V049-3-403	V049-3-613
V049-3-114	V049-3-503	V049-3-703
		V049-3-803



DETAIL 5 REF.

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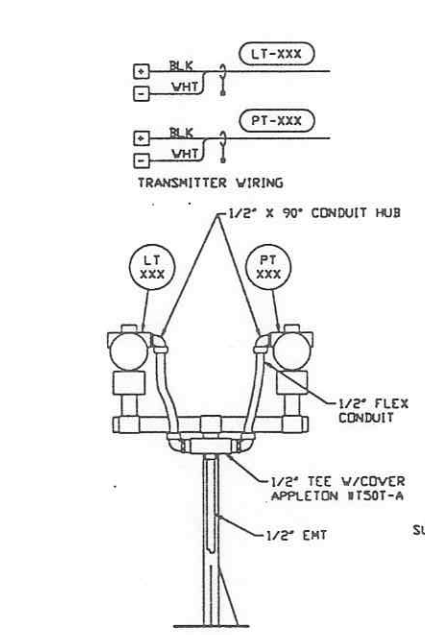
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V049-3-113	V049-3-613



DETAIL 6 REF.

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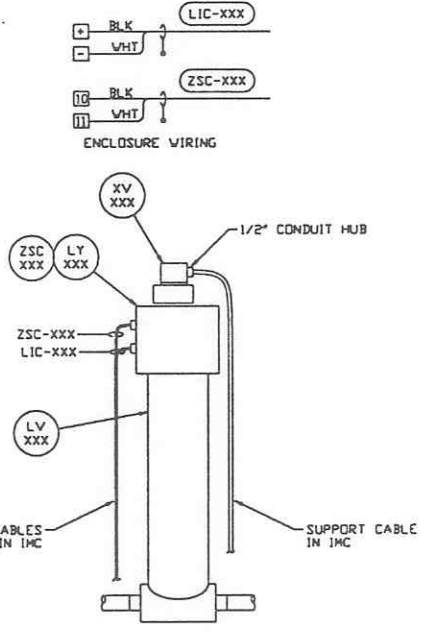
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V049-3-113	V049-3-403	V049-3-613
V049-3-203	V049-3-503	V049-3-803



DETAIL 7 REF.

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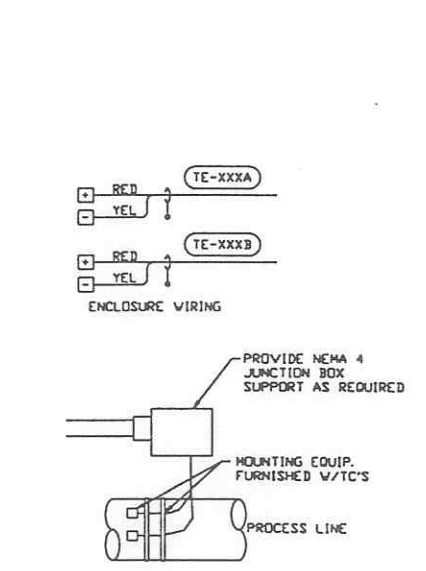
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V049-3-203	V049-3-503	V049-3-803



DETAIL 8 REF.

SCALE: 1" = 6"

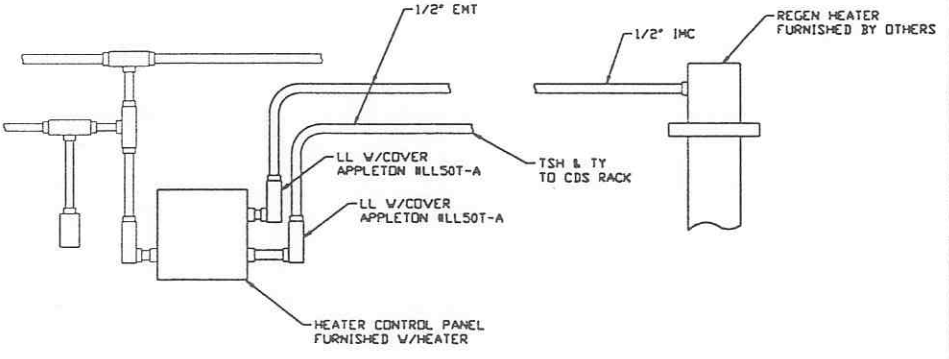
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V049-3-113	V049-3-403	V049-3-613
V049-3-203	V049-3-503	V049-3-803



DETAIL 9 REF.

SCALE: 1" = 1'-0"

V049-3-112	V049-3-303	V049-3-612
V049-3-113	V049-3-403	V049-3-613
V049-3-203	V049-3-503	V049-3-703
		V049-3-803



DETAIL 10 REF.

SCALE: 1" = 1'-0"

V049-3-112	V049-3-303	V049-3-612
V049-3-113	V049-3-403	V049-3-613
V049-3-203	V049-3-503	V049-3-703
		V049-3-803

PRELIMINARY NOT FOR CONSTRUCTION
FADI AZIZ BARK
WA REG. #33057

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES: FRACTIONAL: ANGULAR APPROX 18°-30° BOND 12° THREE PLACE DECIMAL: .005 FINISHED SURFACE: RING BREAK CORNERS IN OUT REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING

USED ON: NEXT ASS'Y:

ISSUE FOR FDR UPDATE & BID

REVISIONS: RECD JWB

DATE: 11.25.96

DESB: 0355

SCALE: AS NOTED

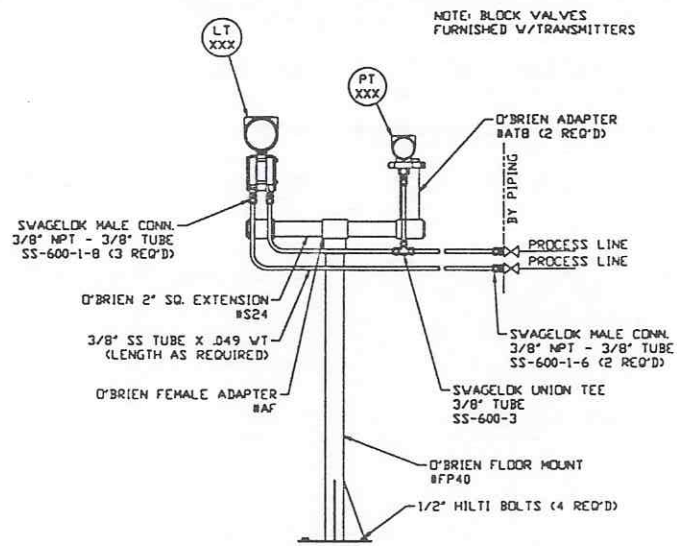
SHEET: 1 OF 1

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

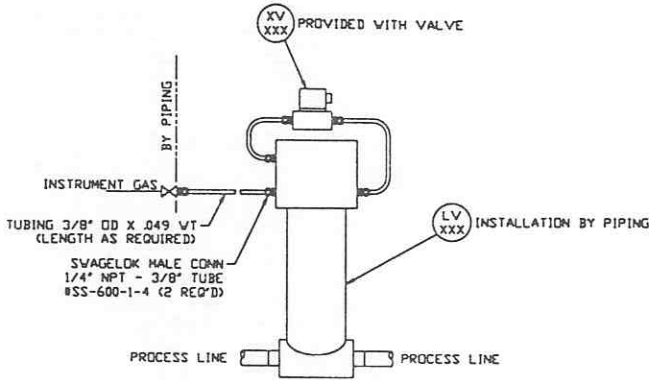
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LIGO VACUUM EQUIPMENT
WASHINGTON SITE & LOUISIANA SITE

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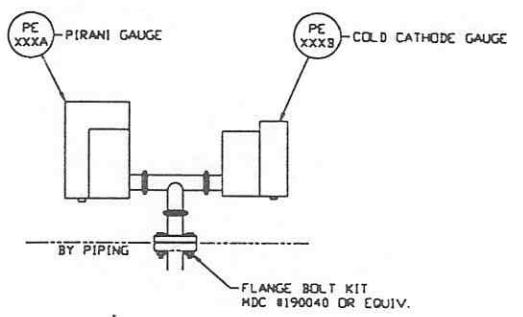
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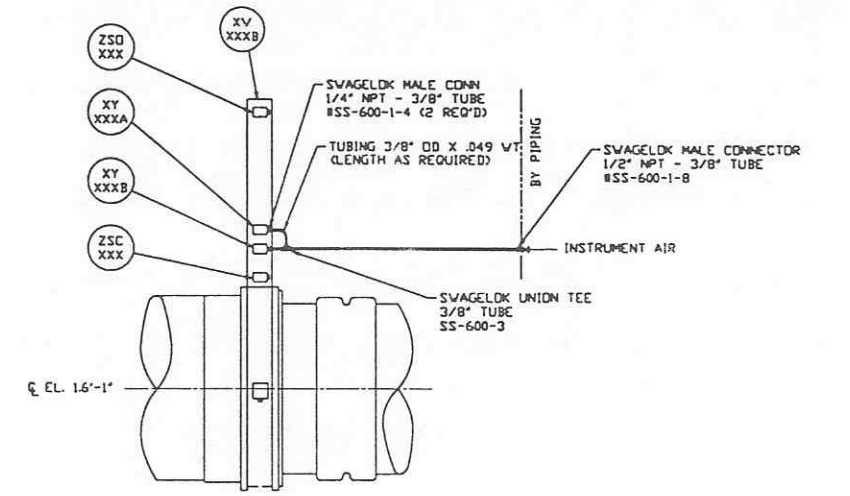
LEVEL & PRESSURE TRANSMITTER
DETAIL 1 REF.
 SCALE: 1" = 1'-0"
 REF. V049-3-102 V049-3-301 V049-3-602
 V049-3-103 V049-3-401 V049-3-603
 V049-3-201 V049-3-501 V049-3-701
 V049-3-801



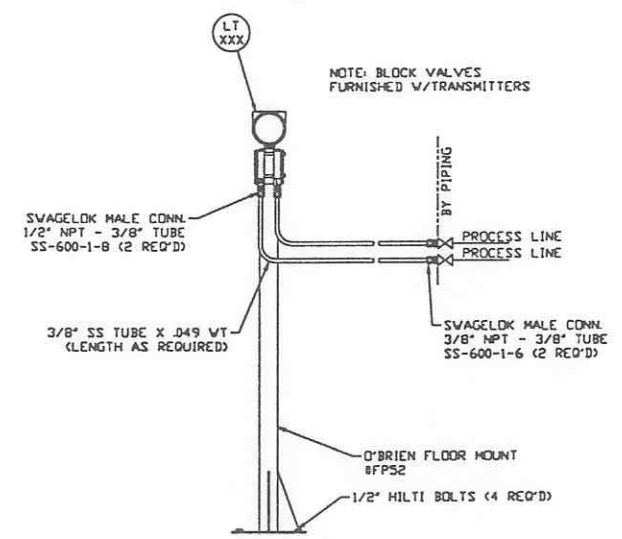
LEVEL CONTROL VALVE
DETAIL 2 REF.
 SCALE: 1" = 1'-0"
 REF. V049-3-102 V049-3-301 V049-3-602
 V049-3-103 V049-3-401 V049-3-603
 V049-3-201 V049-3-501 V049-3-701
 V049-3-801



VACUUM GAUGE PAIRS
DETAIL 3 REF.
 SCALE: 1" = 6"-0"
 REF. V049-3-101 V049-3-201 V049-3-601
 V049-3-102 V049-3-301 V049-3-602
 V049-3-103 V049-3-401 V049-3-603
 V049-3-104 V049-3-501 V049-3-701
 V049-3-801



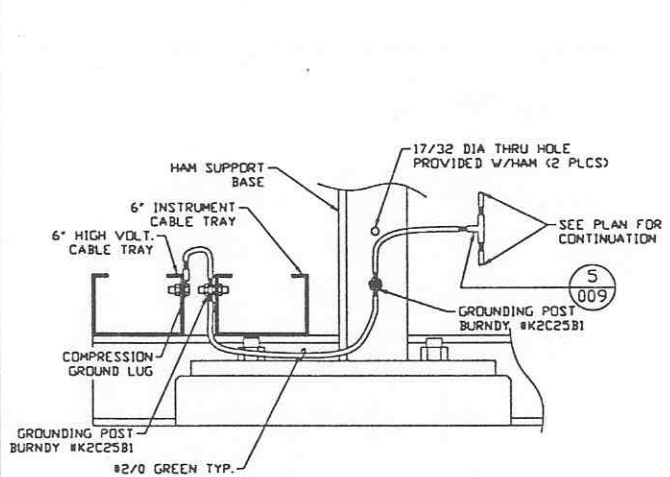
PNEUMATIC GATE VALVES
DETAIL 4 REF.
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 V049-3-113 V049-3-613



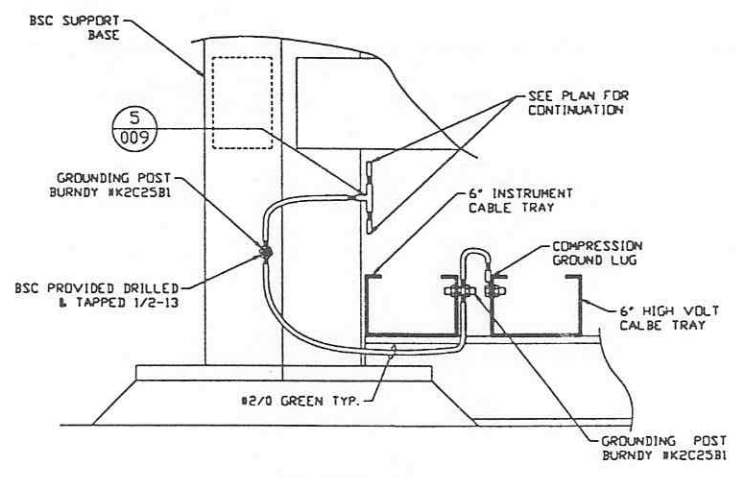
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DETAIL 5 REF.
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 V049-3-201 V049-3-501 V049-3-701
 V049-3-801

PROPRIETARY AND CONFIDENTIAL				UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
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DO NOT SCALE THIS DRAWING				0				ISSUE FOR FDR UPDATE & BID			
USED ON:				REV				DESCRIPTION			
NEXT ASSY:				ISSUE DESCRIPTION				SCALE AS NOTED SHEET 1 OF 1			
DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION	CHKD	BRVN	DATE	DESB	CAB FILE	SIZE	DWG. NO.	REV.
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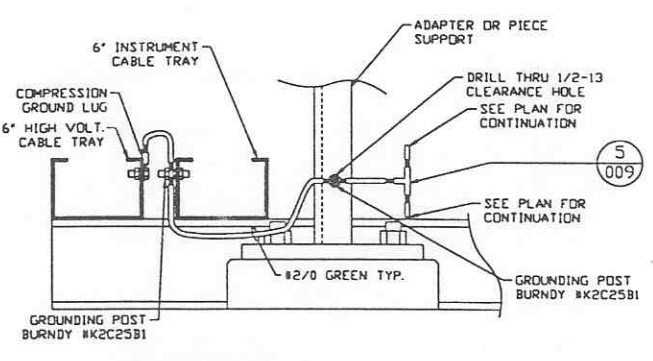
LIGO-DSG1483-00-V



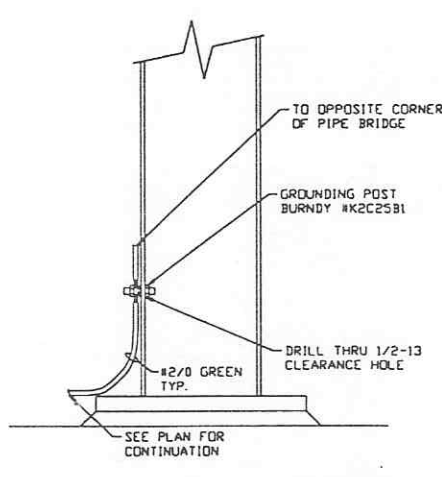
HORIZONTAL ACCESS MODULE
 PROVIDE MISC. HARDWARE AS REQ'D
DETAIL 1 REF.
 SCALE: NONE --- V049-3-133 V049-3-633
 V049-3-136



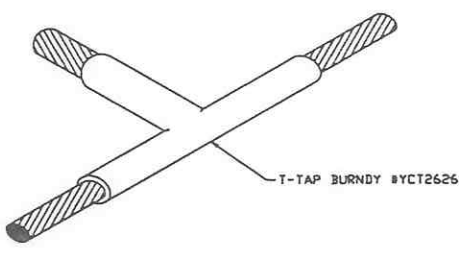
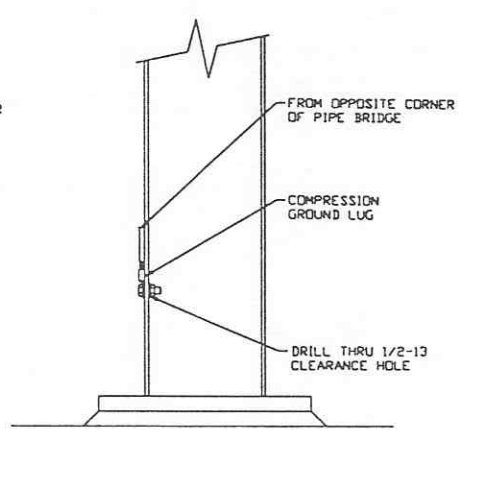
BEAM SPLITTER CHAMBER
 PROVIDE MISC. HARDWARE AS REQ'D
DETAIL 2 REF.
 SCALE: NONE --- V049-3-133 V049-3-209 V049-3-633
 V049-3-134 V049-3-309 V049-3-709
 V049-3-135 V049-3-409 V049-3-809
 V049-3-136 V049-3-509



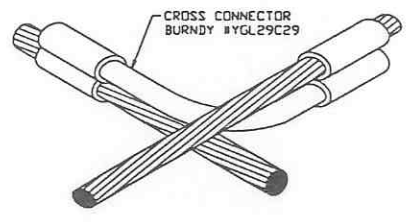
ADAPTER OR SPOOL PIECE
 PROVIDE MISC. HARDWARE AS REQ'D
DETAIL 3 REF.
 SCALE: NONE --- V049-3-133 V049-3-209 V049-3-633 V049-3-809
 V049-3-134 V049-3-309 V049-3-634
 V049-3-135 V049-3-409 V049-3-635
 V049-3-136 V049-3-509 V049-3-709



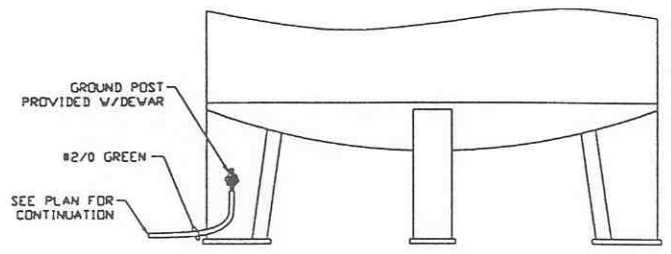
PIPE BRIDGE
 PROVIDE MISC. HARDWARE AS REQ'D
DETAIL 4 REF.
 SCALE: NONE --- V049-3-133
 V049-3-633



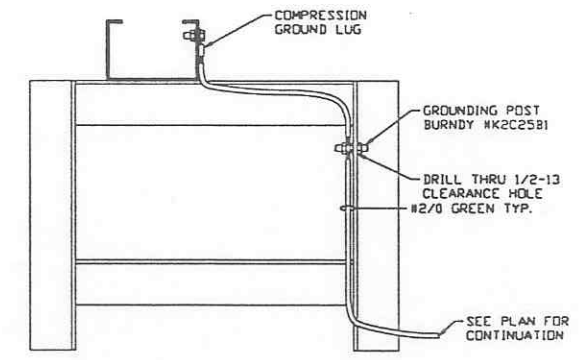
TEE CONNECTION
DETAIL 5 REF.
 SCALE: NONE --- V049-3-009 V049-3-136 V049-3-509 V049-3-709
 V049-3-133 V049-3-209 V049-3-633 V049-3-809
 V049-3-134 V049-3-309 V049-3-634
 V049-3-135 V049-3-409 V049-3-635



CROSS CONNECTION
DETAIL 6 REF.
 SCALE: NONE --- V049-3-133 V049-3-633
 V049-3-136



LNP DEVAR
 PROVIDE MISC. HARDWARE AS REQ'D
DETAIL 7 REF.
 SCALE: NONE --- V049-3-634 V049-3-309 V049-3-634
 V049-3-635 V049-3-409 V049-3-635
 V049-3-209 V049-3-509 V049-3-809



PIPE & CABLE TRAY SUPPORT
 PROVIDE MISC. HARDWARE AS REQ'D
DETAIL 8 REF.
 SCALE: NONE --- V049-3-634 V049-3-309 V049-3-634
 V049-3-635 V049-3-409 V049-3-635
 V049-3-209 V049-3-509 V049-3-709
 V049-3-809

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
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6		5	
4		3	
2		1	

DO NOT SCALE THIS DRAWING	REV	DESCRIPTION	CHK'D	DRWN	DATE	DESB
0		ISSUE FOR FDR UPDATE & BID			12.27.96	0392

LIGO-D961484-00-V

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

GROUNDING DETAILS
 LIGO VACUUM EQUIPMENT
 WASHINGTON SITE &
 LOUISIANA SITE

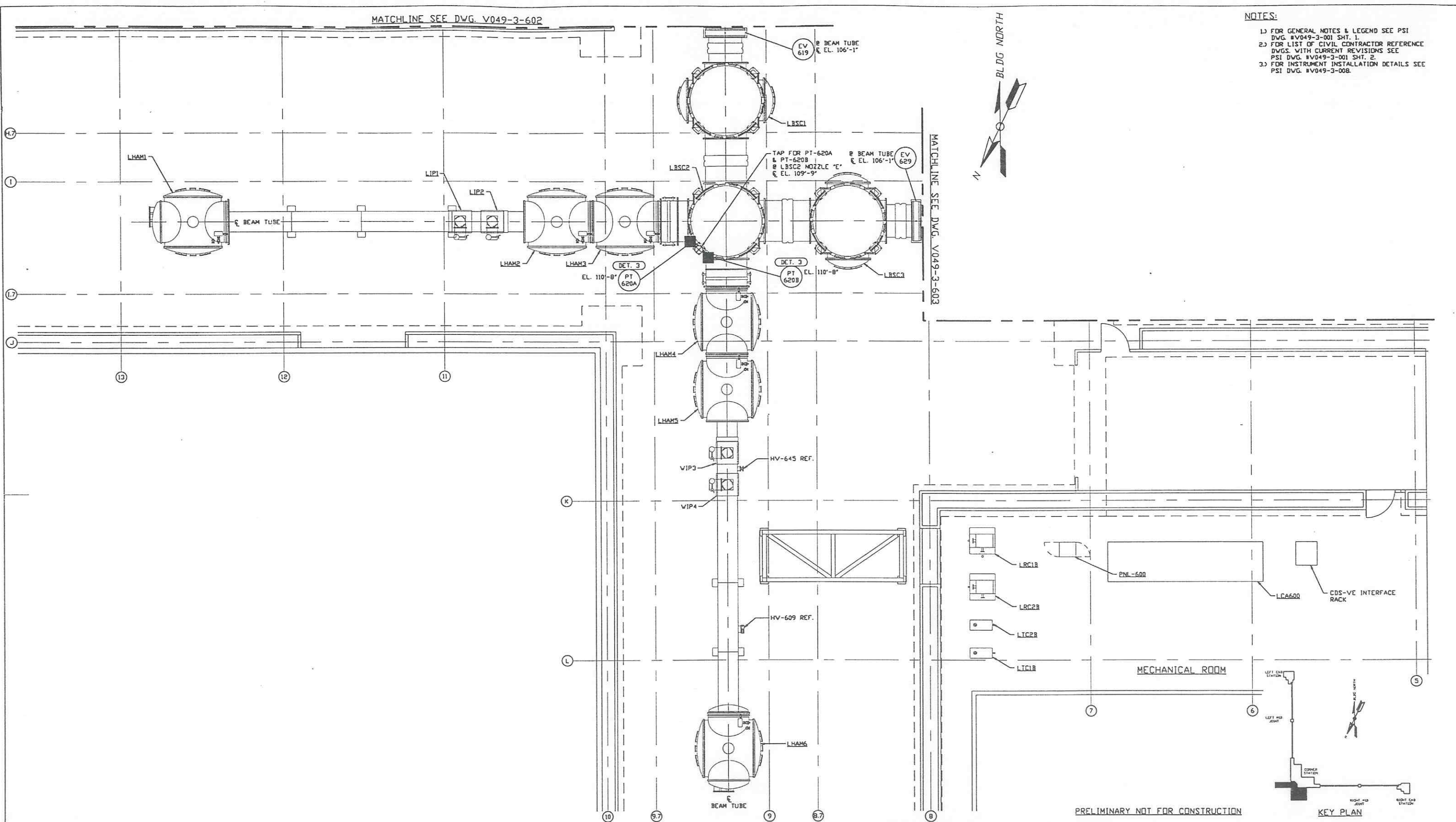
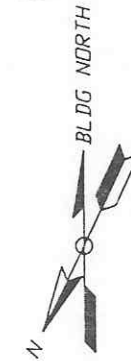
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V0493009	D	V049-3-009	0

SCALE: AS NOTED SHEET 1 OF 1

MATCHLINE SEE DWG. V049-3-602

NOTES:

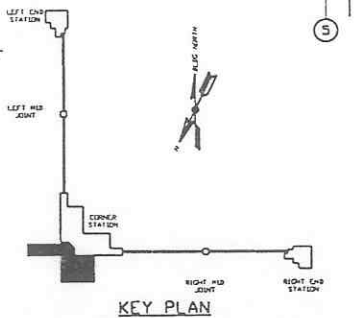
- 1) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
- 2) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
- 3) FOR INSTRUMENT INSTALLATION DETAILS SEE PSI DWG. #V049-3-008.



MATCHLINE SEE DWG. V049-3-603

VERTEX SECTION PLAN @ EL. 100'-0"

PRELIMINARY NOT FOR CONSTRUCTION



DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-603	INSTRUMENT PLAN LOUISIANA RIGHT BEAM MANIFOLD		
V049-3-602	INSTRUMENT PLAN LOUISIANA LEFT BEAM MANIFOLD		
V049-3-008	INSTRUMENT INSTALLATION DETAILS		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND	V049-5-040	PIPING PLAN LOUISIANA CORNER STATION
V049-0-023	P & I D LOUISIANA VERTEX SECTION	V049-5-003	EQUIP. ARRANGEMENT LOUISIANA CORNER STATION

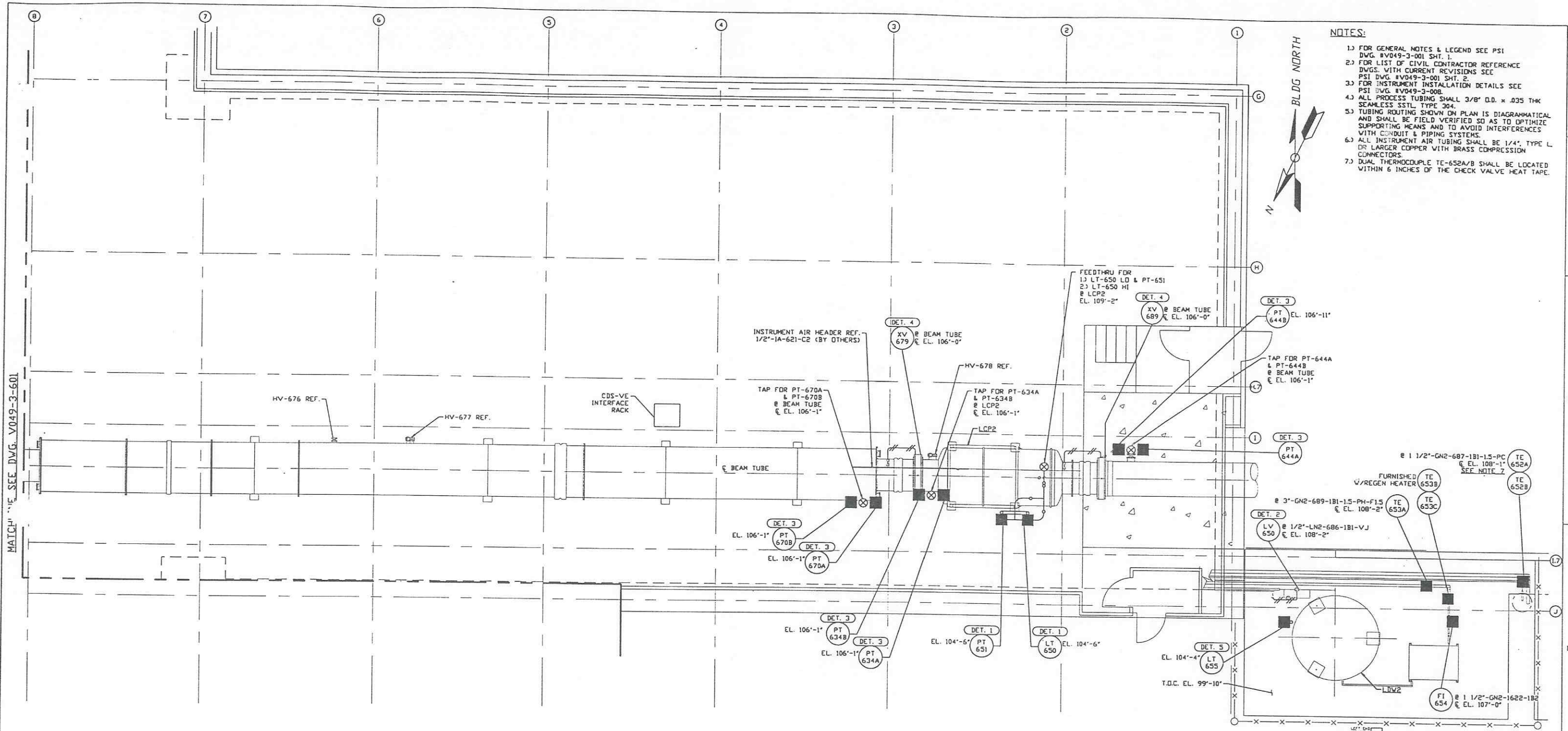
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DECD
DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430
NEXT ASSY.						

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

INSTRUMENT PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
VERTEX SECTION

CAD FILE: V0493601
 SIZE: D
 DWG. NO.: V049-3-601
 REV.: 0

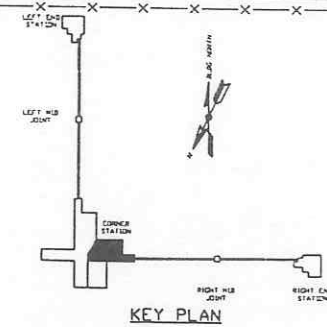
SCALE: 3/16" = 1' - 0"
 SHEET: 1 OF 1



- NOTES:**
- FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - FOR INSTRUMENT INSTALLATION DETAILS SEE PSI DWG. #V049-3-008.
 - ALL PROCESS TUBING SHALL 3/8" O.D. x .035 THK SEAMLESS SS316 TYPE 304.
 - TUBING ROUTING SHOWN ON PLAN IS DIAGRAMMATICAL AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH CONDUIT & PIPING SYSTEMS.
 - ALL INSTRUMENT AIR TUBING SHALL BE 1/4" TYPE L OR LARGER COPPER WITH BRASS COMPRESSION CONNECTORS.
 - DUAL THERMOCOUPLE TE-652A/B SHALL BE LOCATED WITHIN 6 INCHES OF THE CHECK VALVE HEAT TAPE.

RIGHT BEAM MANIFOLD PLAN @ EL. 100'-0"

PRELIMINARY NOT FOR CONSTRUCTION



<p>PROPRIETARY AND CONFIDENTIAL</p> <p>THIS DRAWING CONTAINS PROPRIETARY INFORMATION BELONGING TO PROCESS SYSTEMS INTERNATIONAL, INC. OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF PROCESS SYSTEMS INTERNATIONAL, INC. AND SHALL BE RETURNED UPON REQUEST.</p>		<p>V049-5-003 EQUIP. ARRANGEMENT LOUISIANA CORNER STATION</p> <p>V049-3-601 INSTRUMENT PLAN LOUISIANA VERTEX SECTION</p> <p>V049-3-008 INSTRUMENT INSTALLATION DETAILS</p> <p>V049-3-003 LOUISIANA OVERALL SITE PLAN</p> <p>V049-3-001 GENERAL NOTES & LEGEND</p> <p>V049-0-025 P & I D LOUISIANA RIGHT BEAM MANIFOLD</p>	<p>V049-5-040 PIPING PLAN LOUISIANA CORNER STATION</p>	<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES:</p> <p>FRACTIONAL ±</p> <p>ANGULAR APPROX ± 1/2°</p> <p>BORE ± 0.005</p> <p>TWO PLACE DECIMAL ± 0.01</p> <p>THIRD PLACE DECIMAL ± 0.005</p> <p>FURNISHED SURFACE FINISH</p> <p>REMOVE ALL BURRS</p>	<p>DO NOT SCALE THIS DRAWING</p> <p>USED ON:</p> <p>NEXT ASS'Y:</p>	<p>0 ISSUE FOR LA DESIGN REVIEW</p> <p>REV. DESCRIPTION</p>	<p>02.24.97</p> <p>04.30</p>	<p>SCALE 3/16" = 1' - 0"</p>	<p>0</p>
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LIGO-D970113-00-V

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

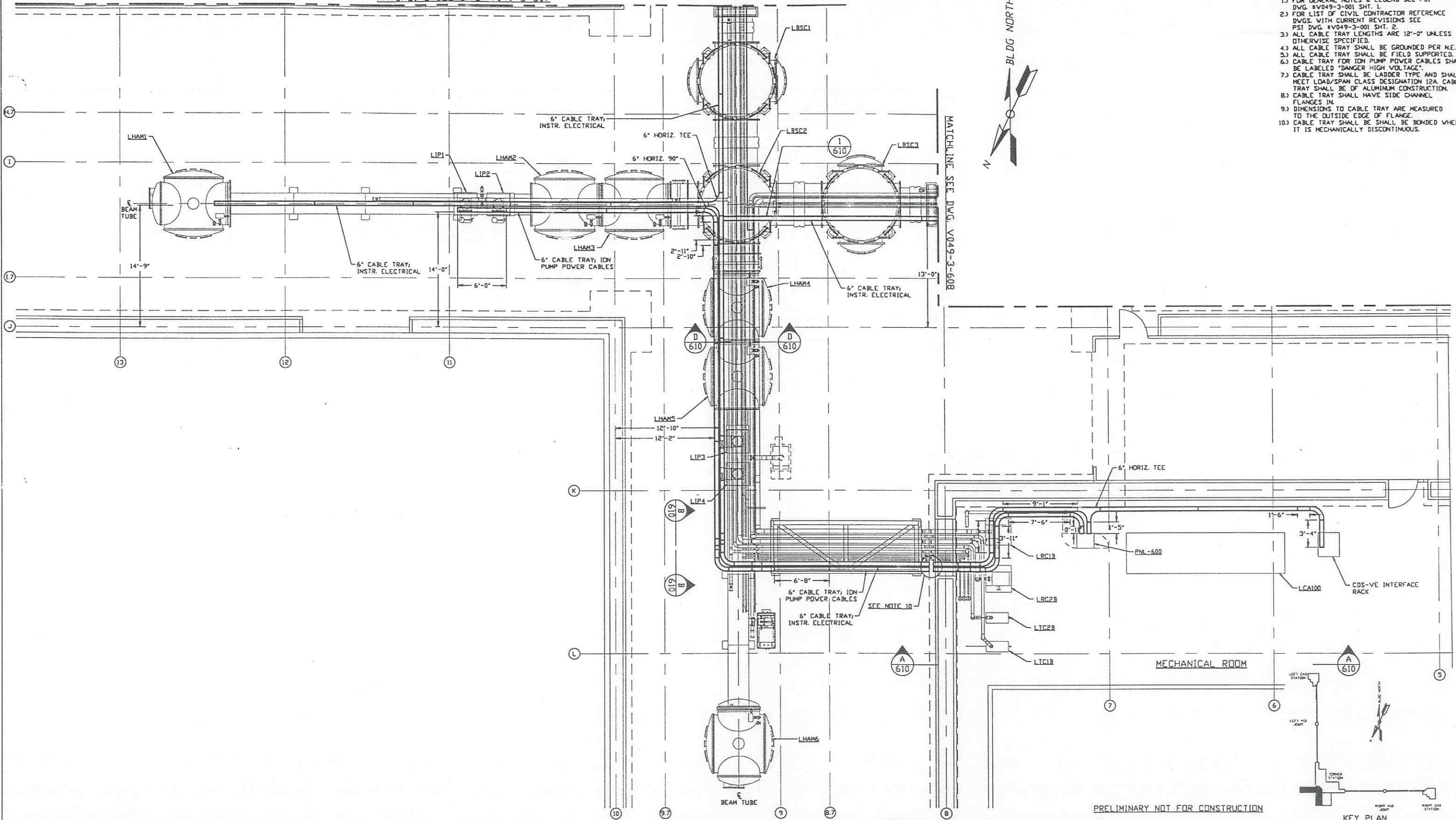
INSTRUMENT PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
RIGHT BEAM MANIFOLD

CAD FILE: V0493603
SIZE: D
DWG. NO.: V049-3-603
REV. 0

MATCHLINE SEE DWG. V049-3-607



- NOTES:**
- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2.) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3.) ALL CABLE TRAY LENGTHS ARE 12'-0" UNLESS OTHERWISE SPECIFIED.
 - 4.) ALL CABLE TRAY SHALL BE GROUNDED PER N.E.C.
 - 5.) ALL CABLE TRAY SHALL BE FIELD SUPPORTED.
 - 6.) CABLE TRAY FOR ION PUMP POWER CABLES SHALL BE LABELED "DANGER HIGH VOLTAGE".
 - 7.) CABLE TRAY SHALL BE LADDER TYPE AND SHALL MEET LOAD/SPAN CLASS DESIGNATION 12A. CABLE TRAY SHALL BE OF ALUMINUM CONSTRUCTION.
 - 8.) CABLE TRAY SHALL HAVE SIDE CHANNEL FLANGES IN DIMENSIONS TO CABLE TRAY ARE MEASURED TO THE OUTSIDE EDGE OF FLANGE.
 - 9.) CABLE TRAY SHALL BE BONDED WHERE IT IS MECHANICALLY DISCONTINUOUS.



PRELIMINARY NOT FOR CONSTRUCTION
 VERTEX SECTION PLAN @ EL. 100'-0"

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-610	CABLE TRAY DETAILS CORNER STATION		
V049-3-608	CABLE TRAY PLAN LOUISIANA RIGHT BEAM MANIFOLD		
V049-3-607	CABLE TRAY PLAN LOUISIANA LEFT BEAM MANIFOLD		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		

UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL ± ANGULAR/ARCH 20°-30° BEND ±2°
 TWO PLACE DECIMAL ± .005
 THREE PLACE DECIMAL ± .002
 FINISHED SURF. AND BREAK CORNERS TO REMOVE ALL BURRS

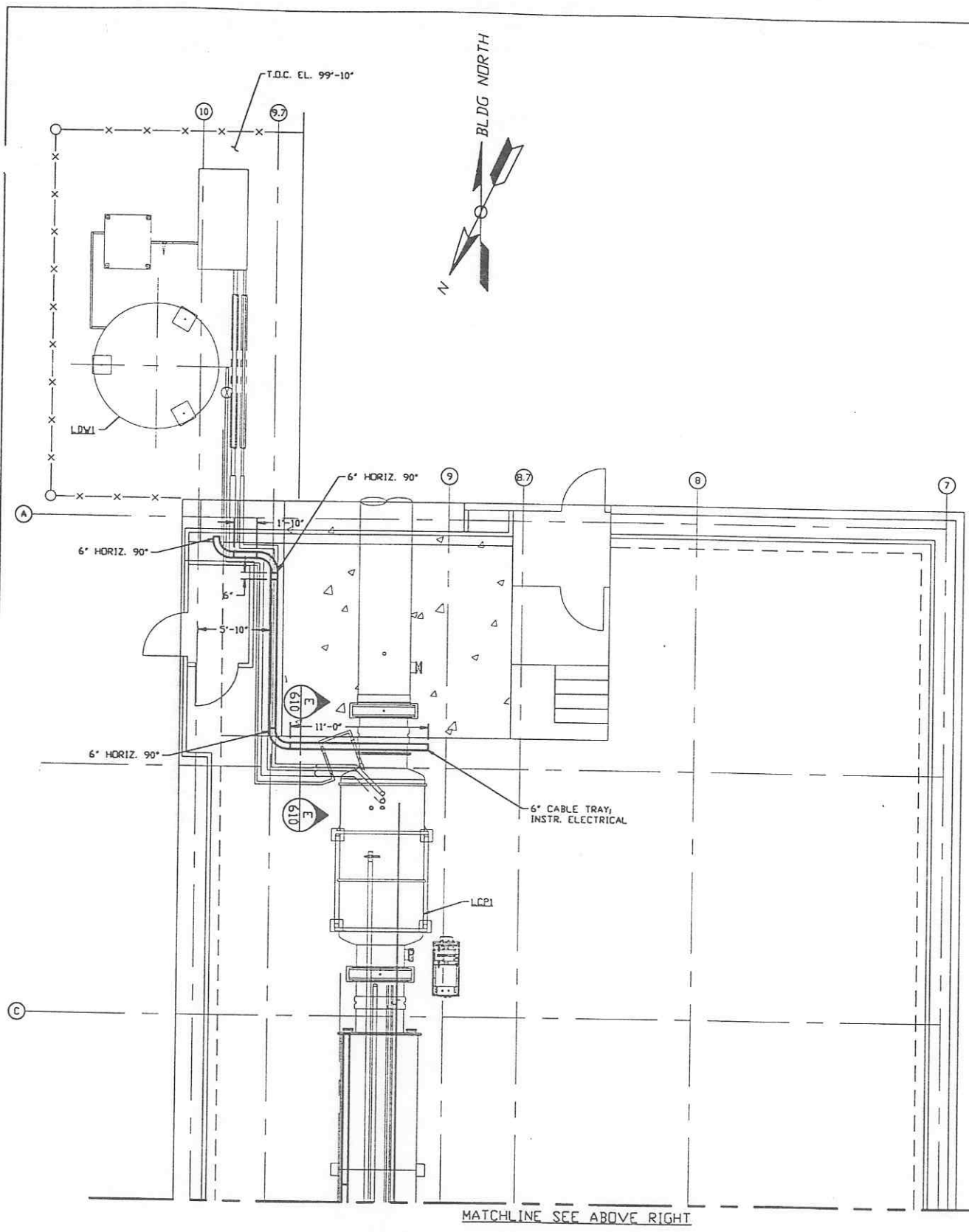
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DESB
	0	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430

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

**CABLE TRAY PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 VERTEX SECTION**

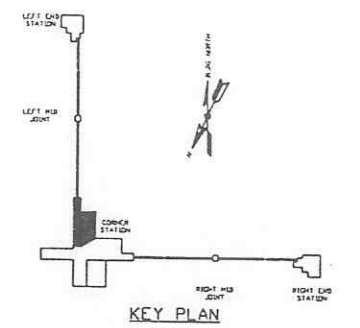
CAD FILE: V0493606
 SIZE: D
 DWG. NO.: V049-3-606
 SHEET: 1 OF 1

LIGO-D970114-001



LEFT BEAM MANIFOLD PLAN @ EL. 100'-0"

PRELIMINARY NOT FOR CONSTRUCTION



DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-610	CABLE TRAY DETAILS CORNER STATION		
V049-3-606	CABLE TRAY PLAN LOUISIANA VERTEX SECTION		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL ±
 ANGULAR ± 1/2° ± 30" BEHND 12"
 TWO PLACE DECIMAL ± .01
 THREE PLACE DECIMAL ± .003
 FINISHED SURFACE IN ± .003
 BRICK CORNERS IN ± .003
 REMOVE ALL BLURS

DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW							
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DESB			
					02.24.97	0430			

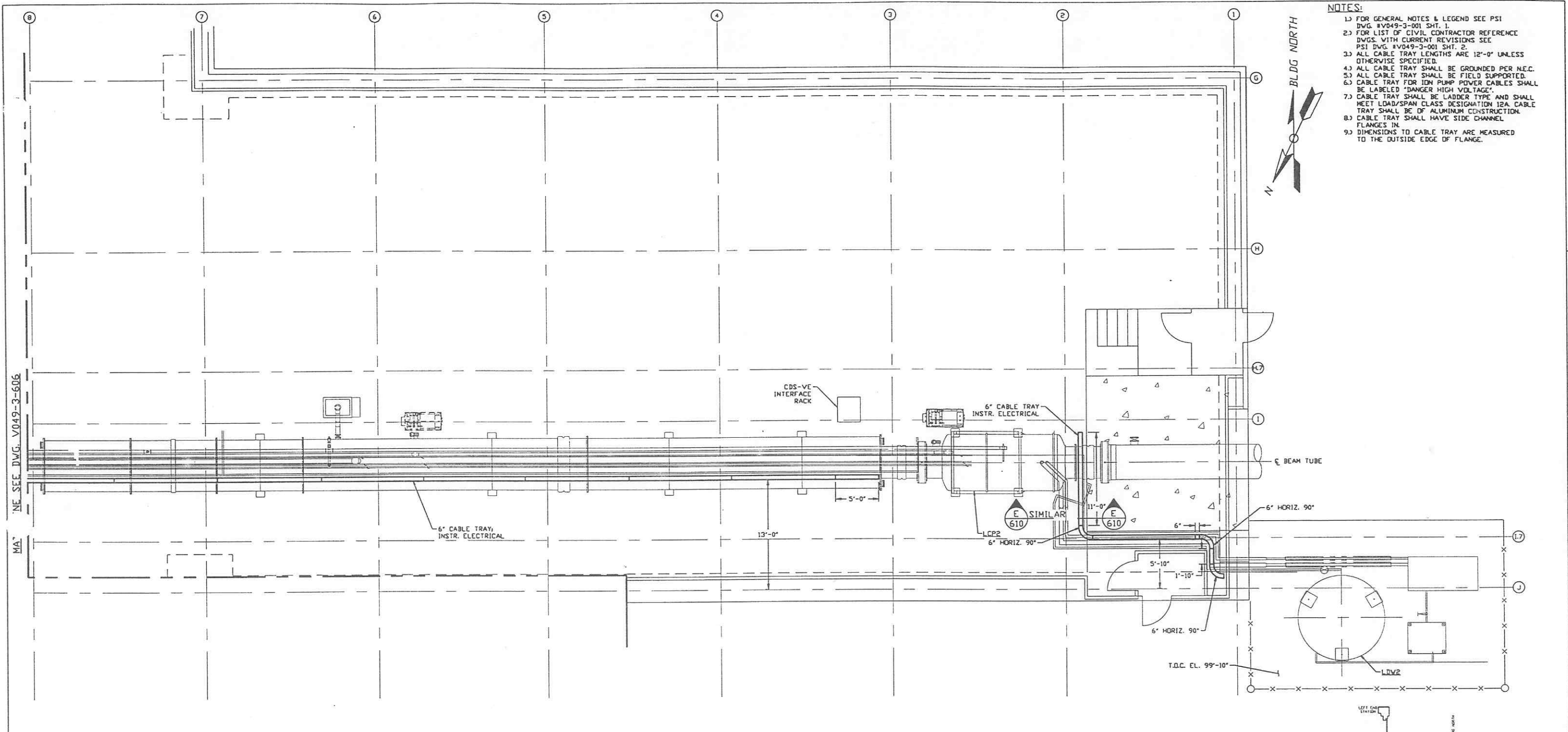
LIGO-D970115-00-V

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

CABLE TRAY PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 LEFT BEAM MANIFOLD

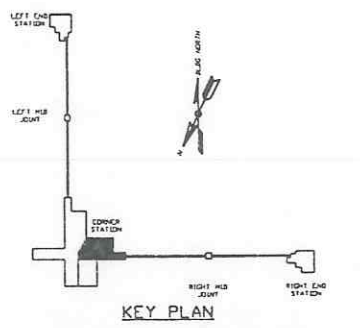
CAR FILE: V0493607
 SIZE: D
 DWG. NO.: V049-3-607
 REV. 0

SCALE: 3/16" = 1' - 0"
 SHEET: 1 OF 1



- NOTES:**
- 1) FOR GENERAL NOTES & LEGEND SEE PSI DVG. #V049-3-001 SHT. 1.
 - 2) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DVG. #V049-3-001 SHT. 2.
 - 3) ALL CABLE TRAY LENGTHS ARE 12'-0" UNLESS OTHERWISE SPECIFIED.
 - 4) ALL CABLE TRAY SHALL BE GROUNDED PER M.E.C.
 - 5) ALL CABLE TRAY SHALL BE FIELD SUPPORTED.
 - 6) CABLE TRAY FOR ION PUMP POWER CABLES SHALL BE LABELED "DANGER HIGH VOLTAGE".
 - 7) CABLE TRAY SHALL BE LADDER TYPE AND SHALL MEET LOAD/SPAN CLASS DESIGNATION 12A. CABLE TRAY SHALL BE OF ALUMINUM CONSTRUCTION.
 - 8) CABLE TRAY SHALL HAVE SIDE CHANNEL FLANGES IN DIMENSIONS TO CABLE TRAY ARE MEASURED TO THE OUTSIDE EDGE OF FLANGE.
 - 9) DIMENSIONS TO CABLE TRAY ARE MEASURED TO THE OUTSIDE EDGE OF FLANGE.

RIGHT BEAM MANIFOLD PLAN @ EL. 100'-0"



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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-610	CABLE TRAY DETAILS LOUISIANA CORNER STATION		
V049-3-606	CABLE TRAY PLAN LOUISIANA VERTEX SECTION		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL & ANGULAR: ± 1/16" & ± 30"
 DECIMAL: ± 0.015"
 FINISHED SURFACE: ± 0.005"
 BREAK CORNERS: 1/4" OUT.
 REMOVE ALL BURRS

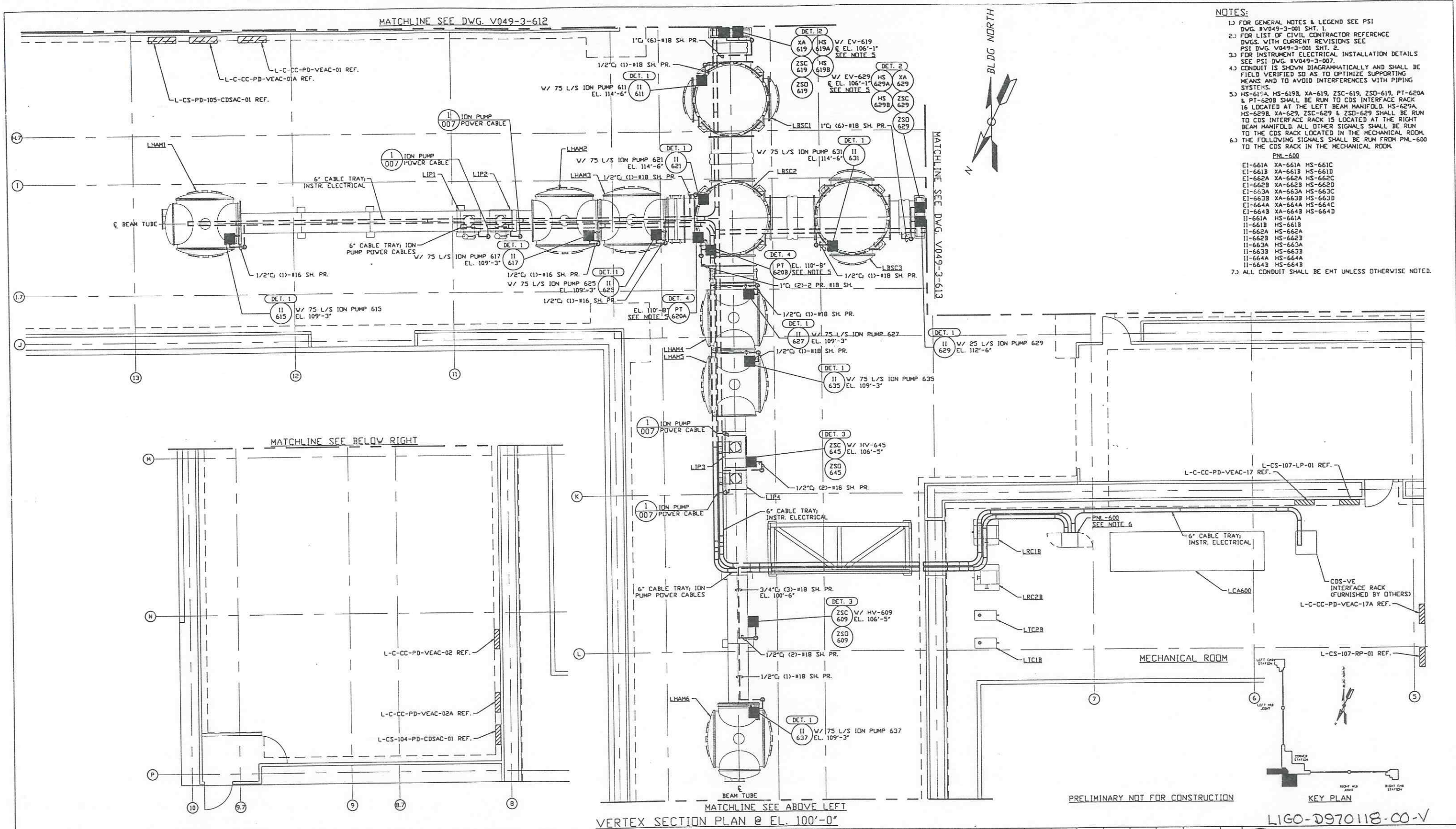
DO NOT SCALE THIS DRAWING	REV	DESCRIPTION	CHKD	DRWN	DATE	DEDR
0		ISSUE FOR LA DESIGN REVIEW			02.24.97	0430

PROCESS SYSTEMS INTERNATIONAL, INC.
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CABLE TRAY PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 RIGHT BEAM MANIFOLD

CAD FILE: V0493608
 SHEET: D
 DWG. NO.: V049-3-608
 REV.: 0

SCALE: 3/16" = 1' - 0"
 SHEET: 1 OF 1



- NOTES:**
- FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. V049-3-001 SHT. 2.
 - FOR INSTRUMENT ELECTRICAL INSTALLATION DETAILS SEE PSI DWG. #V049-3-007.
 - CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - HS-619A, HS-619B, XA-619, ZSC-619, ZSD-619, PT-620A & PT-620B SHALL BE RUN TO CDS INTERFACE RACK 16 LOCATED AT THE LEFT BEAM MANIFOLD. HS-629A, HS-629B, XA-629, ZSC-629 & ZSD-629 SHALL BE RUN TO CDS INTERFACE RACK 15 LOCATED AT THE RIGHT BEAM MANIFOLD. ALL OTHER SIGNALS SHALL BE RUN TO THE CDS RACK LOCATED IN THE MECHANICAL ROOM.
 - THE FOLLOWING SIGNALS SHALL BE RUN FROM PNL-600 TO THE CDS RACK IN THE MECHANICAL ROOM.
- | | | | |
|---------|---------|---------|---------|
| PNL-600 | EI-661A | XA-661A | HS-661C |
| | EI-661B | XA-661B | HS-661D |
| | EI-662A | XA-662A | HS-662C |
| | EI-662B | XA-662B | HS-662D |
| | EI-663A | XA-663A | HS-663C |
| | EI-663B | XA-663B | HS-663D |
| | EI-664A | XA-664A | HS-664C |
| | EI-664B | XA-664B | HS-664D |
| | II-661A | HS-661A | |
| | II-661B | HS-661B | |
| | II-662A | HS-662A | |
| | II-662B | HS-662B | |
| | II-663A | HS-663A | |
| | II-663B | HS-663B | |
| | II-664A | HS-664A | |
| | II-664B | HS-664B | |
- 7.) ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.

VERTEX SECTION PLAN @ EL. 100'-0"

PRELIMINARY NOT FOR CONSTRUCTION

LIGO-D970118-CO-V

PROPRIETARY AND CONFIDENTIAL	V049-3-612	INSTR. ELEC. PLAN LOUISIANA LEFT BEAM MANIFOLD		
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	V049-3-007	INSTRUMENT ELECTRICAL INSTALLATION DETAILS		
	V049-3-003	LOUISIANA OVERALL SITE PLAN	V049-3-623	CDS INTERFACE DIAGRAM
	V049-3-001	GENERAL NOTES & LEGEND	V049-3-622	PNL-600 WIRING DIAGRAM
	V049-0-023	P & I D LOUISIANA VERTEX SECTION	V049-3-613	INSTR. ELEC. PLAN LOUISIANA RIGHT BEAM MANIFOLD
DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION	
	REFERENCE DRAWINGS			

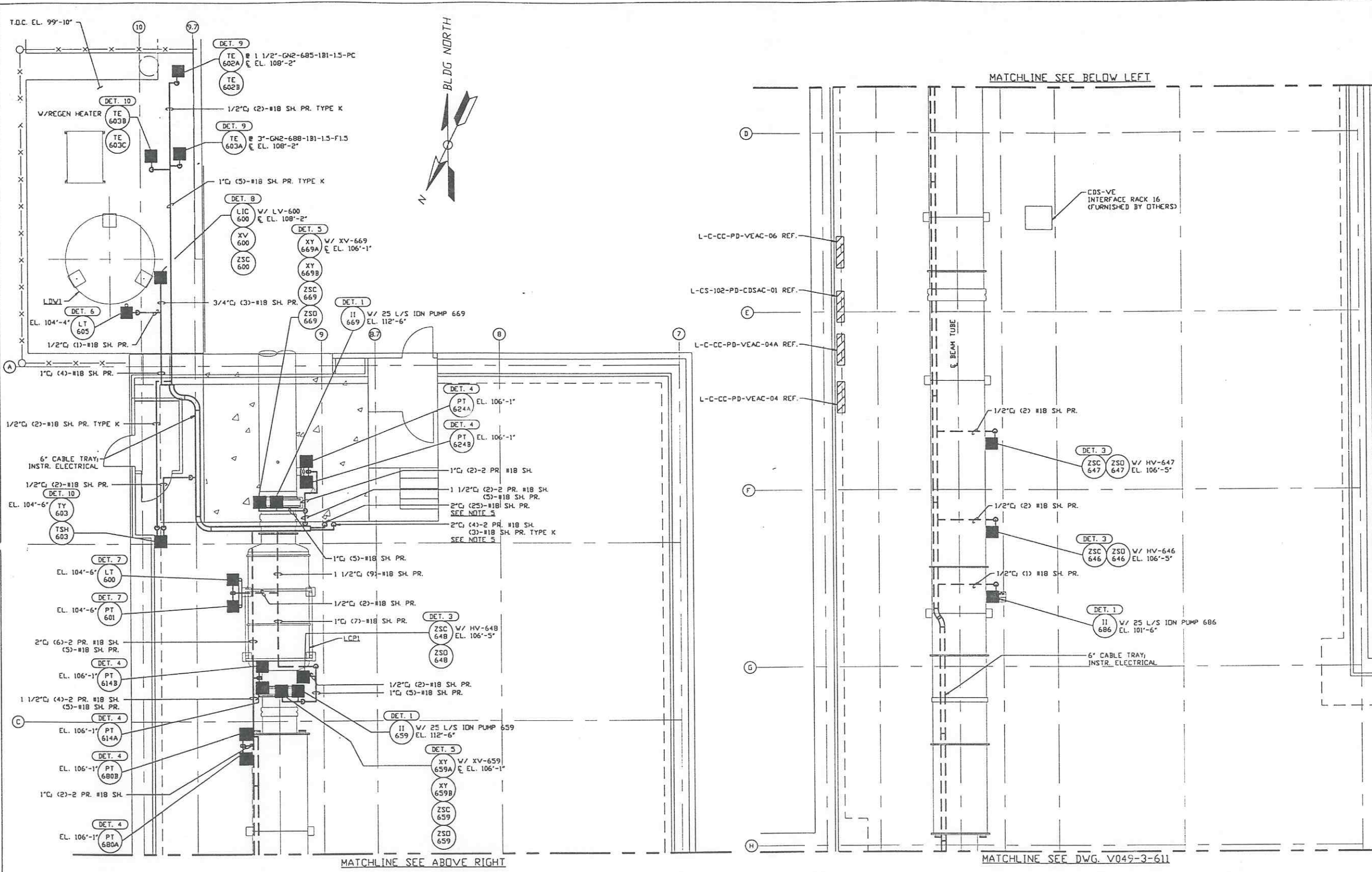
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES:	
FRACTIONAL:	
ANGULAR: 1/4" - 30" BEND 1/2"	
TWO PLACE DECIMAL: 1/8"	
THREE PLACE DECIMAL: 1/32"	
FINISHED SURFACE: 1/32"	
BREAK CORNERS: 1/8"	
REMOVE ALL BURRS	
DO NOT SCALE THIS DRAWING	0
USED ON:	REV
NEXT ASSY:	

ISSUE FOR LA DESIGN REVIEW	0	ISSUE FOR LA DESIGN REVIEW							
ISSUE DESCRIPTION									
CHKD	DRWN	DATE	DECR						
		02.24.97	0430						

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

INSTRUMENT ELECTRICAL PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
VERTEX SECTION

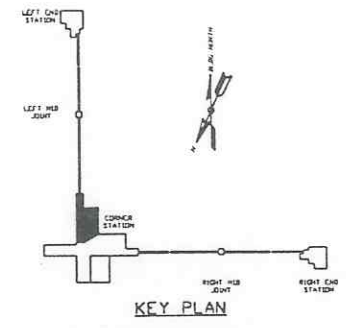
CAD FILE	DWG. NO.	REV.
V0493611	V049-3-611	0
SCALE	SHEET	
3/16" = 1' - 0"	1 OF 1	



- NOTES:**
- 1) FOR GENERAL NOTES & LEGEND SEE PSI DVG. #V049-3-001 SHT. 1.
 - 2) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DVG. #V049-3-001 SHT. 2.
 - 3) FOR INSTRUMENT ELECTRICAL INSTALLATION DETAILS SEE PSI DVG. #V049-3-007.
 - 4) CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - 5) RUN INSTR. ELECTRICAL CABLES IN (2)-2" UNDERGROUND CONDUITS TO CDS-VE INTERFACE RACK. UNDERGROUND CONDUIT IS PROVIDED BY OTHERS. SEE PSI DVG. #V049-3-624 FOR STUB-UP LOCATIONS.
 - 6) ALL SIGNALS SHALL BE RUN TO CDS RACK 16.
 - 7) AT INDOOR INSTALLATIONS, CONDUIT SHALL BE EMT. AT OUTDOOR INSTALLATIONS, CONDUIT SHALL BE IMC.

LEFT BEAM MANIFOLD PLAN @ EL. 100'-0"

PRELIMINARY NOT FOR CONSTRUCTION



LIGO-DS70119-00-V

PROPRIETARY AND CONFIDENTIAL	V049-3-611	INSTR. ELEC. PLAN LOUISIANA VERTEX SECTION		
	V049-3-602	INSTRUMENT PLAN LOUISIANA LEFT BEAM MANIFOLD		
	V049-3-007	INSTRUMENT ELECTRICAL INSTALLATION DETAILS		
	V049-3-003	LOUISIANA OVERALL SITE PLAN		
	V049-3-001	GENERAL NOTES & LEGEND		
	V049-0-022	P & I D LOUISIANA LEFT BEAM MANIFOLD	V049-3-623	CDS INTERFACE DIAGRAM
	DVG. NO.	DESCRIPTION	DVG. NO.	DESCRIPTION

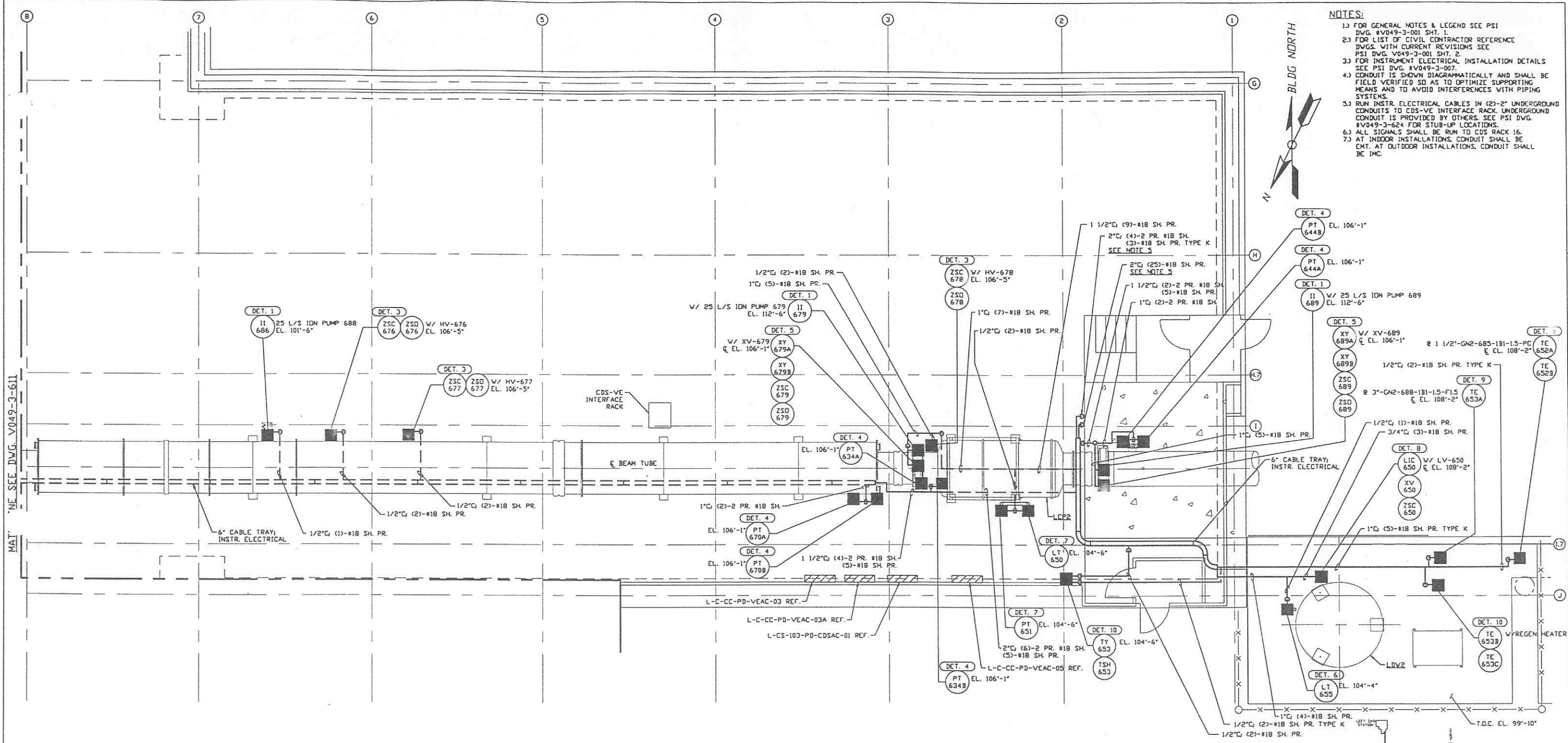
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES					
TOLERANCES: FRACTIONAL: ANGULAR: 18°-30° BEND 12" TWO PLACE DECIMAL & 2005 FINISHED SURFACE RNS BREAK CORNERS IN OUT-OF-PLANE ALL BUBBLES					
DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW			
USED ON:	REV	DESCRIPTION	CHKD	DRWN	DATE
NEXT ASS'Y:					

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20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

INSTRUMENT ELECTRICAL PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
LEFT BEAM MANIFOLD

CAB FILE: V0493612 SIZE: D DVG. NO.: V049-3-612 REV: 0

SCALE: 3/16" = 1' - 0" SHEET: 1 OF 1



- NOTES:**
- 1) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3) FOR INSTRUMENT ELECTRICAL INSTALLATION DETAILS SEE PSI DWG. #V049-3-007.
 - 4) CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - 5) RUN INSTR. ELECTRICAL CABLES IN (2)-2" UNDERGROUND CONDUITS TO CDS-VE INTERFACE RACK. UNDERGROUND CONDUIT IS PROVIDED BY OTHERS. SEE PSI DWG. #V049-3-624 FOR STUB-UP LOCATIONS.
 - 6) ALL SIGNALS SHALL BE RUN TO CDS RACK 16.
 - 7) AT INDOOR INSTALLATIONS, CONDUIT SHALL BE ENT. AT OUTDOOR INSTALLATIONS, CONDUIT SHALL BE IMC.

RIGHT BEAM MANIFOLD PLAN @ EL. 100'-0"

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KEY PLAN

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DWG. NO.	DESCRIPTION	REFERENCE DRAWINGS
V049-3-611	INSTR. ELEC. PLAN LOUISIANA VERTEX SECTION	
V049-3-603	INSTRUMENT PLAN LOUISIANA RIGHT BEAM MANIFOLD	
V049-3-007	INSTRUMENT ELECTRICAL INSTALLATION DETAILS	
V049-3-003	LOUISIANA OVERALL SITE PLAN	
V049-3-001	GENERAL NOTES & LEGEND	
V049-0-024	P & I D LOUISIANA RIGHT BEAM MANIFOLD	V049-3-623 CDS INTERFACE DIAGRAM

UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL: ± ANGULAR APPROX 10°-30° BEHND 10°
 TWO PLACE DECIMAL: ± .01
 THREE PLACE DECIMAL: ± .005
 FINISHED SURFACE: RINGS
 BREAK CORNERS TO OUTSIDE
 REMOVE ALL BURRS

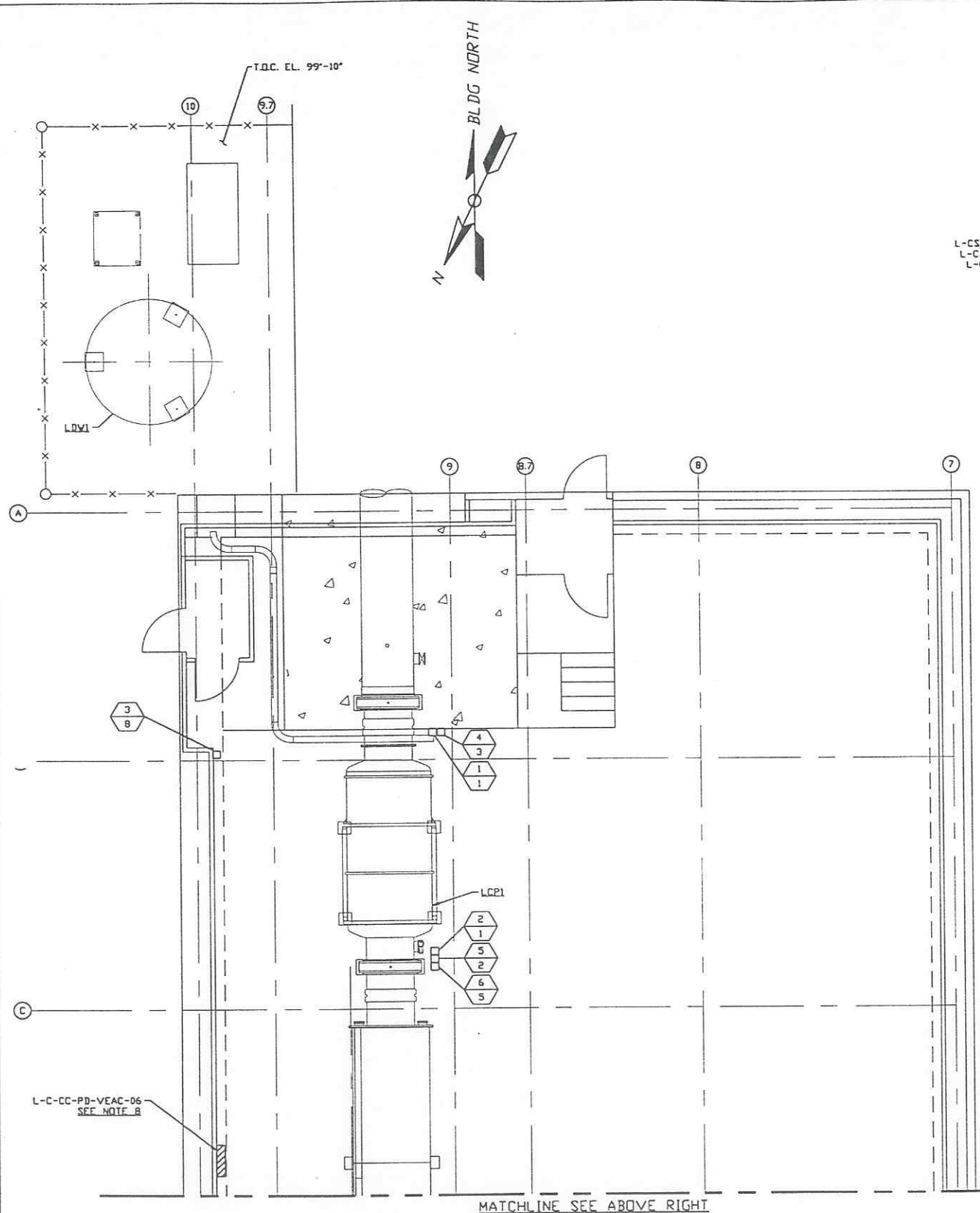
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DESB
DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430

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

INSTRUMENT ELECTRICAL PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 RIGHT BEAM MANIFOLD

CAB FILE: V0493613
 SIZE: D
 DWG. NO.: V049-3-613
 REV: 0

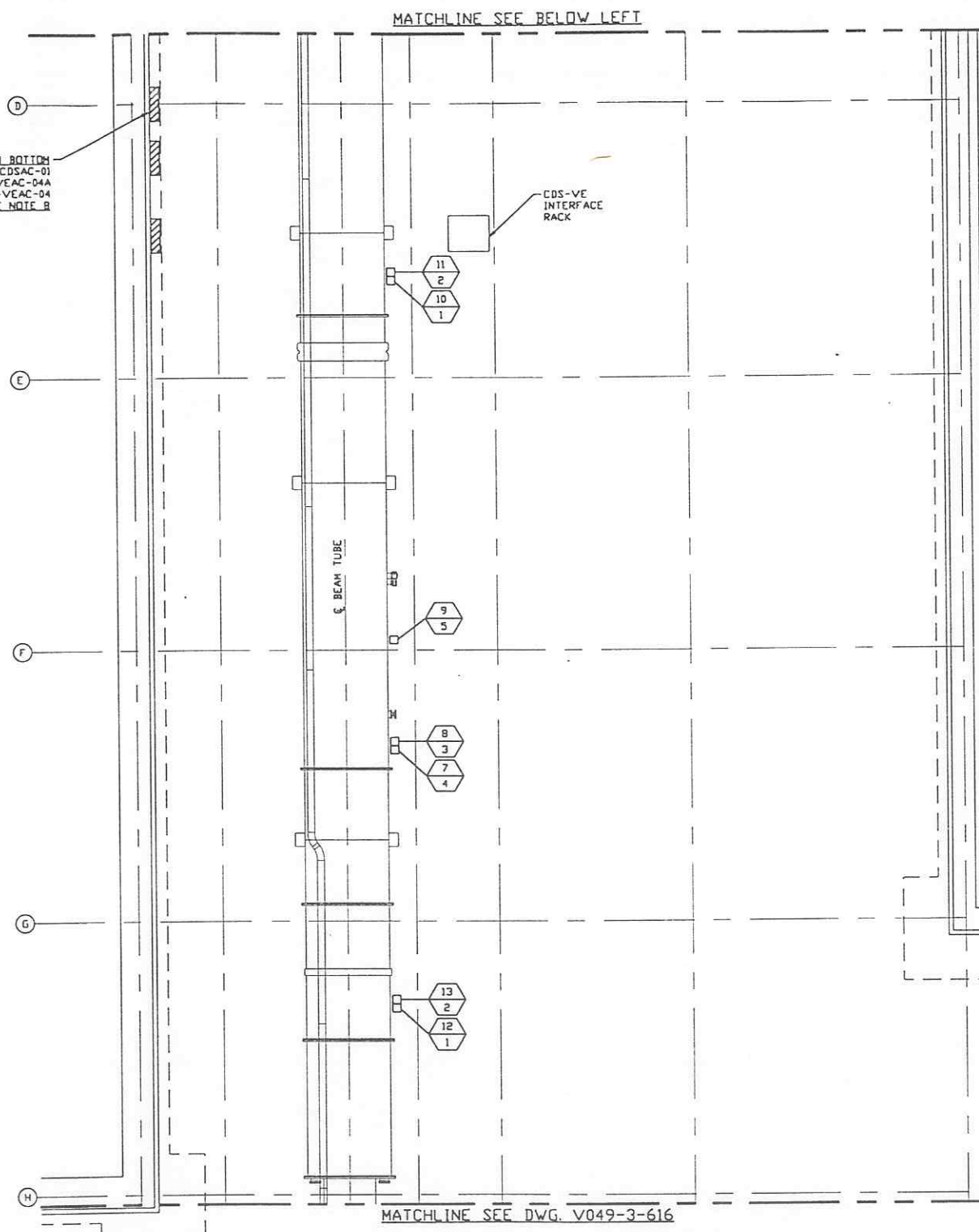
SCALE: 3/16" = 1' - 0"
 SHEET: 1 OF 1



MATCHLINE SEE ABOVE RIGHT

LEFT BEAM MANIFOLD PLAN @ EL. 100'-0"

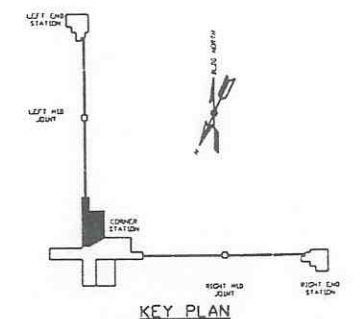
TOP TO BOTTOM
L-CS-102-PD-CDSAC-01
L-C-CC-PD-VEAC-04A
L-C-CC-PD-VEAC-04
SEE NOTE B



MATCHLINE SEE DWG. V049-3-616

PRELIMINARY NOT FOR CONSTRUCTION

- NOTES:**
- FOR ELECTRICAL INSTALLATION DETAILS SEE PSI DWG. V049-3-006.
 - CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - ALL RECEPTACLES SHALL BE IDENTIFIED WITH PANEL AND CKT. NUMBER.
 - EACH 3Ø CIRCUIT SHALL HAVE DEDICATED NEUTRAL AND GROUND.
 - FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - FOR LIST OF CIVIL CONTRACTOR REGERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - FOR DISTRIBUTION SYSTEM FEEDER SCHEDULE SEE PSI DWG. #V049-3-620.
 - POWER DISTRIBUTION PANELS ARE FURNISHED BY OTHERS.
 - ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.



KEY PLAN

LIGO - D970122 - 00 - V

PROPRIETARY AND CONFIDENTIAL	DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
<small>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO PROCESS SYSTEMS INTERNATIONAL, INC. OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN CONSENT OF PROCESS SYSTEMS INTERNATIONAL, INC. AND SHALL BE RETURNED UPON REQUEST.</small>	V049-3-620	DISTRIBUTION SYSTEM FEEDER SCHEDULE LOUISIANA		
	V049-3-316	POWER PLAN LOUISIANA VERTEX SECTION		
	V049-3-006	ELECTRICAL INSTALLATION DETAILS		
	V049-3-003	WASHINGTON OVERALL SITE PLAN		
	V049-3-001	GENERAL NOTES & LEGEND		

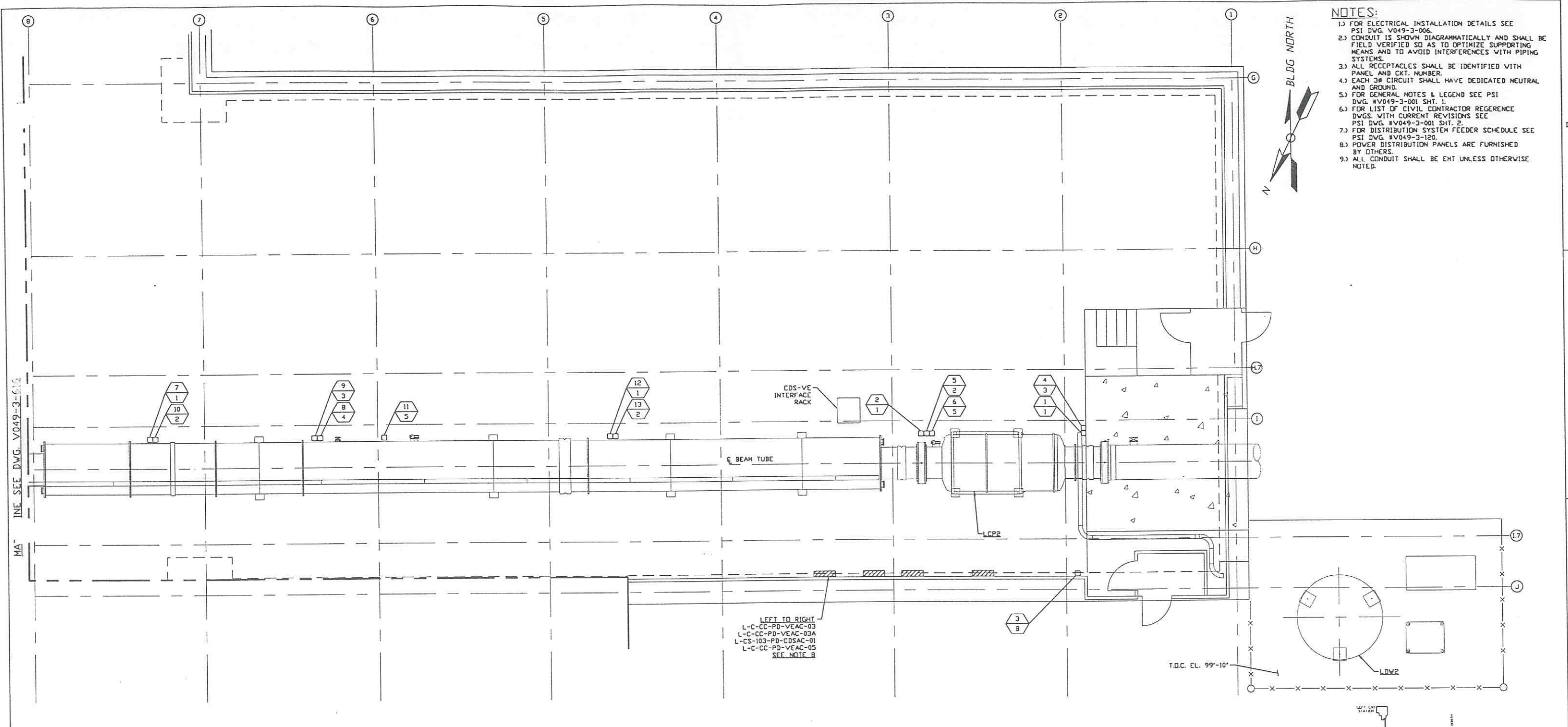
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL 1/8
ANGLE/RADIUS 1/8" - 3/16" BOND 1/2"
TWO PLACE DECIMAL 0.01
THREE PLACE DECIMAL 0.005
FINISHED SURFACE THIS SIDE
BREAK CORNERS IN OUT
REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING	REV	DESCRIPTION	CHKD	DRWN	DATE	DEC
0	ISSUE FOR LA DESIGN REVIEW				02.24.97	0430
USED DWG						
NEXT ASS'Y						

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

**POWER PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
LEFT BEAM MANIFOLD**

CAD FILE V0493617	SIZE D	DWG. NO. V049-3-617	REV. 0
SCALE 3/16" = 1' - 0"	SHEET 1 OF 1		



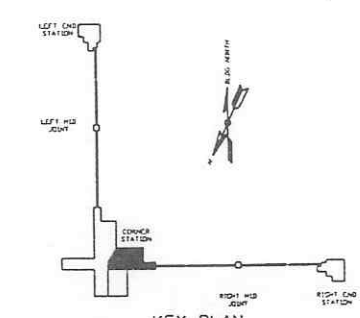
- NOTES:**
- 1.) FOR ELECTRICAL INSTALLATION DETAILS SEE PSI DWG. V049-3-006.
 - 2.) CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - 3.) ALL RECEPTACLES SHALL BE IDENTIFIED WITH PANEL AND CKT. NUMBER.
 - 4.) EACH 3Ø CIRCUIT SHALL HAVE DEDICATED NEUTRAL AND GROUND.
 - 5.) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 6.) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 7.) FOR DISTRIBUTION SYSTEM FEEDER SCHEDULE SEE PSI DWG. #V049-3-120.
 - 8.) POWER DISTRIBUTION PANELS ARE FURNISHED BY OTHERS.
 - 9.) ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.

LINE SEE DWG. V049-3-616

LEFT TO RIGHT
 L-C-CC-PD-VEAC-03
 L-C-CC-PD-VEAC-03A
 L-CS-103-PD-CDSAC-01
 L-C-CC-PD-VEAC-05
 SEE NOTE B

RIGHT BEAM MANIFOLD PLAN @ EL. 100'-0"

PRELIMINARY NOT FOR CONSTRUCTION



LIGO-D970123-00-V

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION	REV	DESCRIPTION	SCALE

PROCESS SYSTEMS INTERNATIONAL, INC.
 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA
POWER PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
RIGHT BEAM MANIFOLD
 CAB FILE V0493618 SIZE D DWG. NO. V049-3-618 REV. 0
 SCALE 3/16" = 1' - 0" SHEET 1 OF 1

DISTRIBUTION SYSTEM FEEDER SCHEDULE VERTEX SECTION; CORNER STATION					
FEEDER NUMBER	SOURCE (LOAD CENTER LOCATION)	CKT #	EQUIPMENT SERVED	CONDUIT	FILL
1	C-CC-PD-VEAC-01		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
2	C-CC-PD-VEAC-01		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
3	C-CC-PD-VEAC-01A		GENERAL/ION PUMP/AUX. TURBO	3/4"	2-#12, #12 GND
4	C-CC-PD-VEAC-01A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
5	C-CC-PD-VEAC-02		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
6	C-CC-PD-VEAC-02		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
7	C-CC-PD-VEAC-02A		TURBO PUMP	3/4"	4-#12, #10 GND
8	C-CC-PD-VEAC-02A		GENERAL/ION PUMP/AUX. TURBO	3/4"	2-#12, #12 GND
9	C-CC-PD-VEAC-02A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
10	C-CC-PD-VEAC-01		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
11	C-CC-PD-VEAC-01		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
12	C-CC-PD-VEAC-03		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
13	C-CC-PD-VEAC-01A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
14	C-CC-PD-VEAC-03A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
15	C-CC-PD-VEAC-01A		GENERAL/ION PUMP/AUX. TURBO	3/4"	2-#12, #12 GND
16	C-CC-PD-VEAC-02		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
17	C-CC-PD-VEAC-02		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
18	C-CC-PD-VEAC-02		ROUGHING PUMP	3/4"	3-#12, #10 GND
19	C-CC-PD-VEAC-02A		GENERAL/ION PUMP/AUX. TURBO	3/4"	2-#12, #12 GND
20	C-CC-PD-VEAC-02A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
21	C-CC-PD-VEAC-03		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
22	C-CC-PD-VEAC-03		GATE VALVE LGV2	3/4"	3-#12, #10 GND
23	C-CC-PD-VEAC-03		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
24	C-CC-PD-VEAC-04		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
25	C-CC-PD-VEAC-04		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
26	C-CC-PD-VEAC-04		GATE VALVE LGV1	3/4"	3-#12, #10 GND
27	C-CC-PD-VEAC-04A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
28	C-CC-PD-VEAC-04A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
29	C-CC-PD-VEAC-17		AIR COMPRESSOR	2"	3-#2/0, #6 GND
30	C-CC-PD-VEAC-17		ROUGH BACKING PUMP	3/4"	3-#8, #10 GND
31	C-CC-PD-VEAC-17		ROUGH BACKING PUMP	3/4"	3-#8, #10 GND
32	C-CC-PD-VEAC-17A		2500 1/s ION PUMP	SEE PLAN	2-#12, #12 GND
33	C-CC-PD-VEAC-17A		2500 1/s ION PUMP	SEE PLAN	2-#12, #12 GND
34	C-CC-PD-VEAC-17A		2500 1/s ION PUMP	SEE PLAN	2-#12, #12 GND
35	C-CC-PD-VEAC-17A		2500 1/s ION PUMP	SEE PLAN	2-#12, #12 GND
36	C-CC-PD-VEAC-17A		2500 1/s ION PUMP	SEE PLAN	2-#12, #12 GND
37	C-CC-PD-VEAC-17A		2500 1/s ION PUMP	SEE PLAN	2-#12, #12 GND
38	C-CC-PD-VEAC-17A		2500 1/s ION PUMP	SEE PLAN	2-#12, #12 GND
39	C-CC-PD-VEAC-17A		2500 1/s ION PUMP	SEE PLAN	2-#12, #12 GND
40	C-CC-PD-VEAC-17A		VE CONTROL TRANSFORMER	3/4"	2-#12, #12 GND
41	C-CC-PD-VEAC-17A		TURBO BACKING PUMP	3/4"	4-#10, #8 GND
42	C-CC-PD-VEAC-17A		TURBO BACKING PUMP	3/4"	4-#10, #8 GND

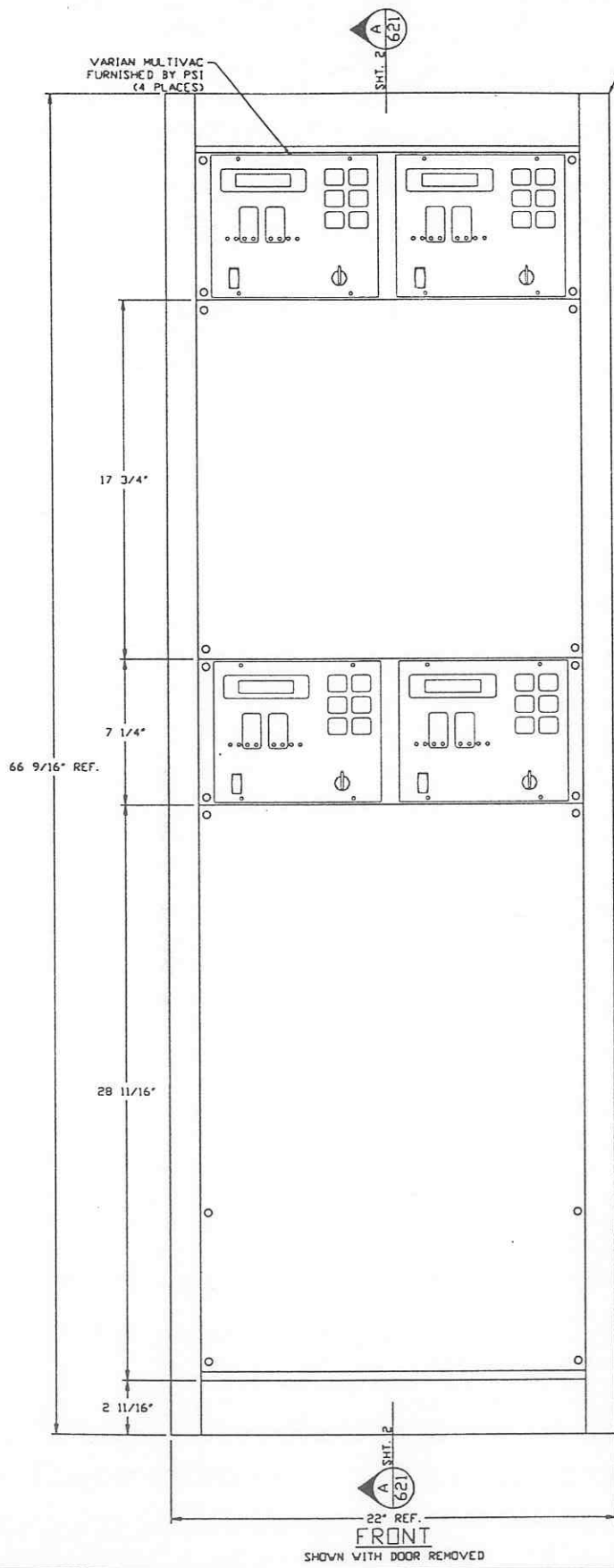
DISTRIBUTION SYSTEM FEEDER SCHEDULE RIGHT BEAM MANIFOLD; CORNER STATION					
FEEDER NUMBER	SOURCE (LOAD CENTER LOCATION)	CKT #	EQUIPMENT SERVED	CONDUIT	FILL
1	C-CC-PD-VEAC-05		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
2	C-CC-PD-VEAC-05		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
3	C-CC-PD-VEAC-05		REGEN HEATER	1"	3-#10, #8 GND
4	C-CC-PD-VEAC-05A		CHECK VALVE HEAT TRACE	3/4"	2-#12, #12 GND
5	C-CC-PD-VEAC-03A		GENERAL/ION PUMP/AUX. TURBO	3/4"	2-#12, #12 GND
6	C-CC-PD-VEAC-03A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
7	C-CC-PD-VEAC-03A		TURBO PUMP	3/4"	4-#12, #10 GND
8	C-CC-PD-VEAC-03		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
9	C-CC-PD-VEAC-03A		ROUGHING PUMP	3/4"	3-#12, #10 GND
10	C-CC-PD-VEAC-03A		GENERAL/ION PUMP/AUX. TURBO	3/4"	2-#12, #12 GND
11	C-CC-PD-VEAC-03A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
12	C-CC-PD-VEAC-05		TURBO PUMP	3/4"	4-#12, #10 GND
13	C-CC-PD-VEAC-03A		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
			BAKEDOUT CONTROL	3/4"	2-#12, #12 GND

DISTRIBUTION SYSTEM FEEDER SCHEDULE LEFT BEAM MANIFOLD; CORNER STATION					
FEEDER NUMBER	SOURCE (LOAD CENTER LOCATION)	CKT #	EQUIPMENT SERVED	CONDUIT	FILL
1	C-CC-PD-VEAC-06		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
2	C-CC-PD-VEAC-06		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
3	C-CC-PD-VEAC-06		REGEN HEATER	1"	3-#10, #8 GND
4	C-CC-PD-VEAC-04A		CHECK VALVE HEAT TRACE	3/4"	2-#12, #12 GND
5	C-CC-PD-VEAC-04A		GENERAL/ION PUMP/AUX. TURBO	3/4"	2-#12, #12 GND
6	C-CC-PD-VEAC-04A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
7	C-CC-PD-VEAC-04A		TURBO PUMP	3/4"	4-#12, #10 GND
8	C-CC-PD-VEAC-04		ROUGHING PUMP	3/4"	3-#12, #10 GND
9	C-CC-PD-VEAC-04A		GENERAL/ION PUMP/AUX. TURBO	3/4"	2-#12, #12 GND
10	C-CC-PD-VEAC-04A		TURBO PUMP	3/4"	4-#12, #10 GND
11	C-CC-PD-VEAC-06		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
12	C-CC-PD-VEAC-04A		BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
13	C-CC-PD-VEAC-04		BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
			BAKEDOUT CONTROL	3/4"	2-#12, #12 GND

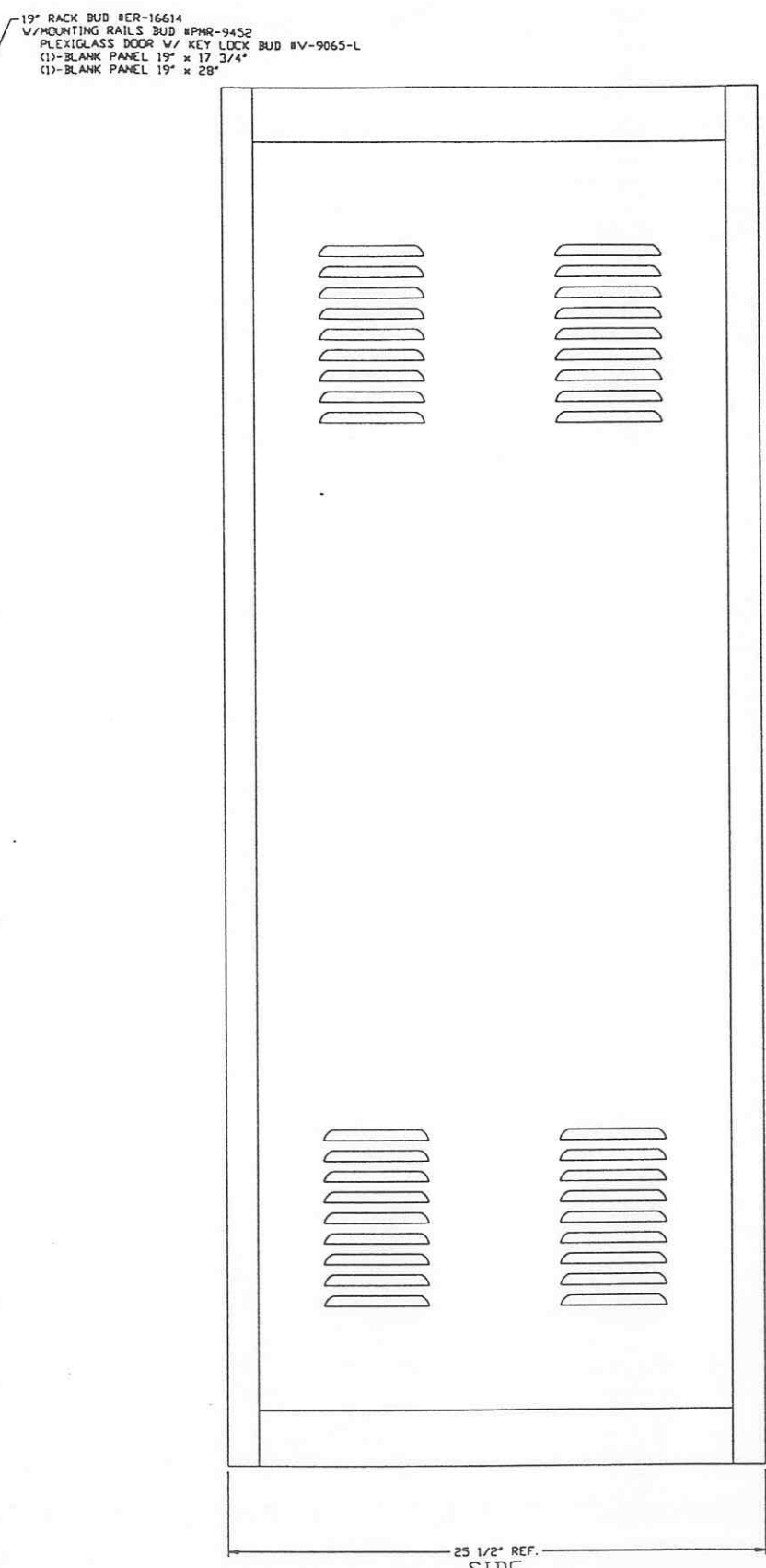
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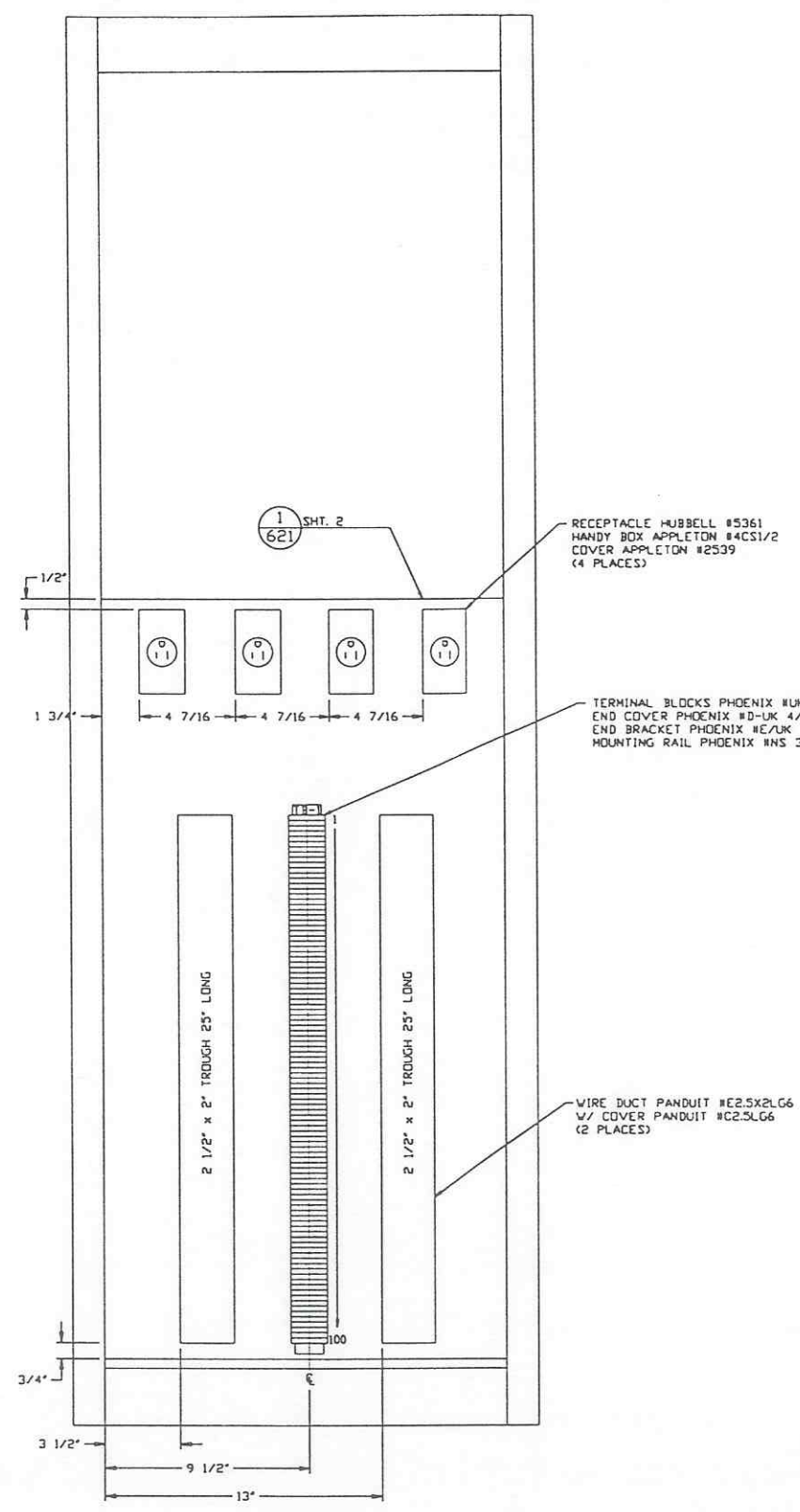
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						DISTRIBUTION SYSTEM FEEDER SCHED. LIGO VACUUM EQUIPMENT LOUISIANA SITE CORNER STATION



FRONT
SHOWN WITH DOOR REMOVED



SIDE



BACK
SHOWN WITH DOOR REMOVED

PRELIMINARY NOT FOR CONSTRUCTION
LIGO-D970125-00-V

PROPRIETARY AND CONFIDENTIAL
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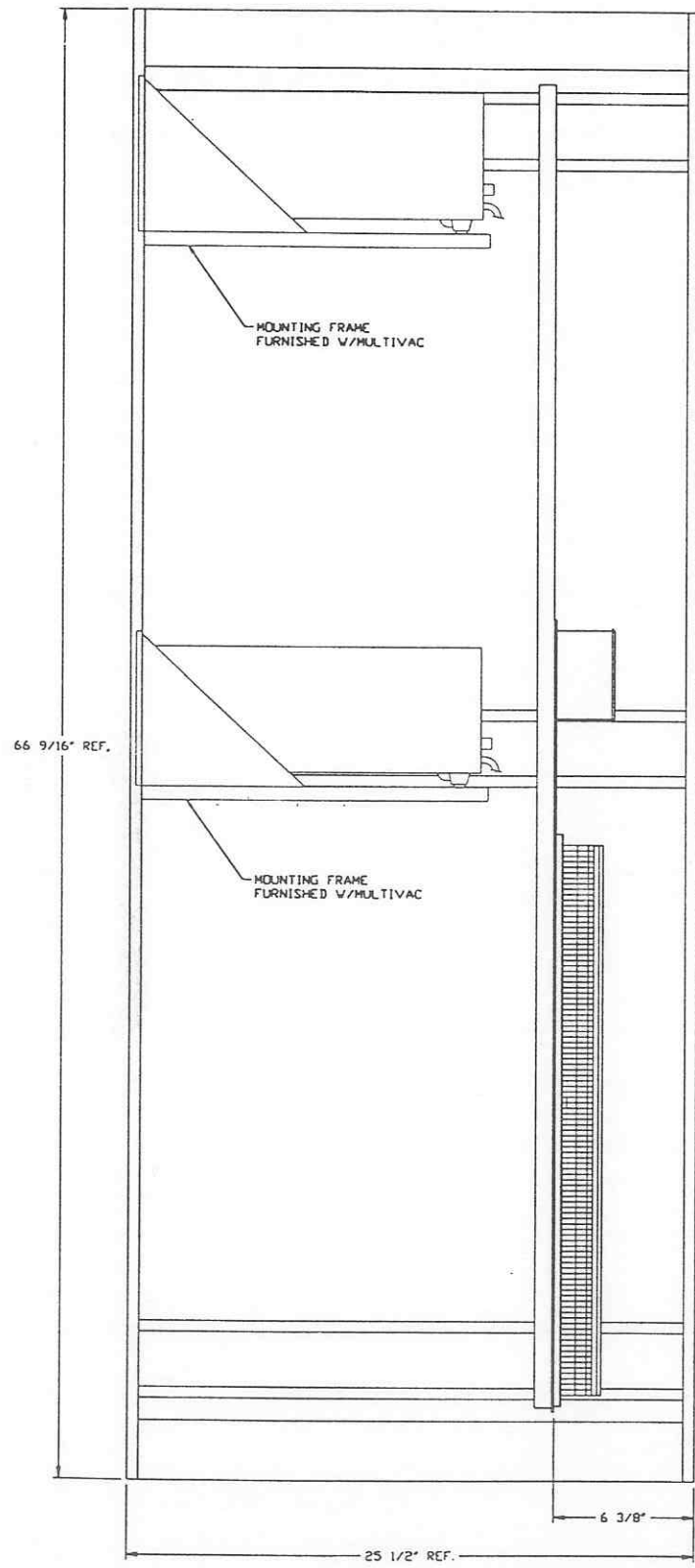
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± ANGULAR APPROX 10°-30° BEND ±2°
TWO PLACE DECIMAL ±.01
THREE PLACE DECIMAL ±.005
FINISHED SURFACE DIMS
BREAK CORNERS IN OUT
REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING	REV	DESCRIPTION	CHKD	DRWN	DATE	DESN
0		ISSUE FOR LA DESIGN REVIEW			02.24.97	0430

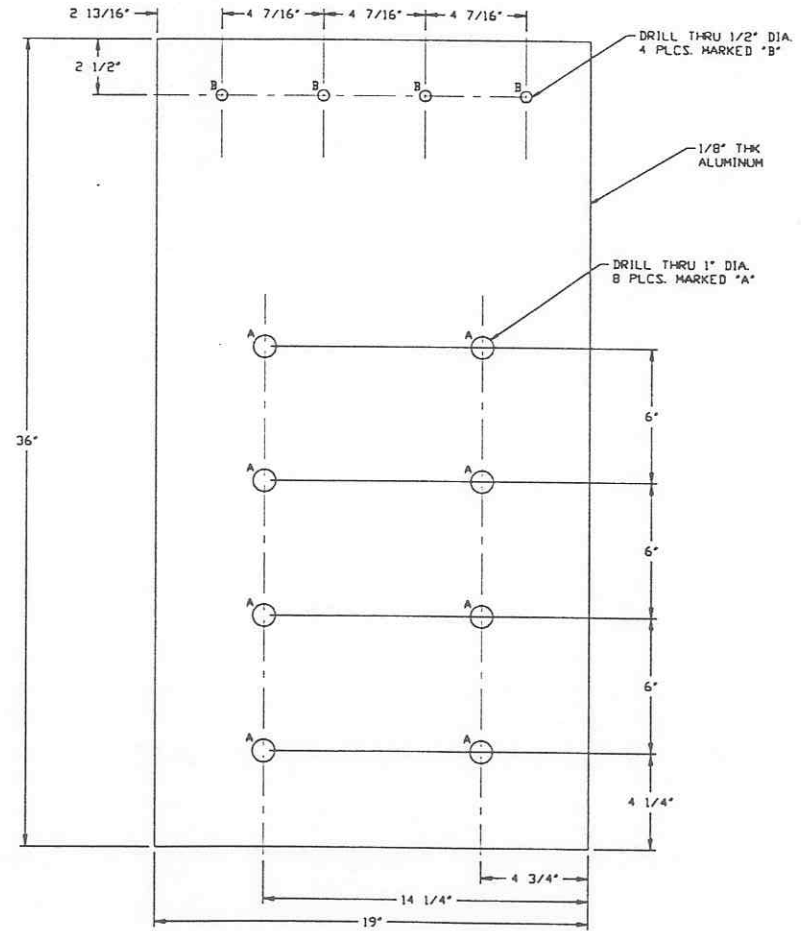
PROCESS SYSTEMS INTERNATIONAL, INC.
20 WALKUP DR., WESTBOROUGH, MASSACHUSETTS 01581 USA

PNL-600 ASSEMBLY
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
CORNER STATION

CAD FILE: V0493621\3621S1
SIZE: D
DWG. NO.: V049-3-621
SCALE: 1/4" = 1"
SHEET: 1 OF 2



SECTION A REF.
SCALE: 1/4" = 1'-0" --- V049-3-621 SHT. 1



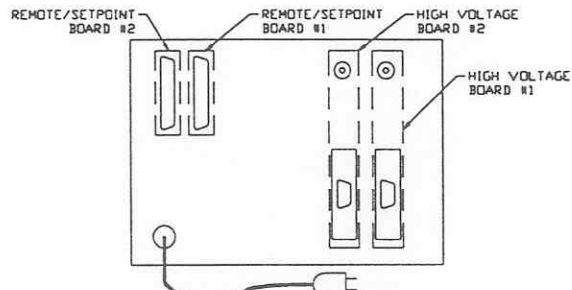
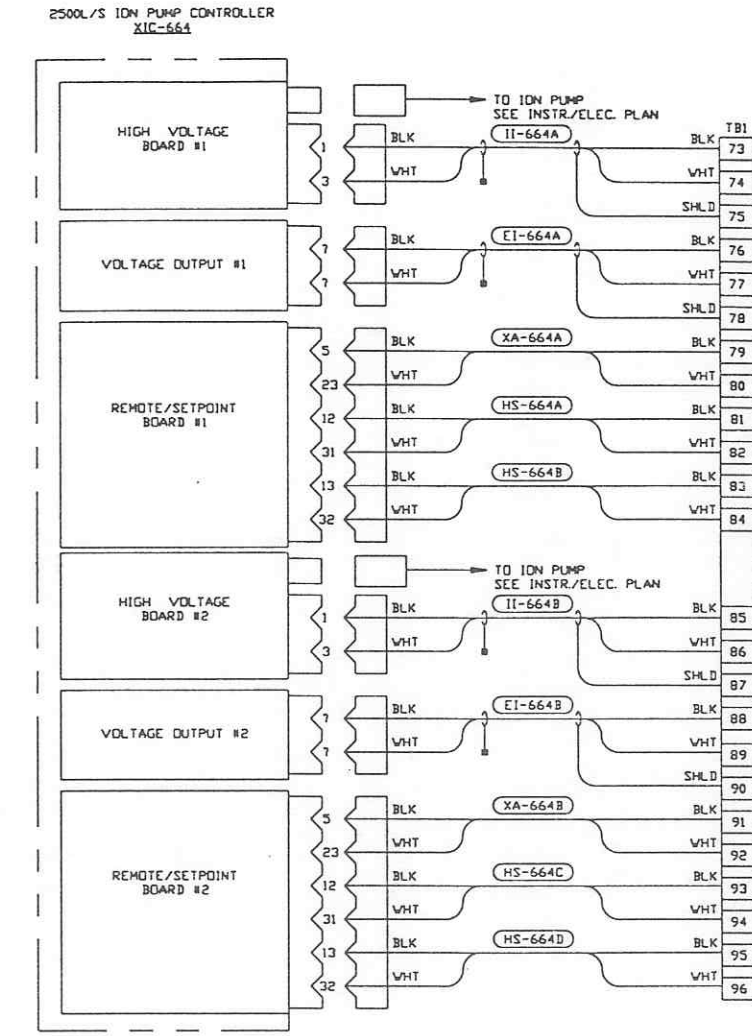
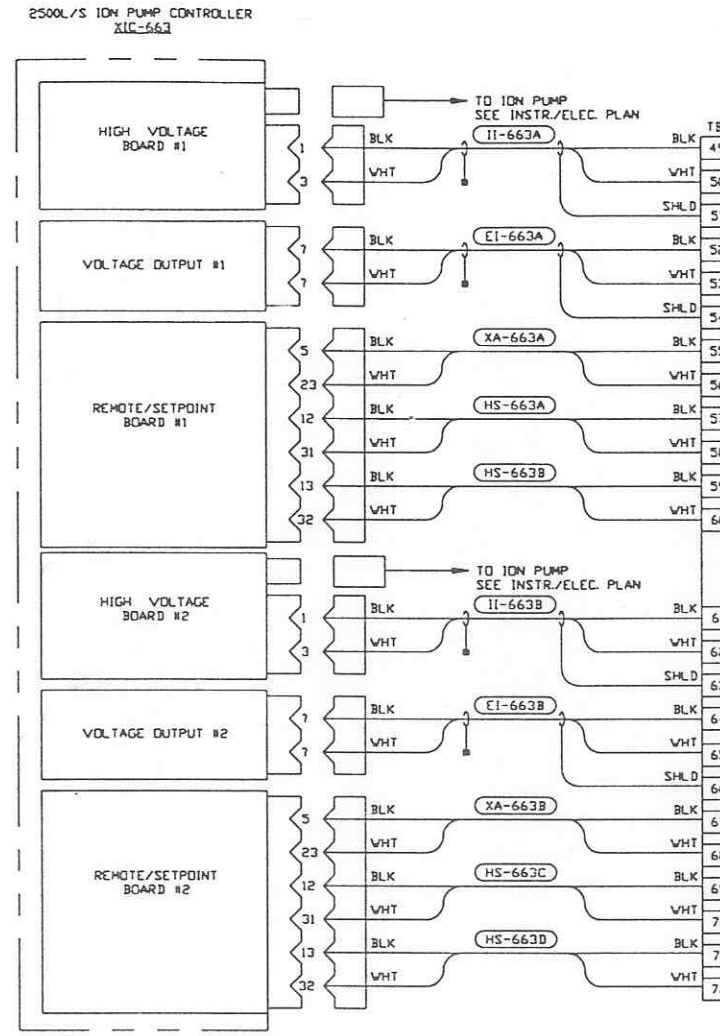
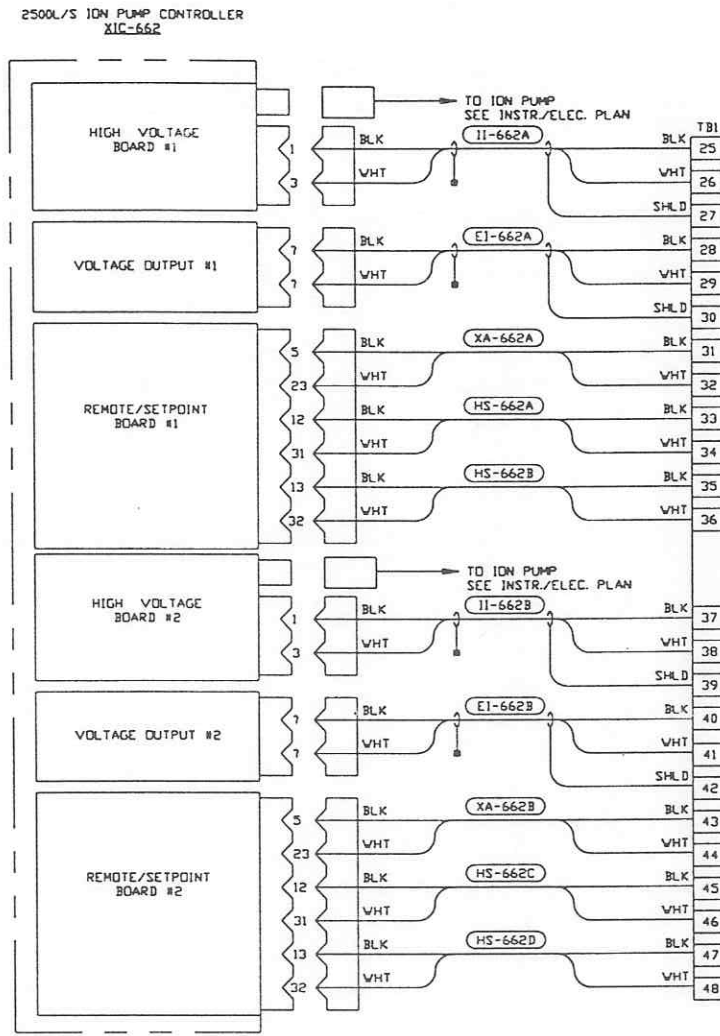
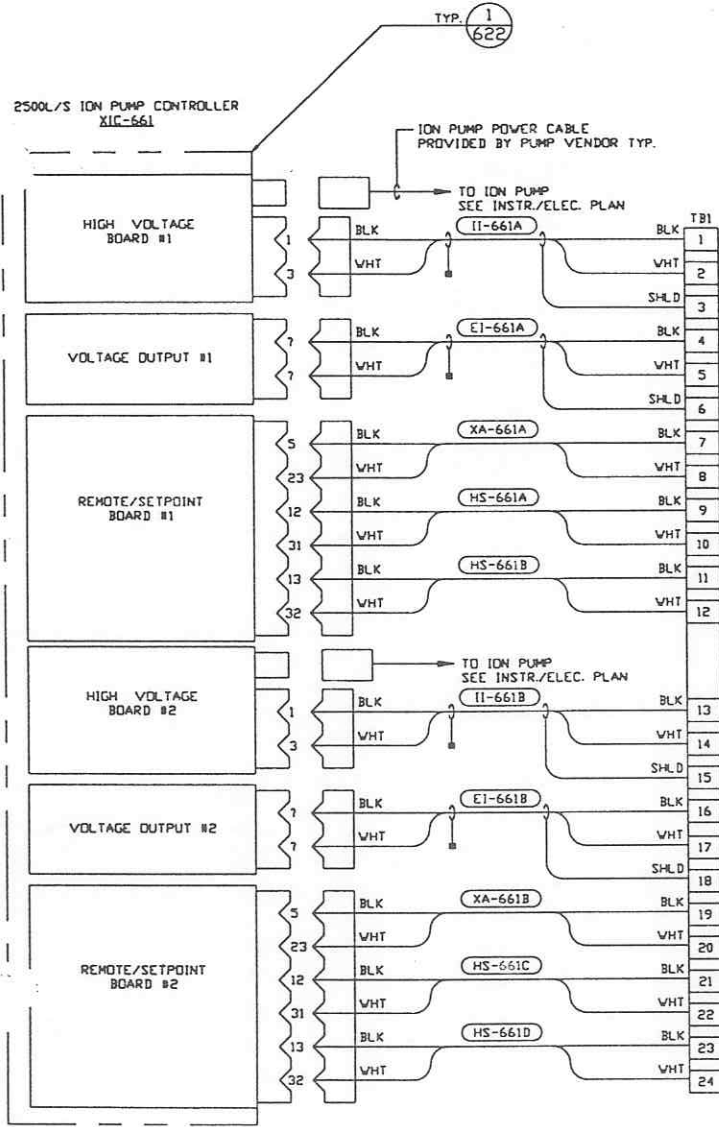
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SCALE: 1/4" = 1'-0" --- V049-3-621 SHT. 1

PRELIMINARY NOT FOR CONSTRUCTION

SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL, INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
PNL-600 ASSEMBLY LIGO VACUUM EQUIPMENT LOUISIANA SITE CORNER STATION			
CAD FILE V0493621\3621S2	SIZE D	ENG. NO. V049-3-621	REV. 0
SCALE AS NOTED	SHEET 2 OF 2		

LIGO-D970125-00-V



NOTES:
1) ALL WIRING IS #18 AWG.

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LIGO-D970126-00-V

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

PNL-600 WIRING DIAGRAM
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
CORNER STATION

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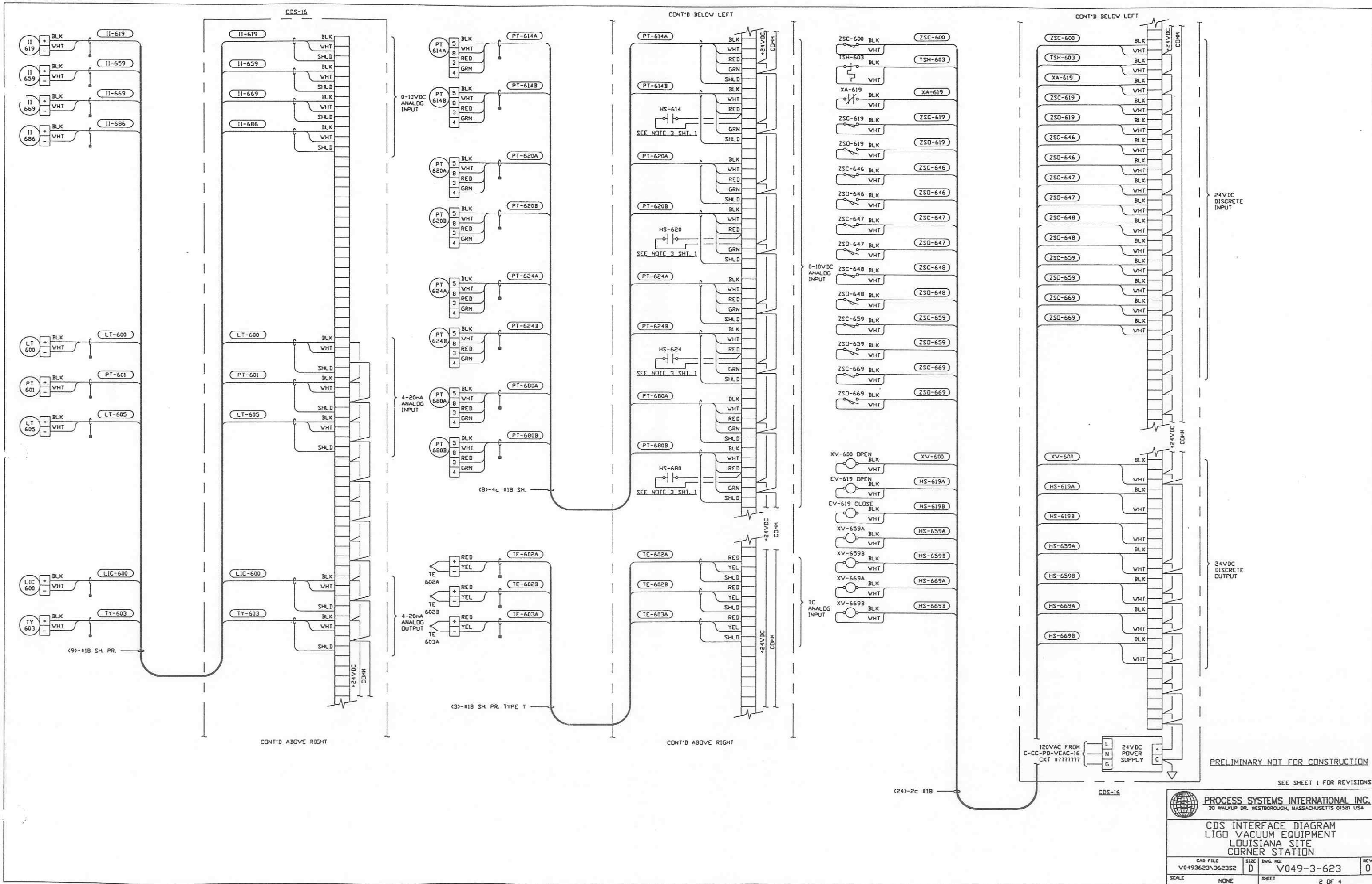
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V049-3-611	INSTRUMENT ELEC. PLAN LOUISIANA VERTEX SECTION		
V049-3-606	CABLE TRAY PLAN LOUISIANA VERTEX SECTION		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± ANGULAR/CHAMFER 1/8" - 3/16" BOND 1/2"
THREE PLACE DECIMAL ± .005
FINISHED SURFACE DIMS
BREAK CORNERS 1/8" OUT
REMOVE ALL BURRS

USED ON	REV	DESCRIPTION
DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW

CHKD	DRWN	DATE	DESN
RES	DHW	0224.97	0430

CAD FILE	SHEET	DWG. NO.	REV.
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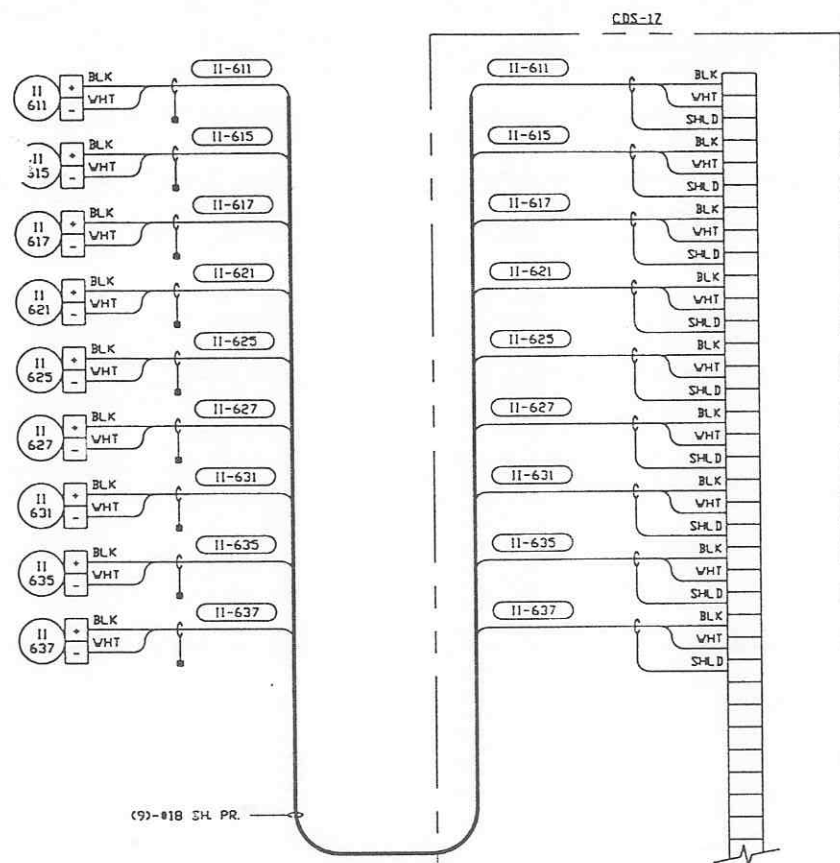
SEE SHEET 1 FOR REVISIONS

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

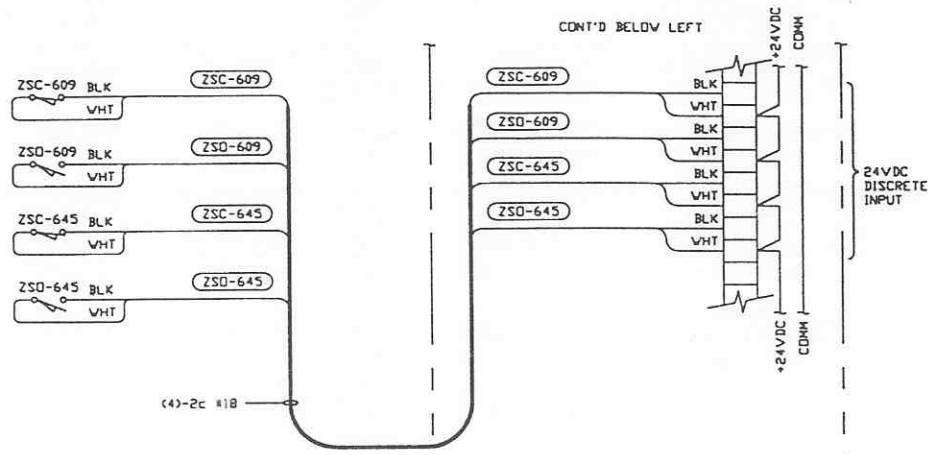
CDS INTERFACE DIAGRAM
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 CORNER STATION

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SCALE	NONE	SHEET	2 OF 4

LIGO-D970127-00-V



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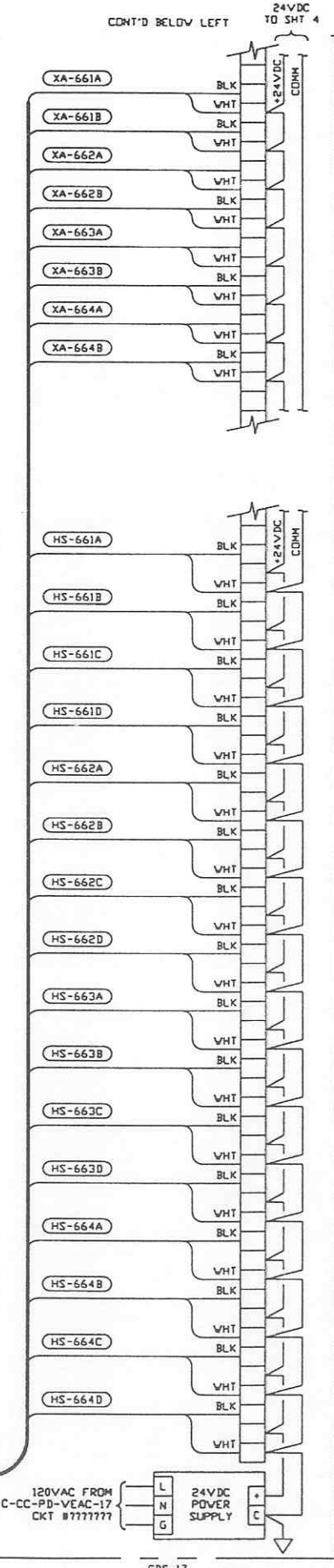
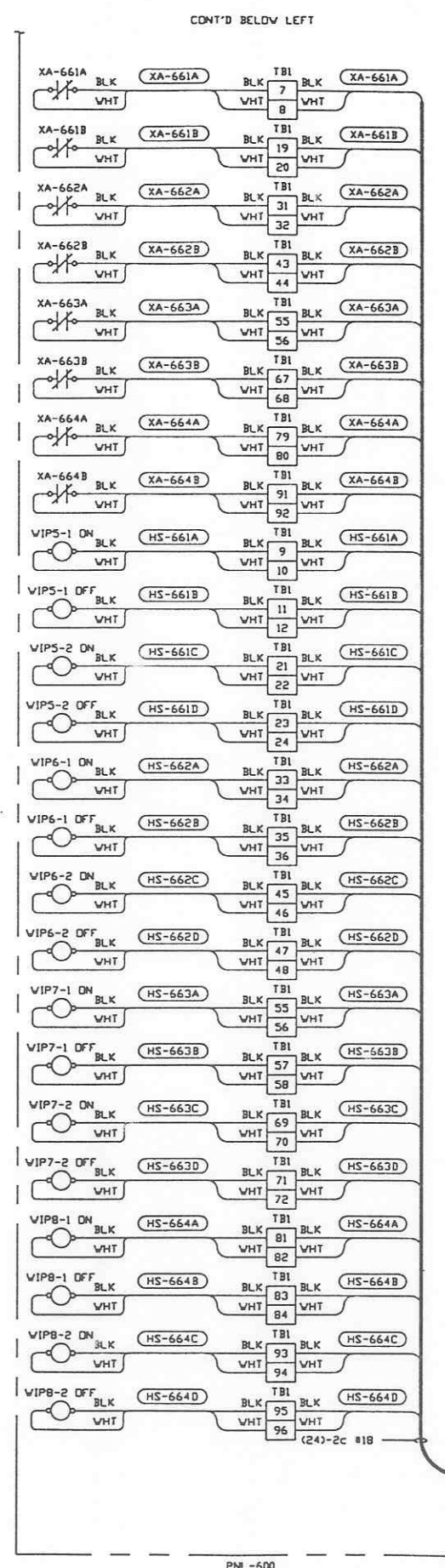
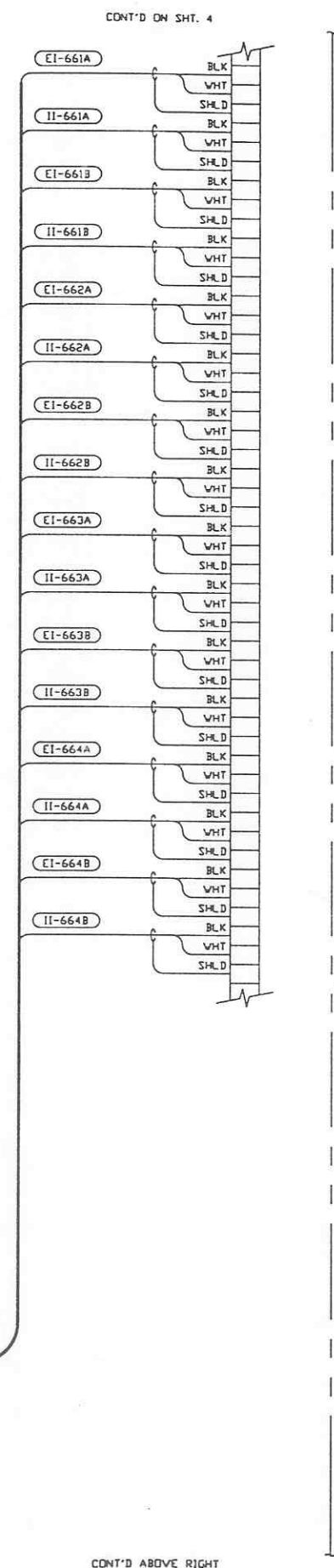
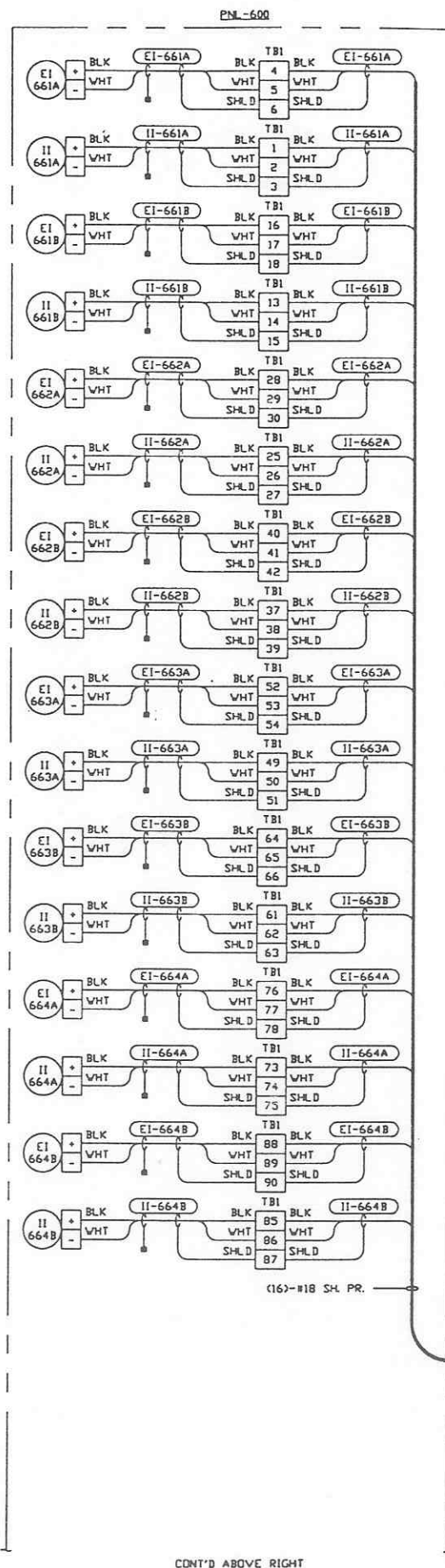
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PRELIMINARY NOT FOR CONSTRUCTION

SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
CDS INTERFACE DIAGRAM LIGO VACUUM EQUIPMENT LOUISIANA SITE CORNER STATION			
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SCALE NONE	SHEET 3 OF 4		

LIGO-D970127-00-V



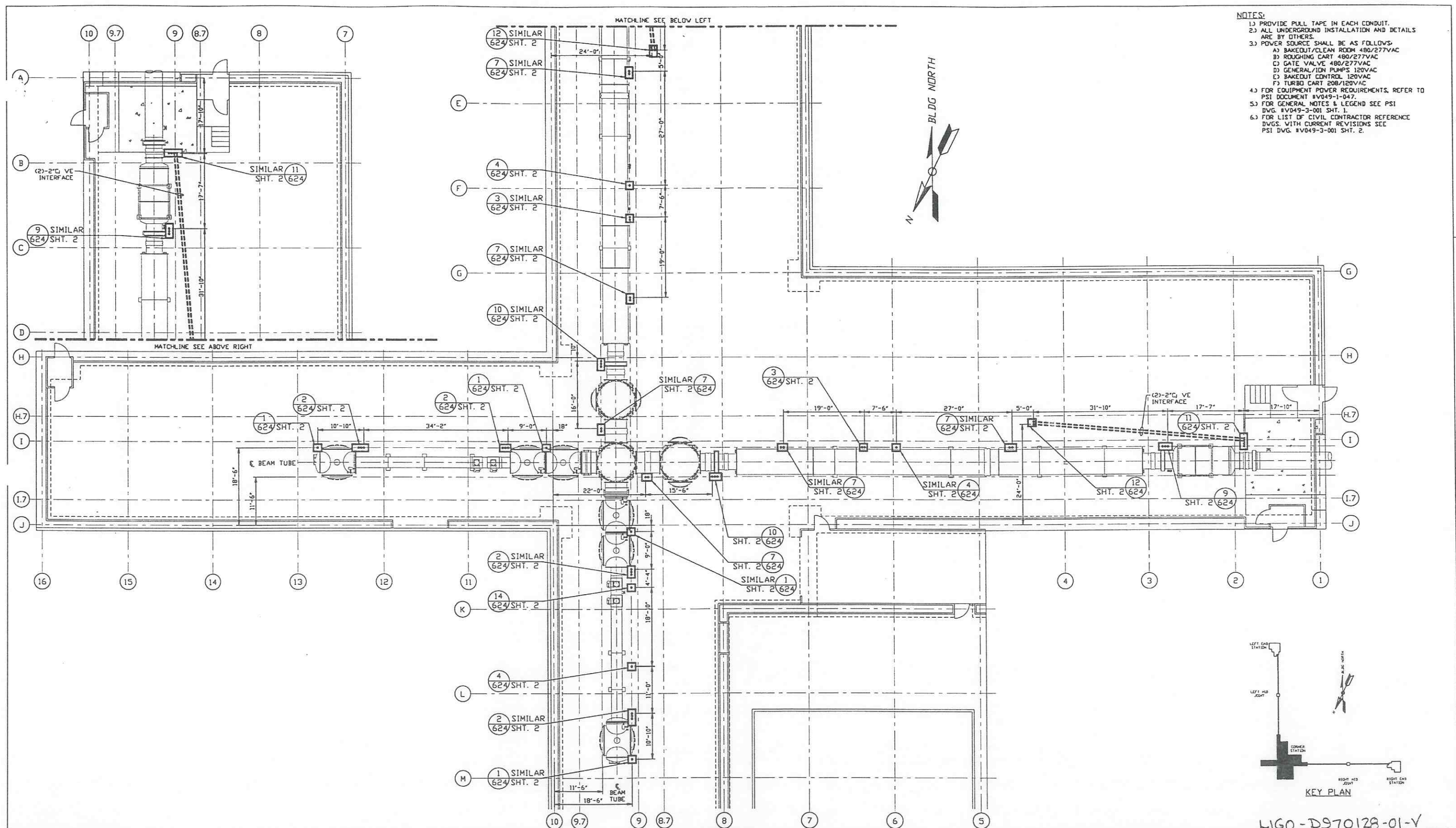
PRELIMINARY NOT FOR CONSTRUCTION

SEE SHEET 1 FOR REVISIONS

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

CDS INTERFACE DIAGRAM
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
CORNER STATION

CAD FILE	SIZE	REV. NO.	REV.
V0493623-362354	D	V049-3-623	0
SCALE	NONE	SHEET	4 OF 4



- NOTES:**
- 1) PROVIDE PULL TAPE IN EACH CONDUIT.
 - 2) ALL UNDERGROUND INSTALLATION AND DETAILS ARE BY OTHERS.
 - 3) POWER SOURCE SHALL BE AS FOLLOWS:
 - A) BAKEDOUT/CLEAN ROOM 480/277VAC
 - B) ROUGHING CART 480/277VAC
 - C) GATE VALVE 480/277VAC
 - D) GENERAL/ION PUMPS 120VAC
 - E) BAKEDOUT CONTROL 120VAC
 - F) TURBO CART 208/120VAC
 - 4) FOR EQUIPMENT POWER REQUIREMENTS, REFER TO PSI DOCUMENT #V049-1-047.
 - 5) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 6) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.

DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
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8	7	16	15
16	15	14	13
14	13	12	11
12	11	11	10
11	10	10	9.7
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9	8.7	8	7
8	7	7	6
7	6	6	5
6	5	5	4
5	4	4	3
4	3	3	2
3	2	2	1
2	1	1	

DO NOT SCALE THIS DRAWING	REV	DESCRIPTION	CHKD	DRWN	DATE	DESB
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0		ISSUE FOR INSTALLATION			12.03.96	0374

LIGO-D970128-01-V

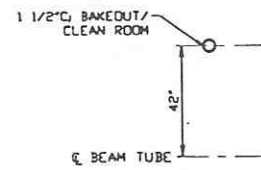
PROCESS SYSTEMS INTERNATIONAL, INC.
20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

ELECTRICAL CONDUIT STUB-UP PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
CORNER STATION

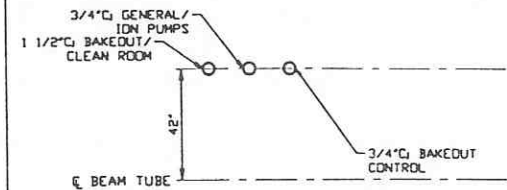
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SHEET: 1 OF 2
SCALE: 1" = 10'-0"

PROPRIETARY AND CONFIDENTIAL

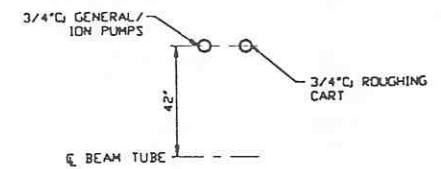
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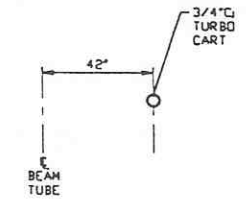
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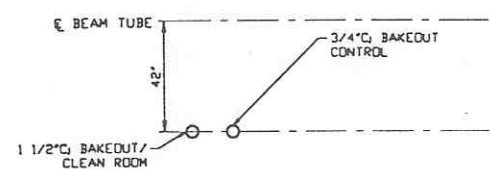
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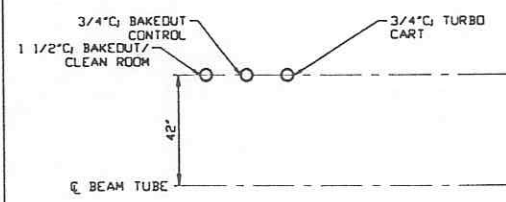
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NO SCALE --- V049-3-624 SHT. 1



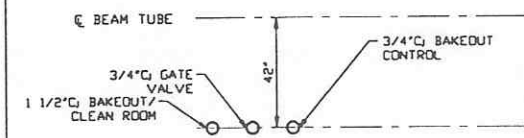
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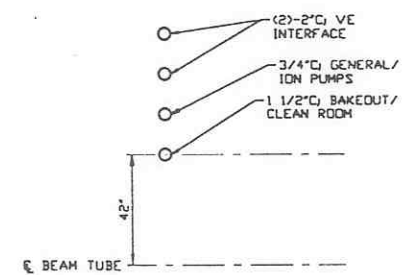
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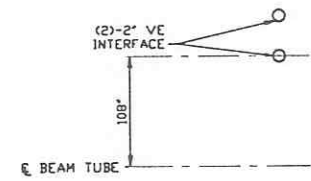
DETAIL 9 REF.
NO SCALE --- V049-3-624 SHT. 1



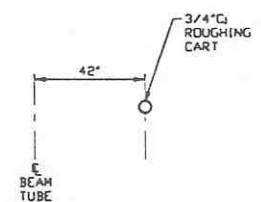
DETAIL 10 REF.
NO SCALE --- V049-3-624 SHT. 1



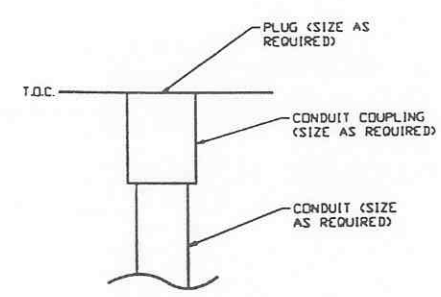
DETAIL 11 REF.
NO SCALE --- V049-3-624 SHT. 1



DETAIL 12 REF.
NO SCALE --- V049-3-624 SHT. 1



DETAIL 14 REF.
NO SCALE --- V049-3-624 SHT. 1



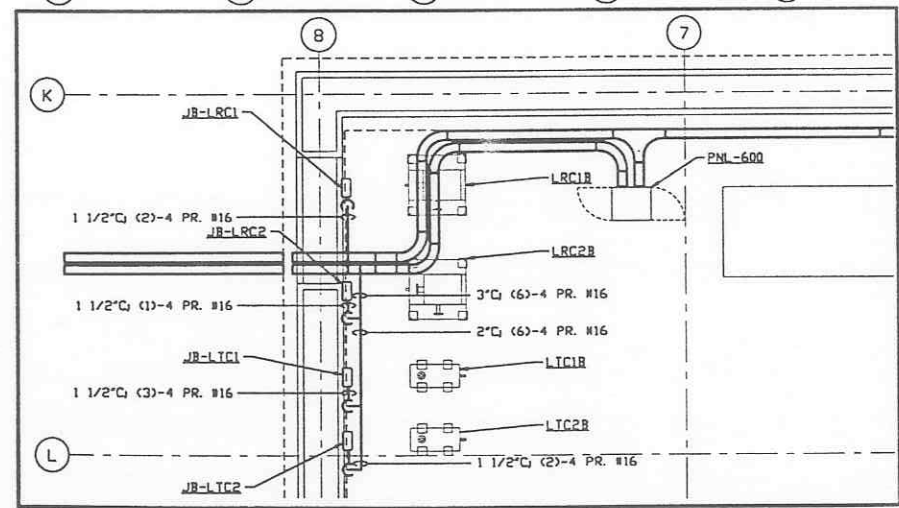
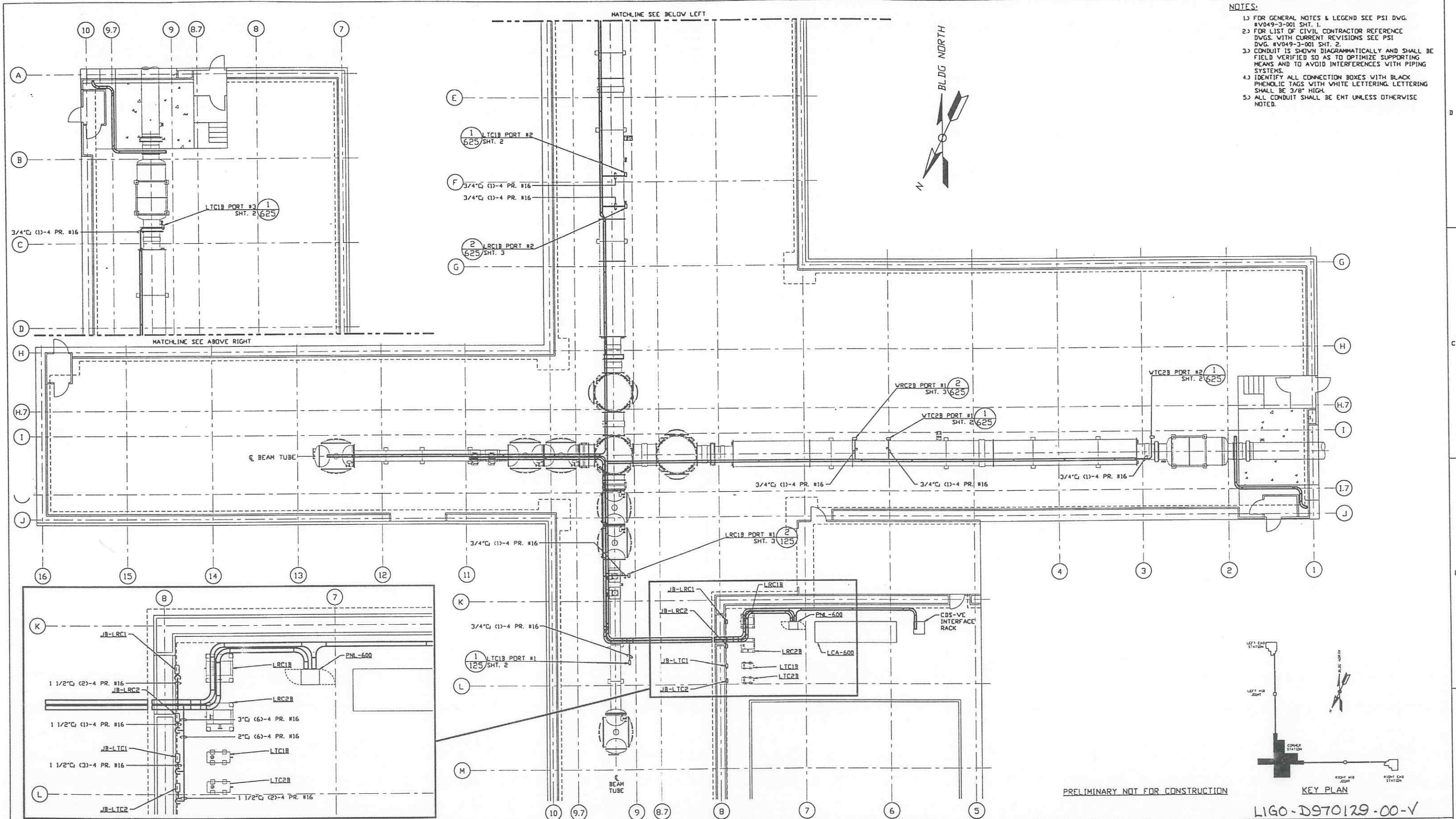
DETAIL 16 REF.
NO SCALE --- V049-3-624 SHT. 1

LIGO-D970128-01-V

SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
ELECTRICAL CONDUIT STUB-UP PLAN LIGO VACUUM EQUIPMENT LOUISIANA SITE CORNER STATION			
CAD FILE	SIZE	FIG. NO.	REV.
V0493624/3624S2	D	V049-3-624	1
SCALE	NONE	SHEET	2 OF 2

- NOTES:**
- 1) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3) CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - 4) IDENTIFY ALL CONNECTION BOXES WITH BLACK PHENOLIC TAGS WITH WHITE LETTERING. LETTERING SHALL BE 3/8" HIGH.
 - 5) ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.



PRELIMINARY NOT FOR CONSTRUCTION

KEY PLAN

LIGO-D970129-00-V

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-608	CABLE TRAY PLAN LOUISIANA RIGHT BEAM MANIFOLD		
V049-3-607	CABLE TRAY PLAN LOUISIANA LEFT BEAM MANIFOLD		
V049-3-606	CABLE TRAY PLAN LOUISIANA VERTEX SECTION		
V049-5-03	EQUIP. ARRANGEMENT LOUISIANA VERTEX SECTION		
REFERENCE DRAWINGS			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL ± ANGULAR/ARCH ± .00" BEHND AS*
 TWO PLACE DECIMAL ± .01
 THREE PLACE DECIMAL ± .005
 FINISHED SURFACE ROPS
 BENCH CONFORMS TO OUT-
 REMOVE ALL BURRS

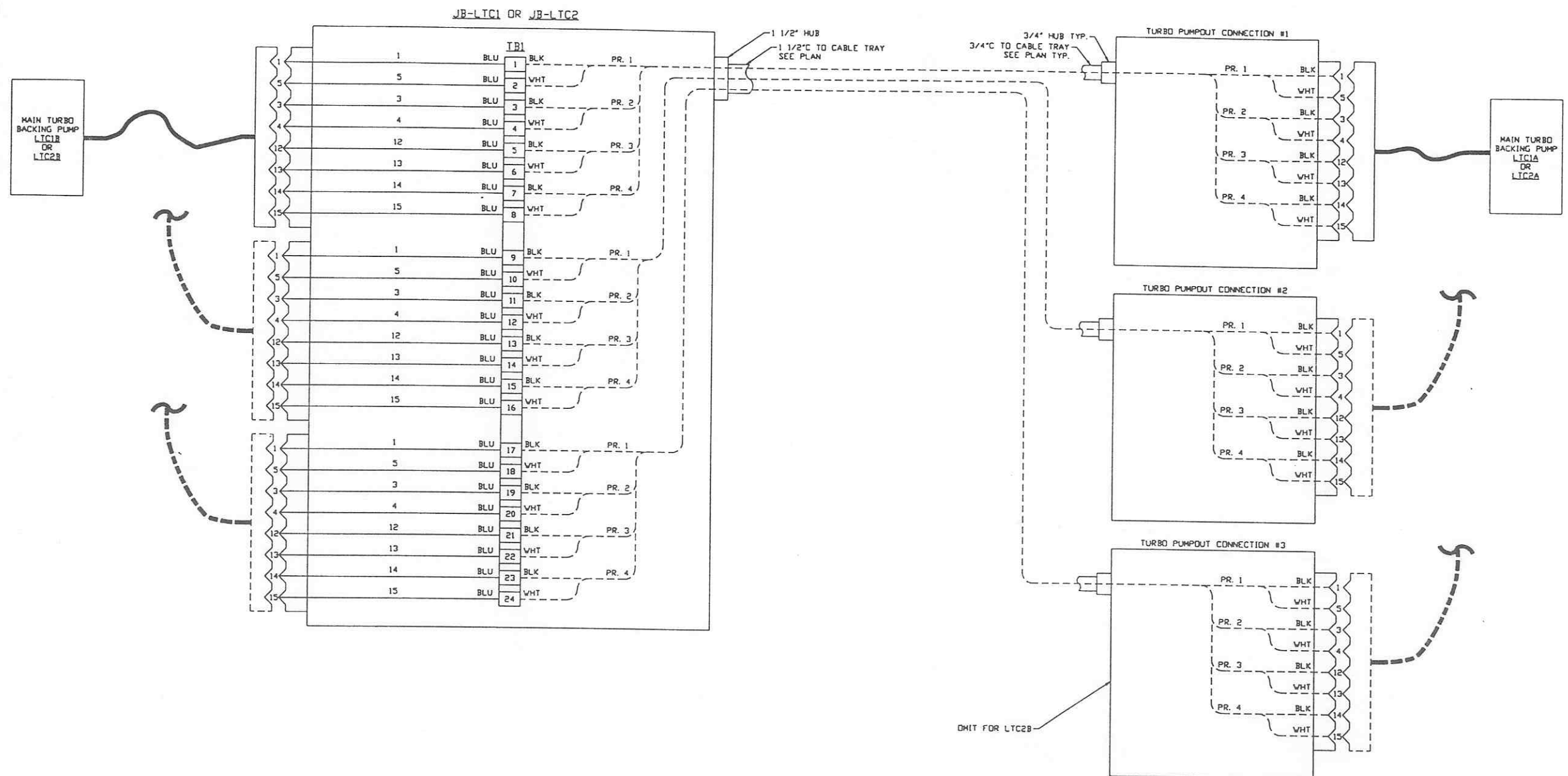
DO NOT SCALE THIS DRAWING

REV	DESCRIPTION	CHKD	DRWN	DATE	DEC#	SCALE	SHEET
0	ISSUE FOR LA DESIGN REVIEW			02-24-97	0430	1" = 10'-0"	1 OF 3

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

VACUUM CARTS INTERFACE PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 CORNER STATION

CAB FILE: V0493625\362551
 SIZE: D
 DWG. NO.: V049-3-625
 REV: 0



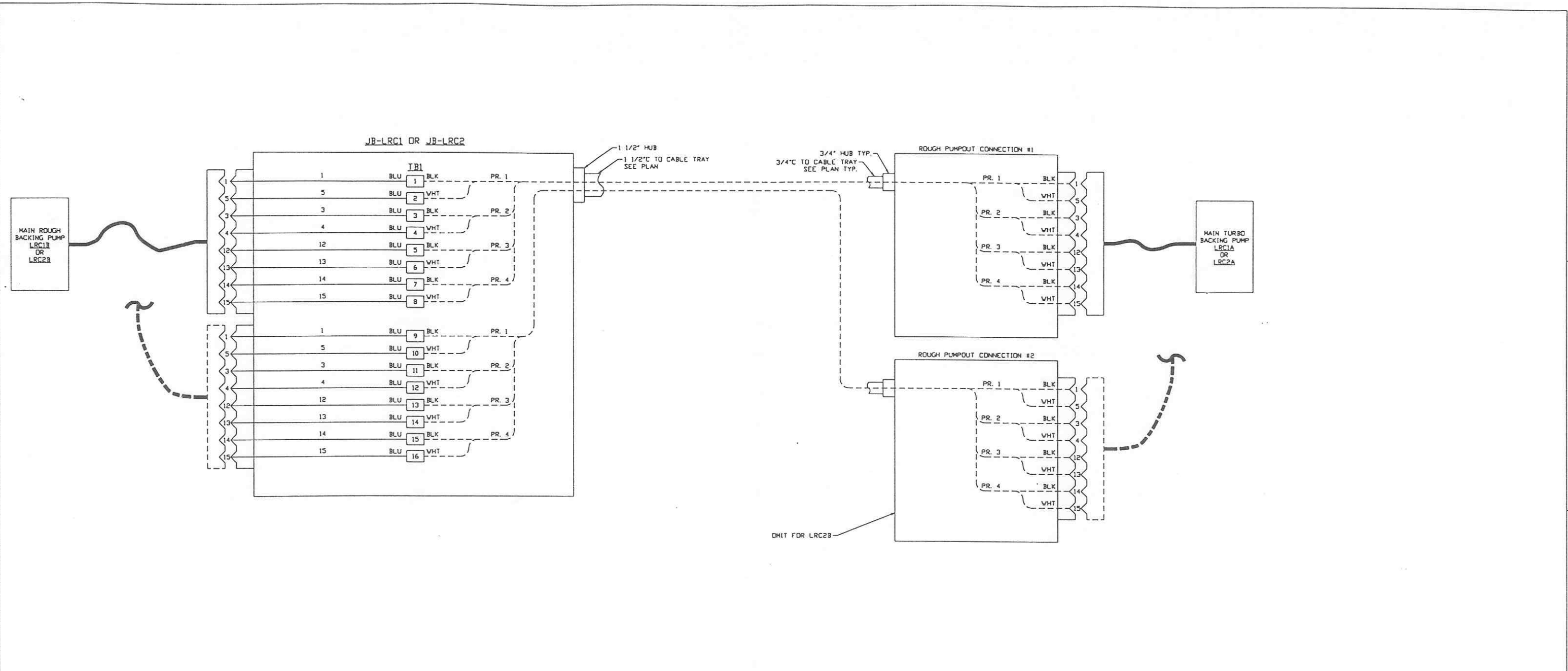
MAIN TURBO CART INTERFACE WIRING DIAGRAM

DETAIL 1 REF.
SCALE: NONE --- V049-3-625

PRELIMINARY NOT FOR CONSTRUCTION

SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
VACUUM CARTS INTERFACE PLAN LIGO VACUUM EQUIPMENT LOUISIANA SITE CORNER STATION			
CAD FILE V0493625\3625S2	SIZE D	DWG. NO. V049-3-625	REV. 0
SCALE AS NOTED	SHEET 2 OF 3		



MAIN MAINING CART INTERFACE WIRING DIAGRAM

DETAIL 2 REF.
SCALE: NONE --- V049-3-625

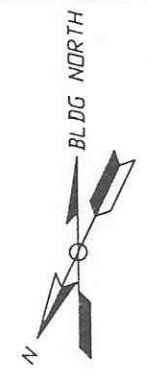
PRELIMINARY NOT FOR CONSTRUCTION

SEE SHEET 1 FOR REVISIONS

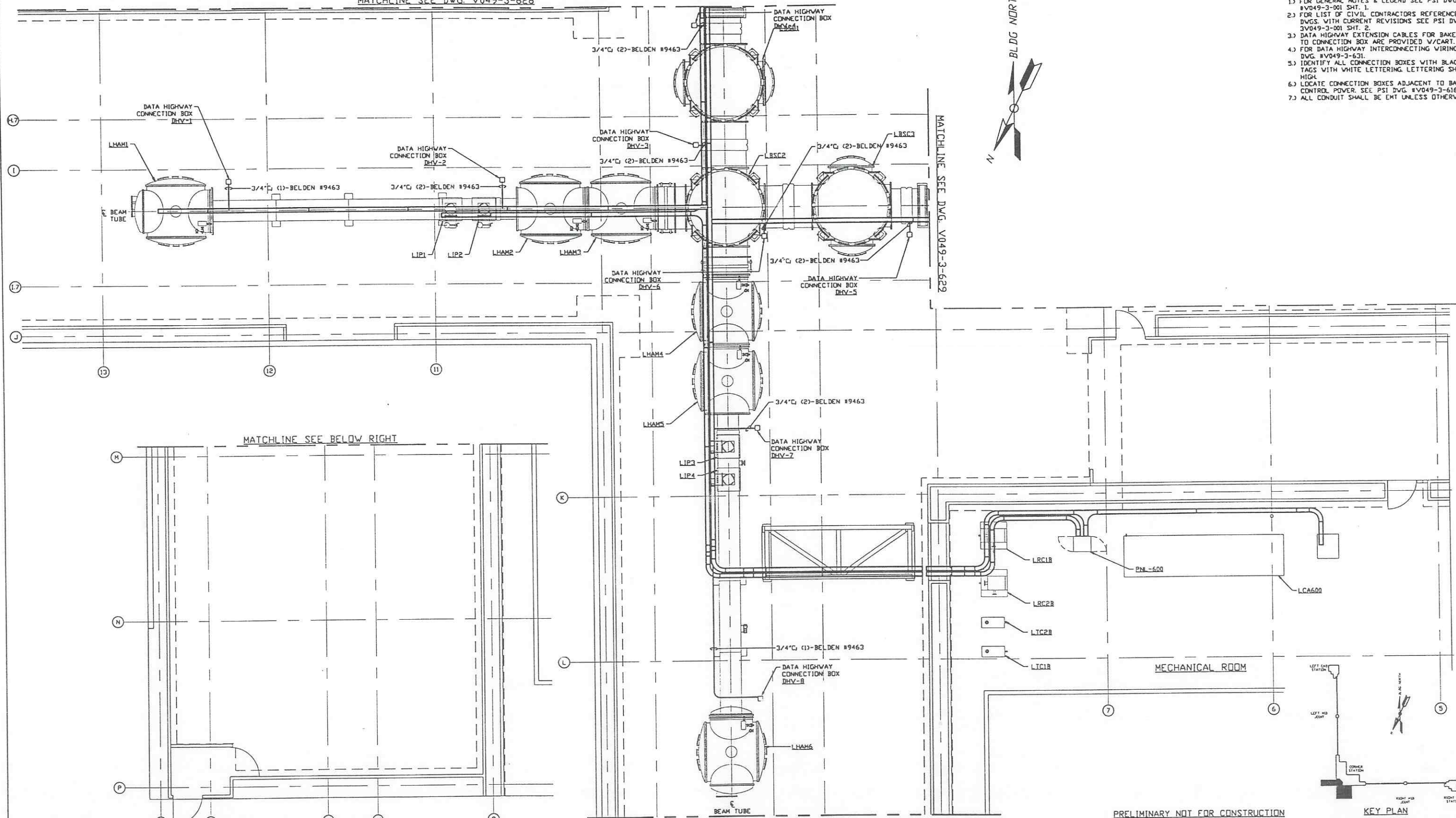
PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
VACUUM CARTS INTERFACE PLAN LIGO VACUUM EQUIPMENT LOUISIANA SITE CORNER STATION			
CAD FILE V0493625\3625S3	SIZE D	DWG. NO. V049-3-625	REV. 0
SCALE AS NOTED	SHEET 3 OF 3		

LIGO-D970179-00-V

MATCHLINE SEE DWG. V049-3-628



- NOTES:**
- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2.) FOR LIST OF CIVIL CONTRACTORS REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3.) DATA HIGHWAY EXTENSION CABLES FOR BAKEDOUT CART TO CONNECTION BOX ARE PROVIDED V/CART. DWG. #V049-3-631.
 - 4.) FOR DATA HIGHWAY INTERCONNECTING WIRING SEE DWG. #V049-3-631.
 - 5.) IDENTIFY ALL CONNECTION BOXES WITH BLACK PHENOLIC TAGS WITH WHITE LETTERING. LETTERING SHALL BE 3/8" HIGH.
 - 6.) LOCATE CONNECTION BOXES ADJACENT TO BAKEDOUT CART CONTROL POWER. SEE PSI DWG. #V049-3-616.
 - 7.) ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.



MATCHLINE SEE BELOW RIGHT

MATCHLINE SEE DWG. V049-3-629

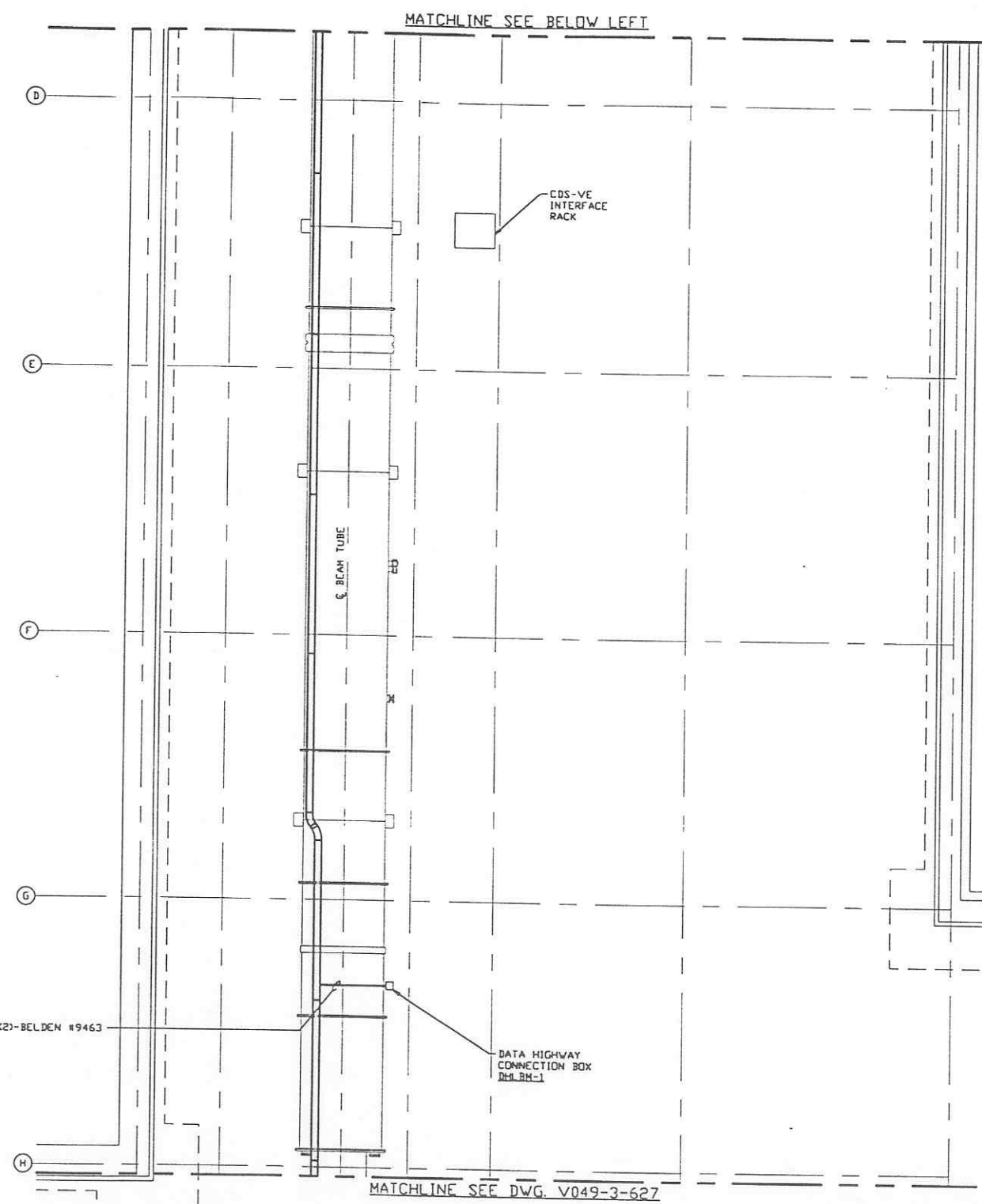
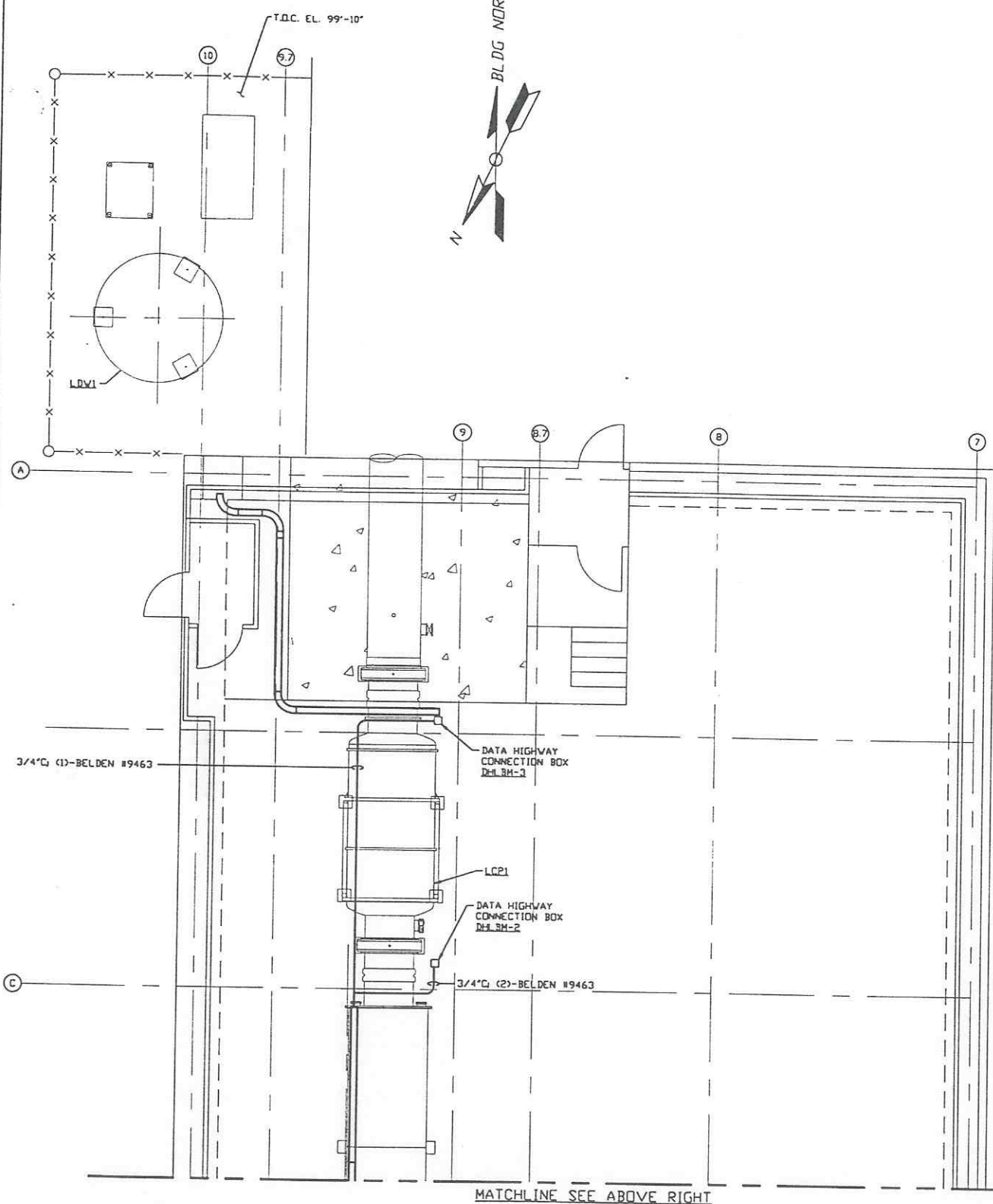
MATCHLINE SEE ABOVE LEFT
VERTEX SECTION PLAN @ EL. 100'-0"

PRELIMINARY NOT FOR CONSTRUCTION

KEY PLAN

LIGO-D970130-00-V

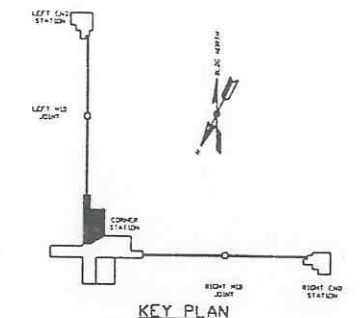
<p>PROPRIETARY AND CONFIDENTIAL</p> <p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO PROCESS SYSTEMS INTERNATIONAL, INC. OR ITS SUBSIDIARIES AND SHALL BE KEPT CONFIDENTIAL. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF PROCESS SYSTEMS INTERNATIONAL, INC. AND SHALL BE RETURNED UPON REQUEST.</p>		<p>V049-3-631 DATA HIGHWAY INTERCONNECTION DIAGRAM LOUISIANA</p> <p>V049-3-616 POWER PLAN LOUISIANA VERTEX SECTION</p> <p>V049-3-606 CABLE TRAY PLAN LOUISIANA VERTEX SECTION</p> <p>V049-3-003 LOUISIANA OVERALL SITE PLAN</p> <p>V049-3-001 GENERAL NOTES & LEGEND</p>		<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES: FRACTIONAL & ANGULAR: 1/16" & 30' BENDS 1/2" TWO PLACE DECIMAL & 3/16" THREE PLACE DECIMAL & 3/32" FINISHED SURFACE DIM. DIM. REMOVE ALL BURRS</p>		<p>DO NOT SCALE THIS DRAWING</p> <p>USED ON</p> <p>NEXT ASS'Y</p>		<p>0 ISSUE FOR LA DESIGN REVIEW</p> <p>REV DESCRIPTION</p> <p>ISSUE DESCRIPTION</p>		<p>0224.97 0430</p> <p>CHKD DRWN DATE DEOR</p>		<p>PROCESS SYSTEMS INTERNATIONAL, INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA</p> <p>DATA HIGHWAY PLAN LIGO VACUUM EQUIPMENT LOUISIANA SITE VERTEX SECTION</p>		<p>CAB FILE V0493627</p> <p>SIZE D</p> <p>DWG. NO. V049-3-627</p> <p>SCALE 3/16" = 1' - 0"</p> <p>SHEET 1 OF 1</p>		<p>REV. 0</p>
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- NOTES:**
- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2.) FOR LIST OF CIVIL CONTRACTORS REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3.) DATA HIGHWAY EXTENSION CABLES FOR BAKEDOUT CART TO CONNECTION BOX ARE PROVIDED W/CART. DWG. #V049-3-631.
 - 4.) FOR DATA HIGHWAY INTERCONNECTING WIRING SEE DWG. #V049-3-631.
 - 5.) IDENTIFY ALL CONNECTION BOXES WITH BLACK PHENOLIC TAGS WITH WHITE LETTERING. LETTERING SHALL BE 3/8" HIGH.
 - 6.) LOCATE CONNECTION BOXES ADJACENT TO BAKEDOUT CART CONTROL POWER. SEE PSI DWG. #V049-3-617.
 - 7.) ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.

LEFT BEAM MANIFOLD PLAN @ EL. 100'-0"

PRELIMINARY NOT FOR CONSTRUCTION



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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-631	DATA HIGHWAY INTERCONNECTION DIAGRAM LOUISIANA		
V049-3-617	POWER PLAN LOUISIANA LEFT BEAM MANIFOLD		
V049-3-607	CABLE TRAY PLAN LOUISIANA LEFT BEAM MANIFOLD		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		

REV	DESCRIPTION	CHKD	DRVN	DATE	DEDR
0	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430

LIGO-D970131-00-V

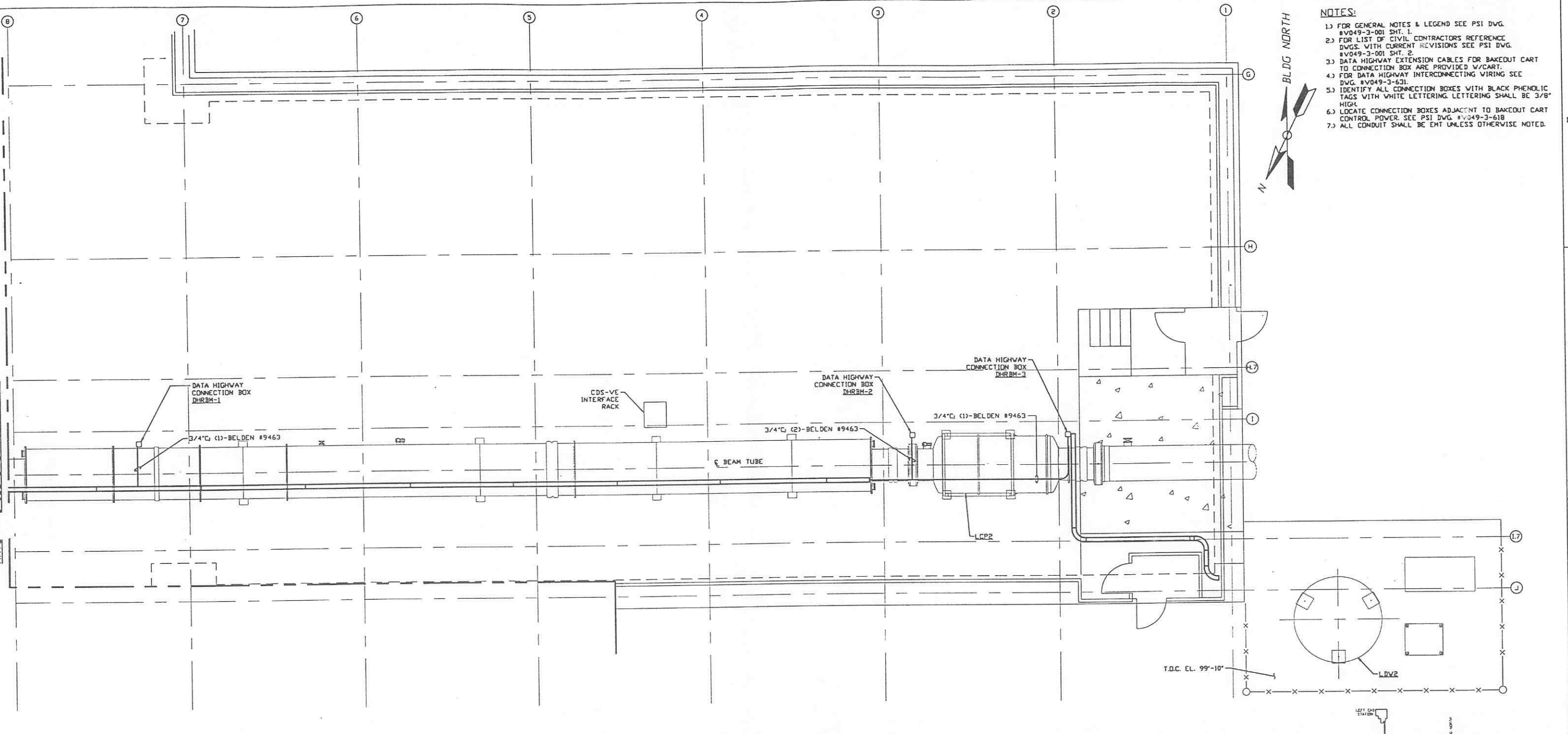
PROCESS SYSTEMS INTERNATIONAL, INC.
 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

DATA HIGHWAY PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 LEFT BEAM MANIFOLD

CAB FILE: V0493628
 SIZE: D
 DWG. NO.: V049-3-628
 REV.: 0

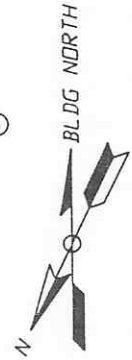
SCALE: 3/16" = 1' - 0"
 SHEET: 1 OF 1

SEE DWG. V049-3-62Z
MATCH

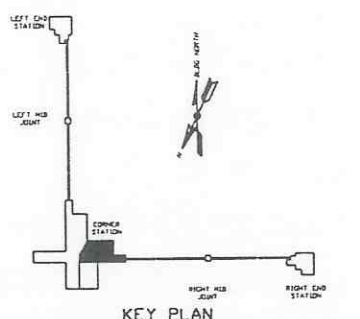


RIGHT BEAM MANIFOLD PLAN @ EL. 100'-0"

- NOTES:**
- FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - FOR LIST OF CIVIL CONTRACTORS REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - DATA HIGHWAY EXTENSION CABLES FOR BAKEOUT CART TO CONNECTION BOX ARE PROVIDED W/CART.
 - FOR DATA HIGHWAY INTERCONNECTING WIRING SEE DWG. #V049-3-631.
 - IDENTIFY ALL CONNECTION BOXES WITH BLACK PHENOLIC TAGS WITH WHITE LETTERING SHALL BE 3/8" HIGH.
 - LOCATE CONNECTION BOXES ADJACENT TO BAKEOUT CART CONTROL POWER. SEE PSI DWG. #V049-3-618.
 - ALL CONDUIT SHALL BE ENT UNLESS OTHERWISE NOTED.

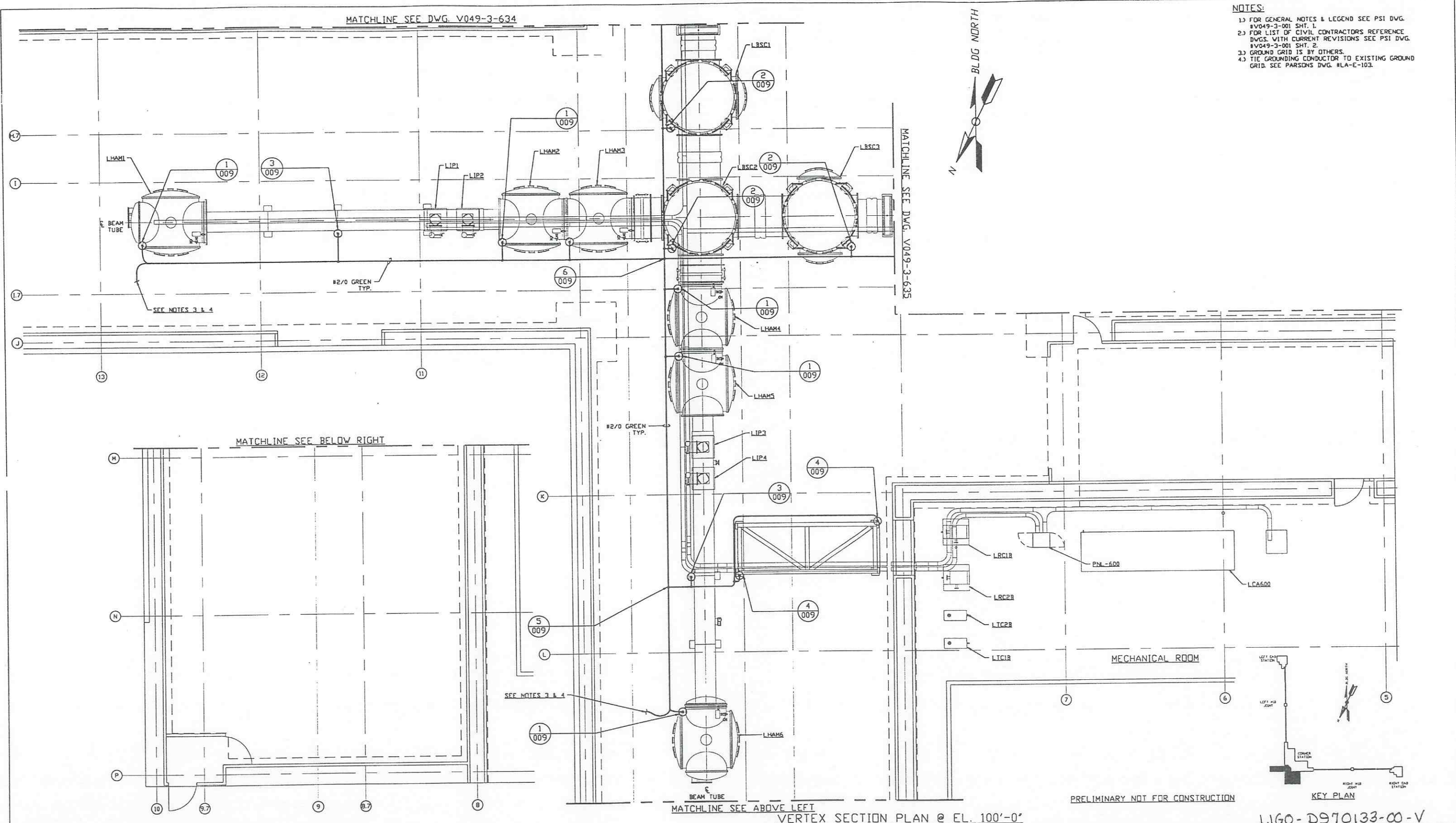


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LIGO-D970132-00-V

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- NOTES:**
- 1) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2) FOR LIST OF CIVIL CONTRACTORS REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3) GROUND GRID IS BY OTHERS.
 - 4) TIE GROUNDING CONDUCTOR TO EXISTING GROUND GRID. SEE PARSONS DWG. #LA-E-103.

PRELIMINARY NOT FOR CONSTRUCTION

KEY PLAN

VERTEX SECTION PLAN @ EL. 100'-0"

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

**GROUNDING PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
VERTEX SECTION**

CAD FILE: V0493633
SIZE: D
DWG. NO.: V049-3-633
REV: 0

DATE: 02-24-97
DEDR: 0430

SCALE: 3/16" = 1' - 0"

SHEET: 1 OF 1

DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-635	GROUNDING PLAN LOUISIANA RIGHT BEAM MANIFOLD		
V049-3-634	GROUNDING PLAN LOUISIANA LEFT BEAM MANIFOLD		
V049-3-606	CABLE TRAY PLAN LOUISIANA VERTEX SECTION		
V049-3-009	GROUNDING DETAILS		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		

REV	DESCRIPTION	CHKD	DRWN	DATE	DEDR
0	ISSUE FOR LA DESIGN REVIEW			02-24-97	0430

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± ANGULAR ± 15°-30° BEND ± 2°
TWO PLACE DECIMAL ± 0.01
THREE PLACE DECIMAL ± 0.005
FINISHED SURFACE DIMS
BREAK CORNERS 1/8" OUT
REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING

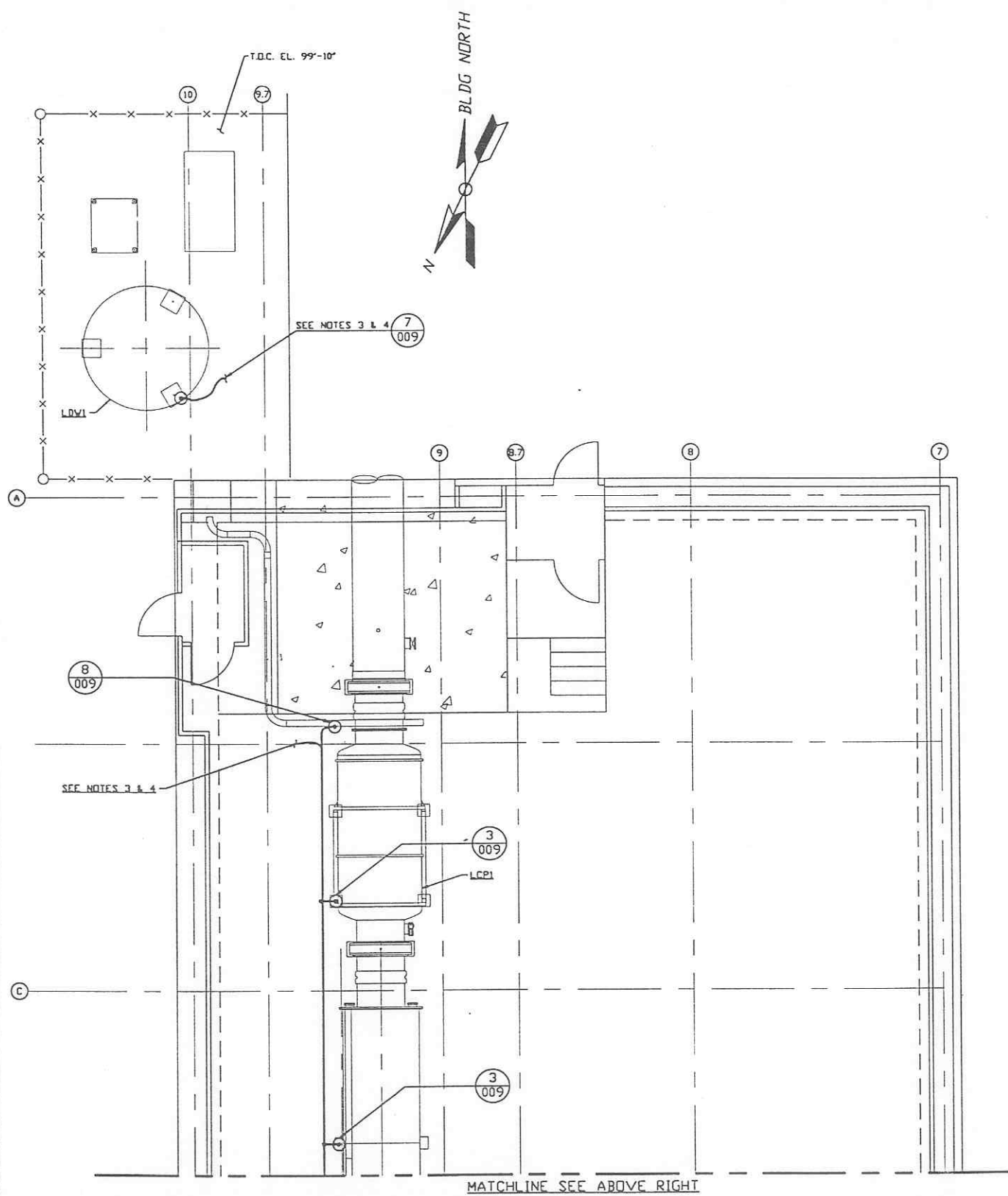
USED ON

NEXT ASS'Y.

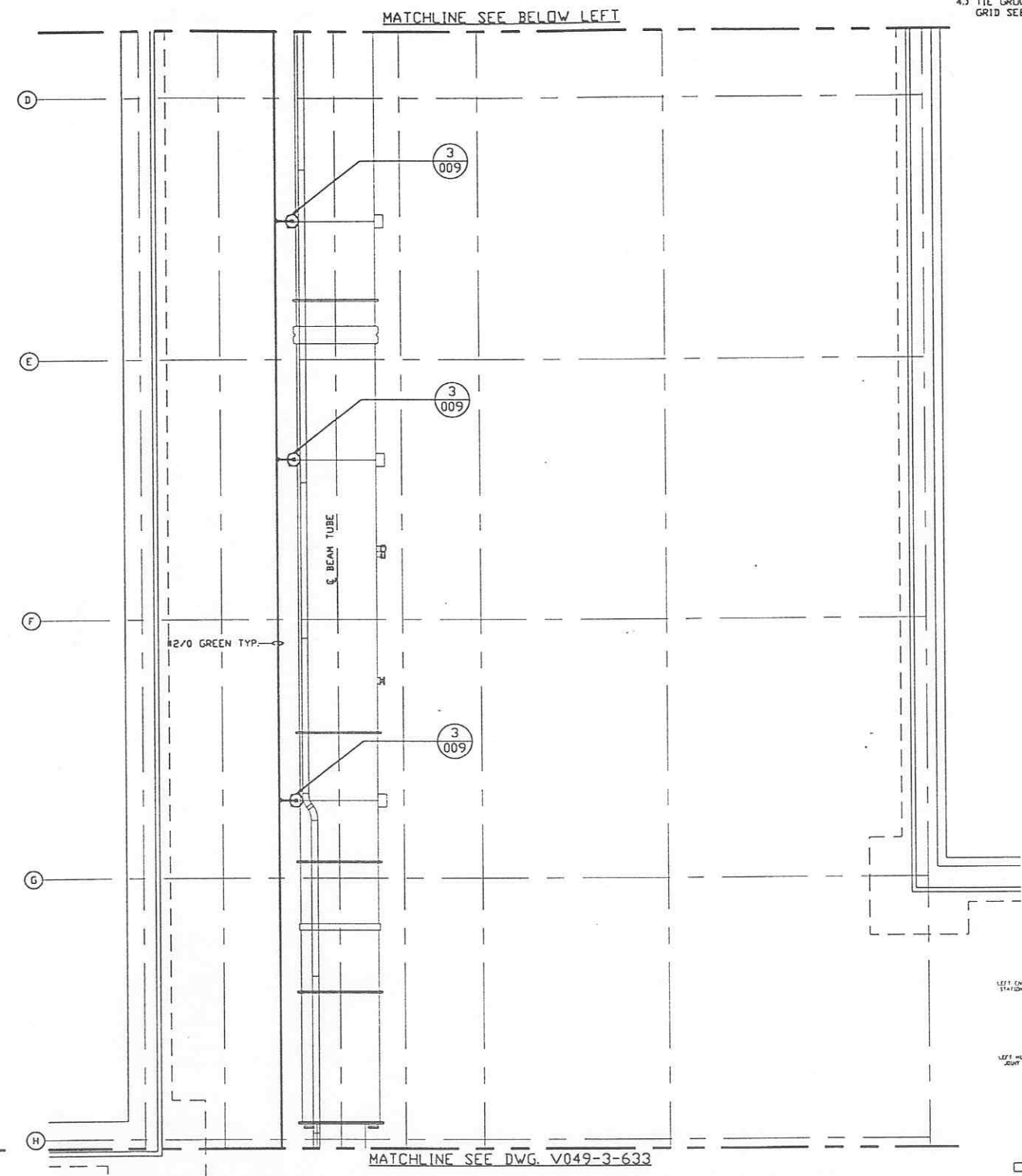
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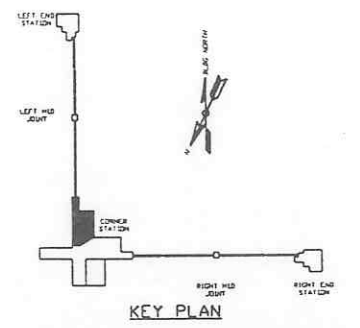
- NOTES:**
- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DVG. #V049-3-001 SHT. 1.
 - 2.) FOR LIST OF CIVIL CONTRACTORS REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DVG. #V049-3-001 SHT. 2.
 - 3.) GROUND GRID IS BY OTHERS.
 - 4.) TIE GROUNDING CONDUCTOR TO EXISTING GROUND GRID SEE PARSONS DVG. ILLA-E-103.



LEFT BEAM MANIFOLD PLAN @ EL. 100'-0"



PRELIMINARY NOT FOR CONSTRUCTION



LIGO-D970134-00-Y

DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-633	GROUNDING PLAN LOUISIANA VERTEX SECTION		
V049-3-607	CABLE TRAY PLAN LOUISIANA LEFT BEAM MANIFOLD		
V049-3-009	GROUNDING DETAILS		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		

REV	DESCRIPTION	CHKD	DRWN	DATE	DED#
0	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430

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

**GROUNDING PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
LEFT BEAM MANIFOLD**

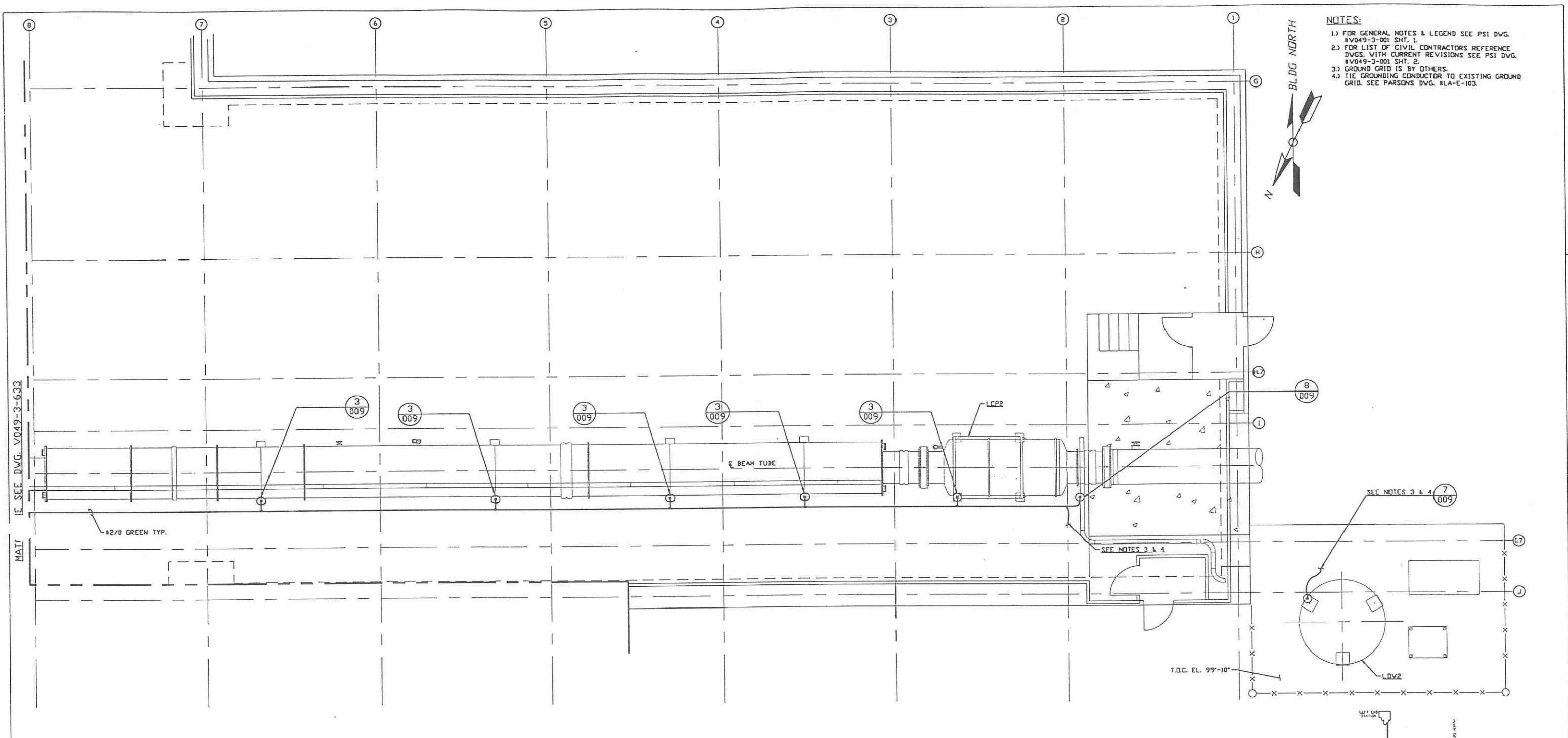
CAD FILE: V0493634
SIZE: D
DWG. NO.: V049-3-634
REV: 0

SCALE: 3/16" = 1' - 0"
SHEET: 1 OF 1

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL & ANGULAR DIMS 1/16" - 3/32" DECIMAL & IN TWO PLACE DECIMAL & IN THREE PLACE DECIMAL & IN FIVE PLACE DECIMAL
FURNISHED SURFACE FINISH: BREAK CORNERS TO OUT. REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING



- NOTES:**
- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2.) FOR LIST OF CIVIL CONTRACTORS REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3.) GROUND GRID IS BY OTHERS.
 - 4.) TIE GROUNDING CONDUCTOR TO EXISTING GROUND GRID. SEE PARSONS DWG. #LA-E-103.

RIGHT BEAM MANIFOLD PLAN @ EL. 100'-0"

SEE SEE DWG. V049-3-633

MATT

#2/0 GREEN TYP.

T.O.C. EL. 99'-10"

PRELIMINARY NOT FOR CONSTRUCTION

KEY PLAN

LIGO-D970135-00-V

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-633	GROUNDING PLAN LOUISIANA VERTEX SECTION		
V049-3-608	CABLE TRAY PLAN LOUISIANA RIGHT BEAM MANIFOLD		
V049-3-009	GROUNDING DETAILS		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		
REFERENCE DRAWINGS			

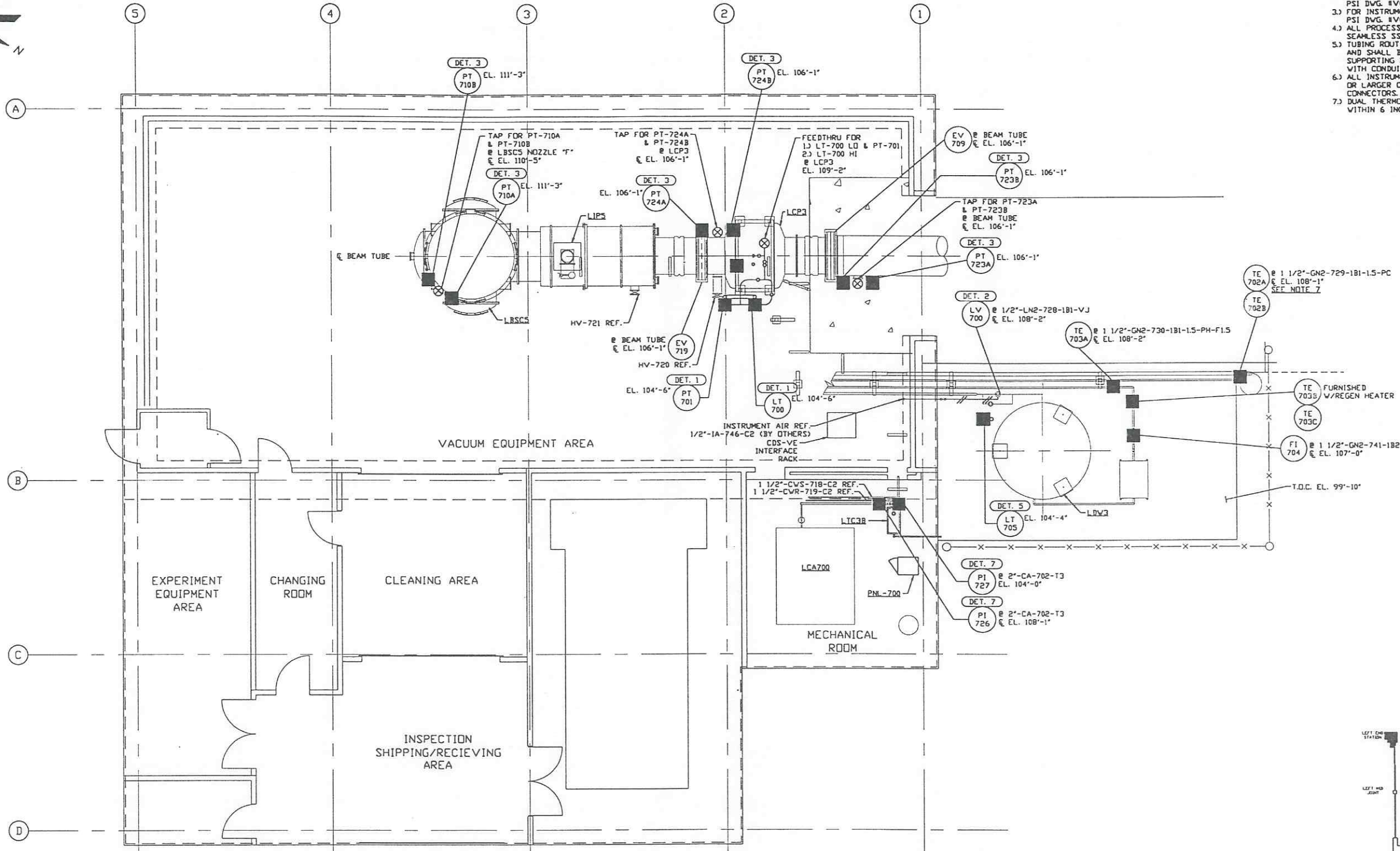
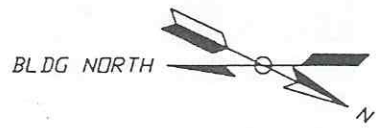
UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL ±
 ANGULAR ± 1/2°
 TWO PLACE DECIMAL ± .01
 THREE PLACE DECIMAL ± .005
 FINISHED SURFACE RISE
 BREAK CORNERS IN OUT-
 REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING	REV	DESCRIPTION	CHKD	DRWN	DATE	DESD
0	ISSUE FOR LA DESIGN REVIEW				02.24.97	0430
USED ON:						
NEXT ASSY:						

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

**GROUNDING PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 RIGHT BEAM MANIFOLD**

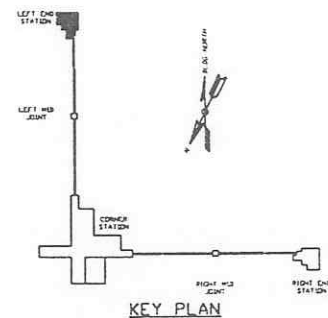
CAD FILE: V0493635
 DWG. NO.: V049-3-635
 SCALE: 3/16" = 1' - 0"
 SHEET: 1 OF 1



- NOTES:**
- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DVG. #V049-3-001 SHT. 1.
 - 2.) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DVG. #V049-3-001 SHT. 2.
 - 3.) FOR INSTRUMENT INSTALLATION DETAILS SEE PSI DVG. #V049-3-008.
 - 4.) ALL PROCESS TUBING SHALL BE 3/8" O.D. x .035 THK SEAMLESS SSTL TYPE 304.
 - 5.) TUBING ROUTING SHOWN ON PLAN IS DIAGRAMMATICAL AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH CONDUIT & PIPING SYSTEMS.
 - 6.) ALL INSTRUMENT AIR TUBING SHALL BE 1/4", TYPE L OR LARGER COPPER WITH BRASS COMPRESSION CONNECTORS.
 - 7.) DUAL THERMOCOUPLE TE-702A/B SHALL BE LOCATED WITHIN 6 INCHES OF THE CHECK VALVE HEAT TAPE.

LEFT END STATION PLAN @ EL. 100'-0"

PRELIMINARY NOT FOR CONSTRUCTION



LIGO-D970136-00-V

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	V049-5-009	EQUIP. ARRANGEMENT LOUISIANA LEFT END STATION			
	V049-3-008	INSTRUMENT INSTALLATION DETAILS			
	V049-3-003	LOUISIANA OVERALL SITE PLAN			
	V049-3-001	GENERAL NOTES & LEGEND			
	V049-0-010	P & I D WASHINGTON LEFT END STATION			
	DVG. NO.	DESCRIPTION	DVG. NO.	DESCRIPTION	
	REFERENCE DRAWINGS				

UNLESS OTHERWISE SPECIFIED					
DIMENSIONS ARE IN INCHES					
TOLERANCES					
FRACTIONAL					
ANGULAR					
TWO PLACE DECIMAL					
THREE PLACE DECIMAL					
FINISHED SURFACE DIMS					
BREAK CORNERS IN OUT					
REMOVE ALL BLURS					
DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW			
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE
NEXT ASS'Y.		ISSUE DESCRIPTION			

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

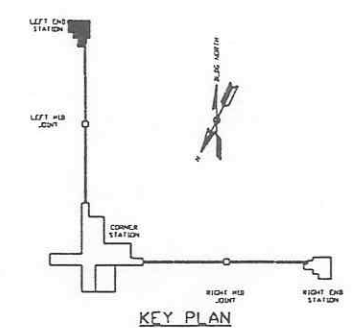
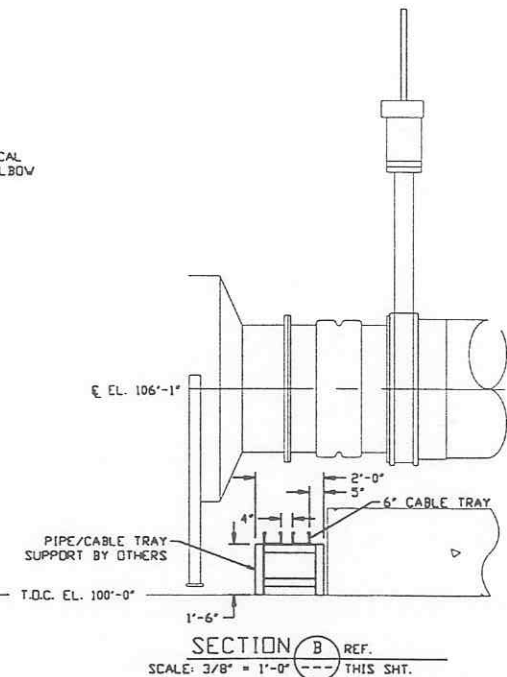
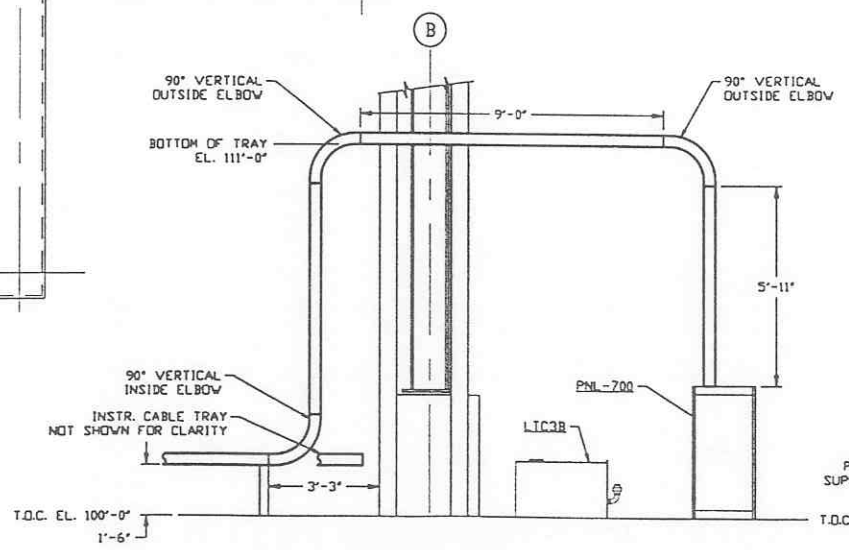
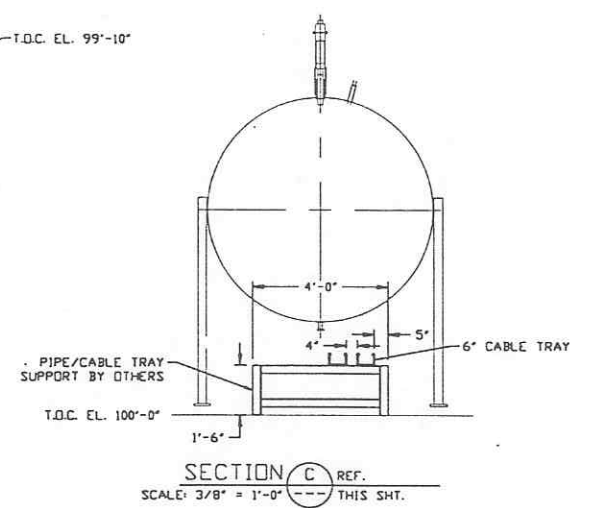
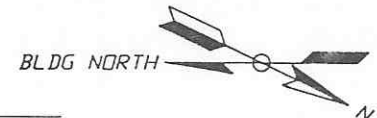
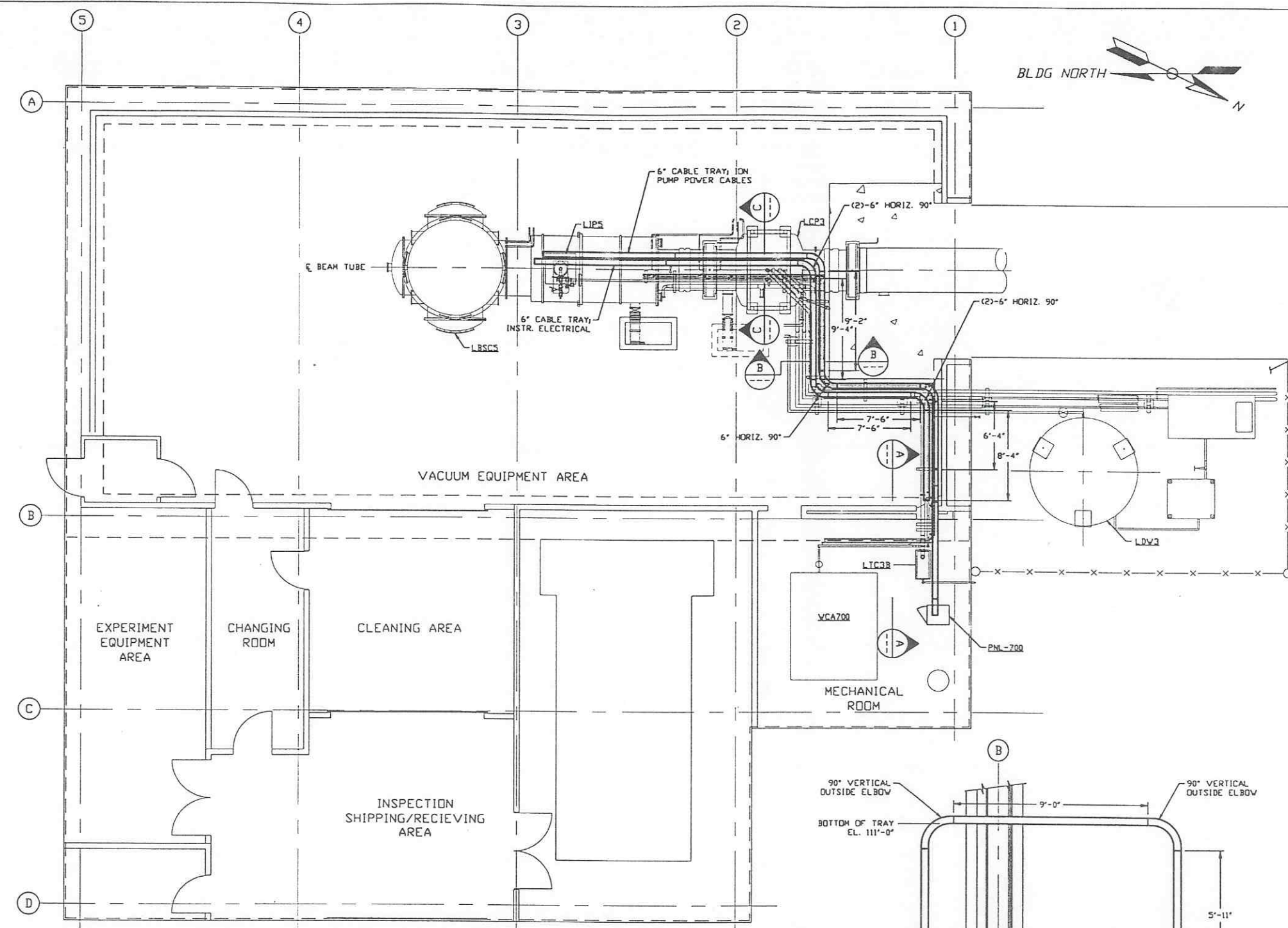
INSTRUMENT PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 LEFT END STATION

CAD FILE	SIZE	DWG. NO.	REV.
V0493701	D	V049-3-701	0

SCALE: 3/16" = 1' - 0"

SHEET 1 OF 1

- NOTES:**
- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2.) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3.) ALL CABLE TRAY LENGTHS ARE 12'-0" UNLESS OTHERWISE SPECIFIED.
 - 4.) ALL CABLE TRAY SHALL BE GROUNDED PER N.E.C.
 - 5.) ALL CABLE TRAY SHALL BE FIELD SUPPORTED.
 - 6.) CABLE TRAY FOR IDN PUMP POWER CABLES SHALL BE LABELED "DANGER HIGH VOLTAGE".
 - 7.) CABLE TRAY SHALL BE LADDER TYPE AND SHALL MEET LOAD/SPAN CLASS DESIGNATION 12A. CABLE TRAY SHALL BE OF ALUMINUM CONSTRUCTION.
 - 8.) CABLE TRAY SHALL HAVE SIDE CHANNEL FLANGES IN.
 - 9.) DIMENSIONS TO CABLE TRAY ARE MEASURED TO THE OUTSIDE EDGE OF FLANGE.



LEFT END STATION PLAN @ EL. 100'-0"

DWG. NO.	DESCRIPTION	REFERENCE DRAWINGS
V049-3-003	LOUISIANA OVERALL SITE PLAN	
V049-3-001	GENERAL NOTES & LEGEND	

REV	DESCRIPTION	DATE	DESB
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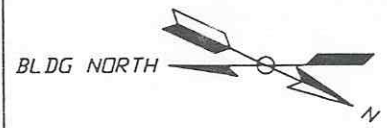
LIGO-D970137-00-V

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

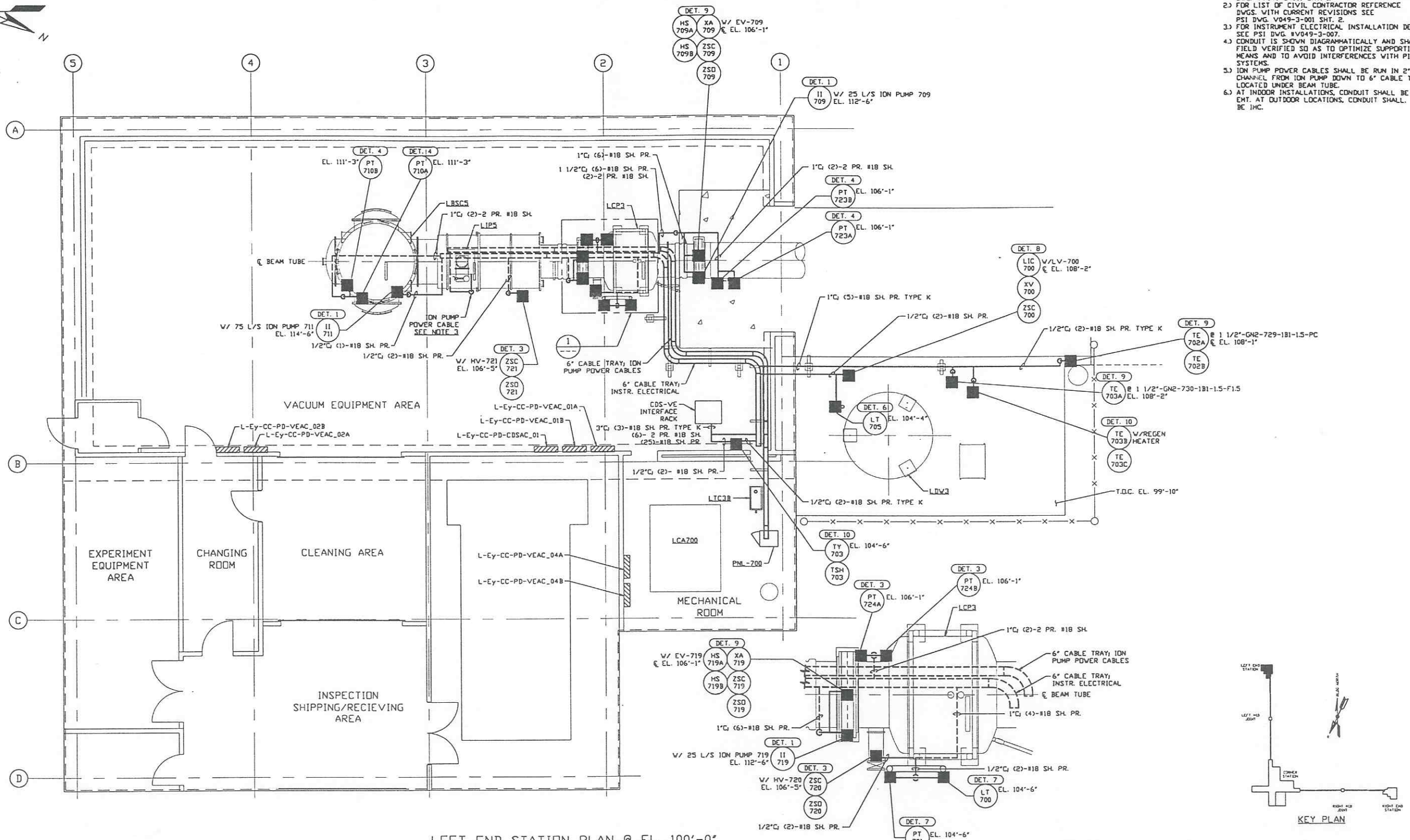
CABLE TRAY PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
LEFT END STATION

CAD FILE	SIZE	DWG. NO.	REV.
V0493702	D	V049-3-702	0

SCALE: 3/16" = 1' - 0" SHEET 1 OF 1



- NOTES:**
- 1) FOR PSI DVG. LIST & LEGEND SEE PSI DVG. #V049-3-001 SHT. 1
 - 2) FOR LIST OF CIVIL CONTRACTOR REFERENCE DVGs. WITH CURRENT REVISIONS SEE PSI DVG. #V049-3-001 SHT. 2
 - 3) FOR INSTRUMENT ELECTRICAL INSTALLATION DETAILS SEE PSI DVG. #V049-3-007
 - 4) CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - 5) ION PUMP POWER CABLES SHALL BE RUN IN 2" CABLE CHANNEL FROM ION PUMP DOWN TO 6" CABLE TRAY LOCATED UNDER BEAM TUBE.
 - 6) AT INDOOR INSTALLATIONS, CONDUIT SHALL BE EMT. AT OUTDOOR LOCATIONS, CONDUIT SHALL BE IMC.



LEFT END STATION PLAN @ EL. 100'-0"

DETAIL 1 REF. THIS SHT.
SCALE: 3/8" = 1' - 0"

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L190-D970138-00-V

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-707	PNL-700 WIRING DIAGRAM		
V049-3-701	INSTRUMENT PLAN LOUISIANA LEFT END STATION		
V049-3-007	INSTRUMENT ELECTRICAL INSTALLATION DETAILS		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND	V049-5-009	EQUIP. ARRANGEMENT LOUISIANA LEFT END STATION
V049-0-020	P & I D LOUISIANA LEFT END STATION	V049-3-708	CDS INTERFACE DIAGRAM

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: ANGULAR:
DECIMAL: 18"-30" 80° 15"
TWO PLACE DECIMAL: 0.005
THREE PLACE DECIMAL: 0.002
FINISHED SURFACE RISES
BREAK CORNERS IN
REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING	ISSUE FOR LA DESIGN REVIEW	USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DESD
0								

DO NOT SCALE THIS DRAWING	ISSUE FOR LA DESIGN REVIEW	USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DESD
0								

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

INSTRUMENT ELECTRICAL PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
LEFT END STATION

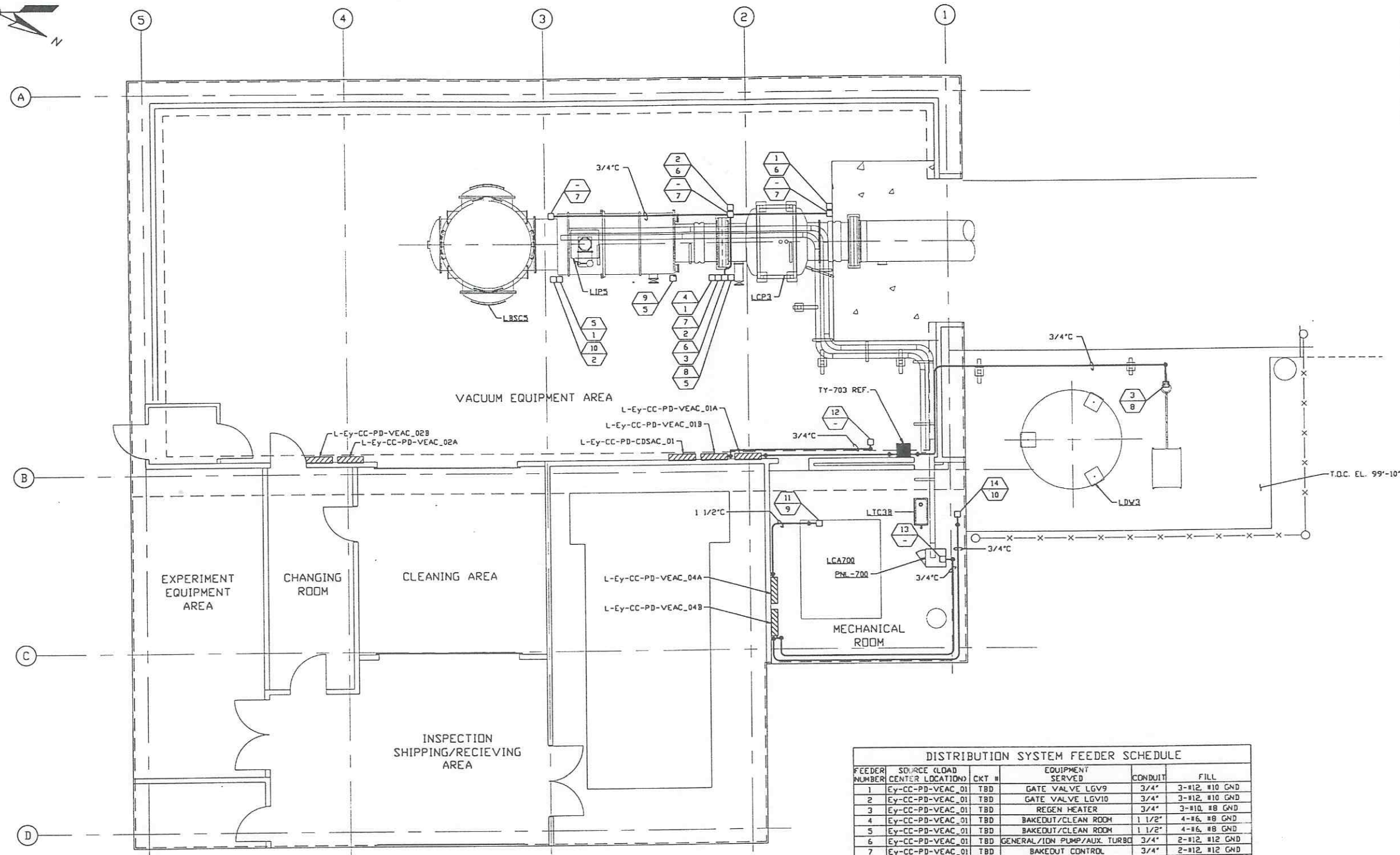
CAD FILE	SHEET	DWG. NO.	REV.
V0493703	D	V049-3-703	0

SCALE: 3/16" = 1' - 0" SHEET: 1 OF 1



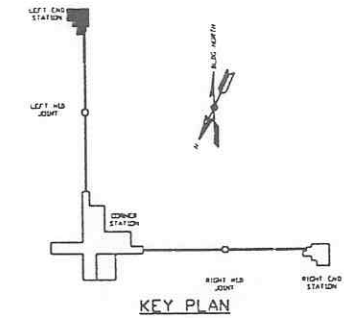
NOTES:

- 1.) FOR ELECTRICAL INSTALLATION DETAILS SEE PSI DVG. V049-3-006.
- 2.) CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
- 3.) ALL RECEPTACLES SHALL BE IDENTIFIED WITH PANEL AND CKT. NUMBER.
- 4.) EACH 3Ø CIRCUIT SHALL HAVE DEDICATED NEUTRAL AND GROUND.
- 5.) FOR GENERAL NOTES & LEGEND SEE PSI DVG. #V049-3-001 SHT. 1.
- 6.) FOR LIST OF CIVIL CONTRACTOR REFERENCE DVGS. WITH CURRENT REVISIONS SEE PSI DVG. #V049-3-001 SHT. 2.
- 7.) POWER DISTRIBUTION PANELS ARE FURNISHED BY OTHERS.
- 8.) AT INDOOR INSTALLATIONS, CONDUIT SHALL BE EMT. AT OUTDOOR INSTALLATIONS, CONDUIT SHALL BE IMC.



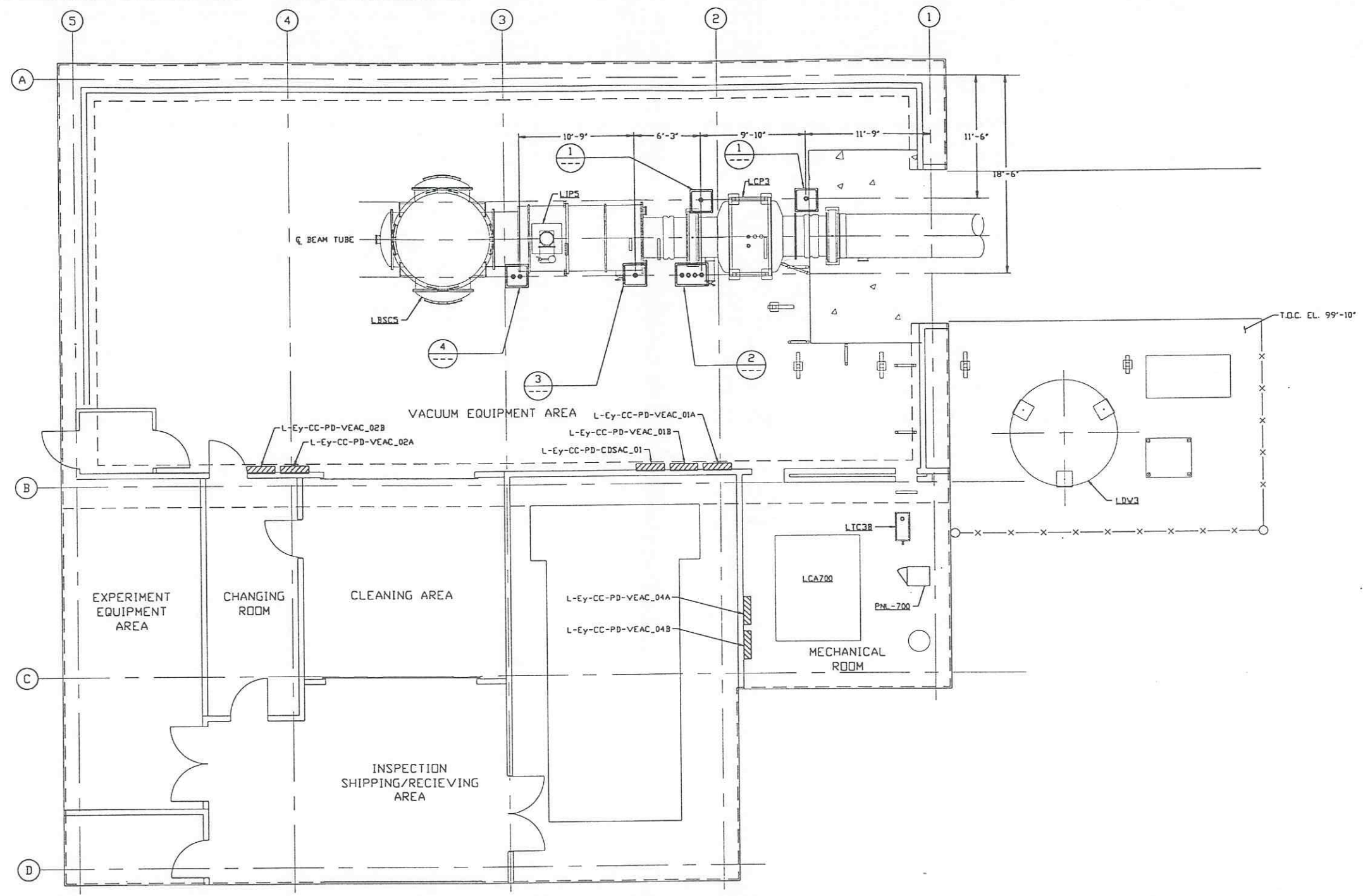
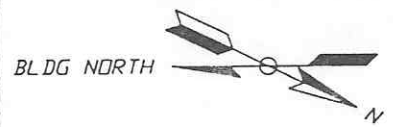
LEFT MID STATION PLAN @ EL. 100'-0"

DISTRIBUTION SYSTEM FEEDER SCHEDULE					
FEEDER NUMBER	SOURCE (LOAD CENTER LOCATION)	CKT #	EQUIPMENT SERVED	CONDUIT	FILL
1	Ey-CC-PD-VEAC_01	TBD	GATE VALVE LGV9	3/4"	3-#12, #10 GND
2	Ey-CC-PD-VEAC_01	TBD	GATE VALVE LGV10	3/4"	3-#12, #10 GND
3	Ey-CC-PD-VEAC_01	TBD	REGEN HEATER	3/4"	3-#10, #8 GND
4	Ey-CC-PD-VEAC_01	TBD	BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
5	Ey-CC-PD-VEAC_01	TBD	BAKEDOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
6	Ey-CC-PD-VEAC_01	TBD	GENERAL/IDN PUMP/AUX. TURBO	3/4"	2-#12, #12 GND
7	Ey-CC-PD-VEAC_01	TBD	BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
8	Ey-CC-PD-VEAC_01	TBD	TURBO PUMP	3/4"	4-#12, #10 GND
9	Ey-CC-PD-VEAC_01	TBD	TURBO PUMP	3/4"	4-#12, #10 GND
10	Ey-CC-PD-VEAC_01	TBD	BAKEDOUT CONTROL	3/4"	2-#12, #12 GND
11	Ey-CC-PD-VEAC_01	TBD	AIR COMPRESSOR	1 1/2"	3-#4, #6 GND
12	Ey-CC-PD-VEAC_03	TBD	VE CONTROL TRANSFORMER	3/4"	2-#12, #12 GND
13	Ey-CC-PD-VEAC_04	TBD	2500 L/S IDN PUMP	3/4"	2-#12, #12 GND
14	Ey-CC-PD-VEAC_04	TBD	TURBO BACKING PUMP	3/4"	4-#10, #8 GND



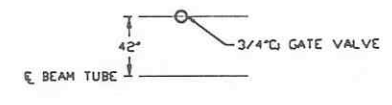
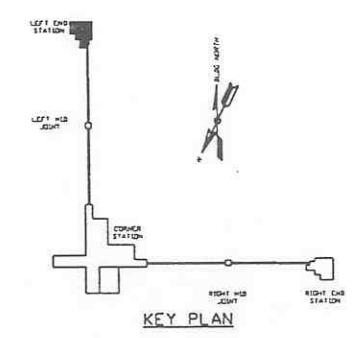
LIGO-D970139-00-V

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION																						
V049-3-006	ELECTRICAL INSTALLATION DETAILS																								
V049-3-005	ION PUMP CONTROLLER CABINET WIRING DIAGRAM																								
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V049-3-001	GENERAL NOTES & LEGEND																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>USED ON</th> <th>REV</th> <th>DESCRIPTION</th> <th>CHKD</th> <th>DRWN</th> <th>DATE</th> <th>DECD</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>				USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DECD								<p>CAB FILE: V0493704 SIZE: D DWG. NO.: V049-3-704 REV. 0</p> <p>SCALE: 3/16" = 1' - 0" SHEET: 1 OF 1</p>							
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DECD																			

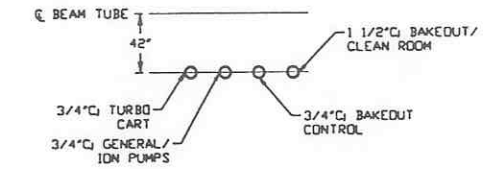


- NOTES:**
- 1.) PROVIDE PULL TAPE IN EACH CONDUIT.
 - 2.) ALL UNDERGROUND INSTALLATION AND DETAILS ARE BY OTHERS.
 - 3.) POWER SOURCE SHALL BE AS FOLLOWS:
 - A) BAKEDOUT/CLEAN ROOM 480/277VAC
 - B) GATE VALVE 480/277VAC
 - C) GENERAL/ION PUMPS 120VAC
 - D) BAKEDOUT CONTROL 120VAC
 - E) TURBO CART 208/120VAC
 - 4.) FOR EQUIPMENT POWER REQUIREMENTS, REFER TO PSI DOCUMENT #V049-1-047.
 - 5.) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 6.) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.

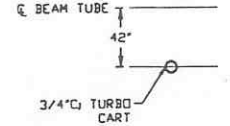
LEFT END STATION PLAN @ EL. 100'-0"



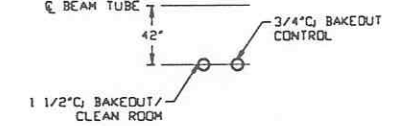
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DETAIL 2 REF. THIS SHT. NO SCALE



DETAIL 3 REF. THIS SHT. NO SCALE



DETAIL 4 REF. THIS SHT. NO SCALE

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL:
ANGULAR/ARCH 1/8"-30" BEH 1/8"
TWO PLACE DECIMAL ± .01
THREE PLACE DECIMAL ± .005
FINISHED SURFACE DIMS
BREAK CORNERS 1/8" OUT
REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING	REV	DESCRIPTION	CHKD	DRWN	DATE	DESB
	1	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430
	0	ISSUE FOR INSTALLATION			12.03.96	0374

LIGO-D970140-00-V

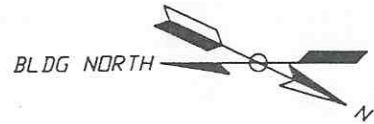
PROCESS SYSTEMS INTERNATIONAL, INC.
20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

ELECTRICAL CONDUIT STUB-UP PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
LEFT END STATION

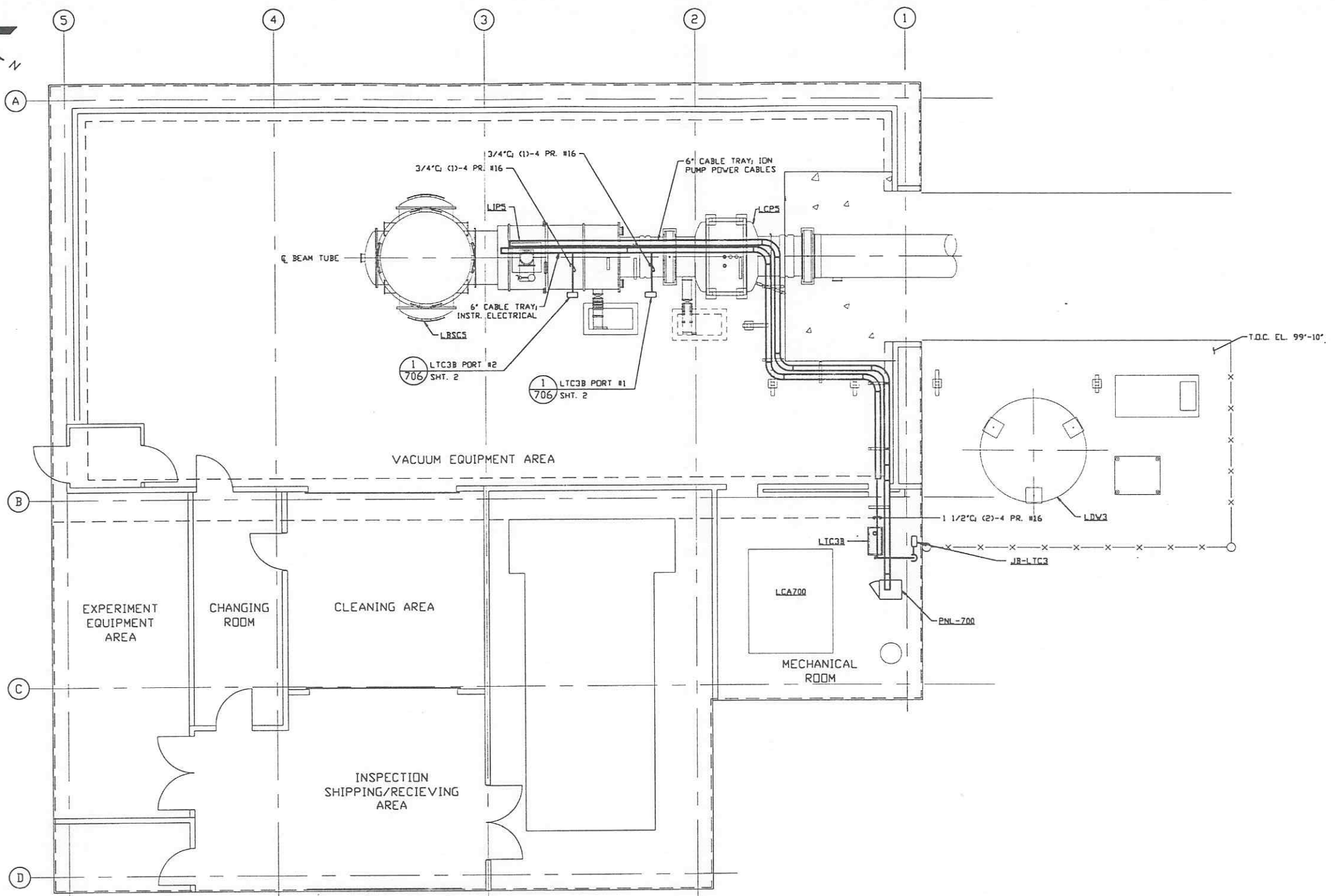
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V0493705	D	V049-3-705	1

SCALE 3/16" = 1" - 0"

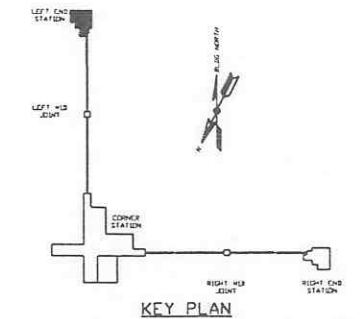
SHEET 1 OF 1



- NOTES:**
- 1) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2) FOR LIST OF CIVILL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3) CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - 4) IDENTIFY ALL CONNECTION BOXES WITH BLACK PHENOLIC TAGS WITH WHITE LETTERING. LETTERING SHALL BE 3/8" HIGH.
 - 5) ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.



LEFT END STATION PLAN @ EL. 100'-0"



PRELIMINARY NOT FOR CONSTRUCTION

LIGO-D970141-00-V

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-5-009	EQUIP. ARRANGEMENT LEFT END STATION		
V049-3-702	CABLE TRAY PLAN LOUISIANA LEFT END STATION		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		
REFERENCE DRAWINGS			

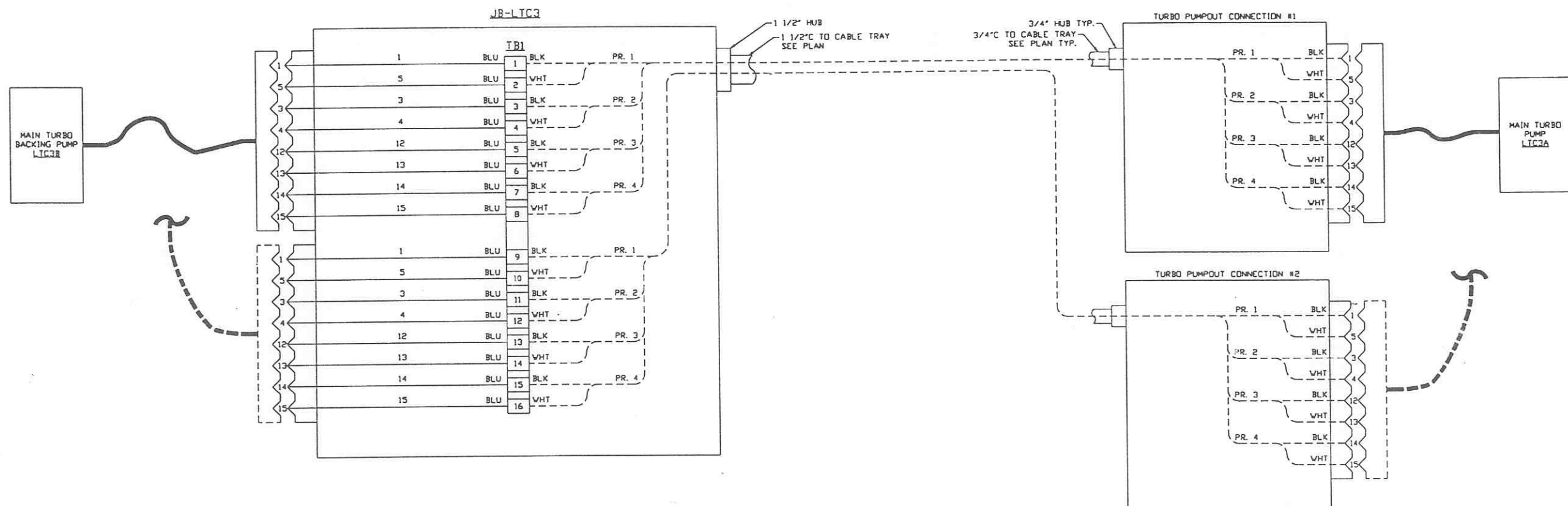
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DEC#
DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430
NEXT ASS'Y.						

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

VACUUM CART INTERFACE PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 LEFT END STATION

CAB FILE	SIZE	DWG. NO.	REV.
V0493706/3706S1	D	V049-3-706	0

SCALE 3/16" = 1' - 0" SHEET 1 OF 2



MAIN TURBO CART INTERFACE WIRING DIAGRAM

DETAIL 1 REF. V049-3-706
SCALE: NONE

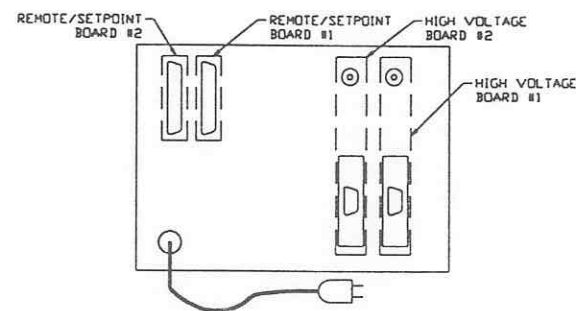
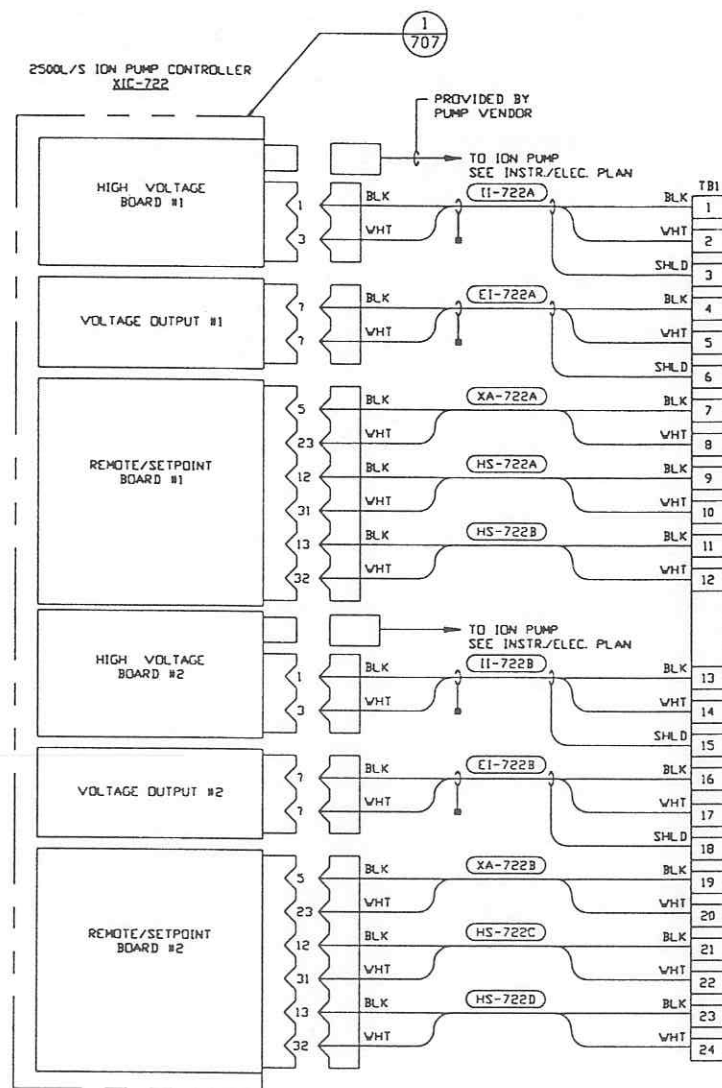
PRELIMINARY NOT FOR CONSTRUCTION

SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
VACUUM CARTS INTERFACE PLAN LIGO VACUUM EQUIPMENT LOUISIANA SITE LEFT END STATION			
CAD FILE V0493706\3706S2	SIZE D	DWG. NO. V049-3-706	REV. 0
SCALE NONE	SHEET 2 OF 2		

100 DETAIL-00-V

NOTES:
1) ALL WIRING IS #18 AWG.



REAR VIEW OF ION PUMP CONTROLLER

DETAIL 1 REF. NO SCALE --- V049-3-707

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-703	INSTRUMENT ELEC. PLAN LOUISIANA LEFT END STATION		
V049-3-702	CABLE TRAY PLAN LOUISIANA LEFT END STATION		
REFERENCE DRAWINGS			

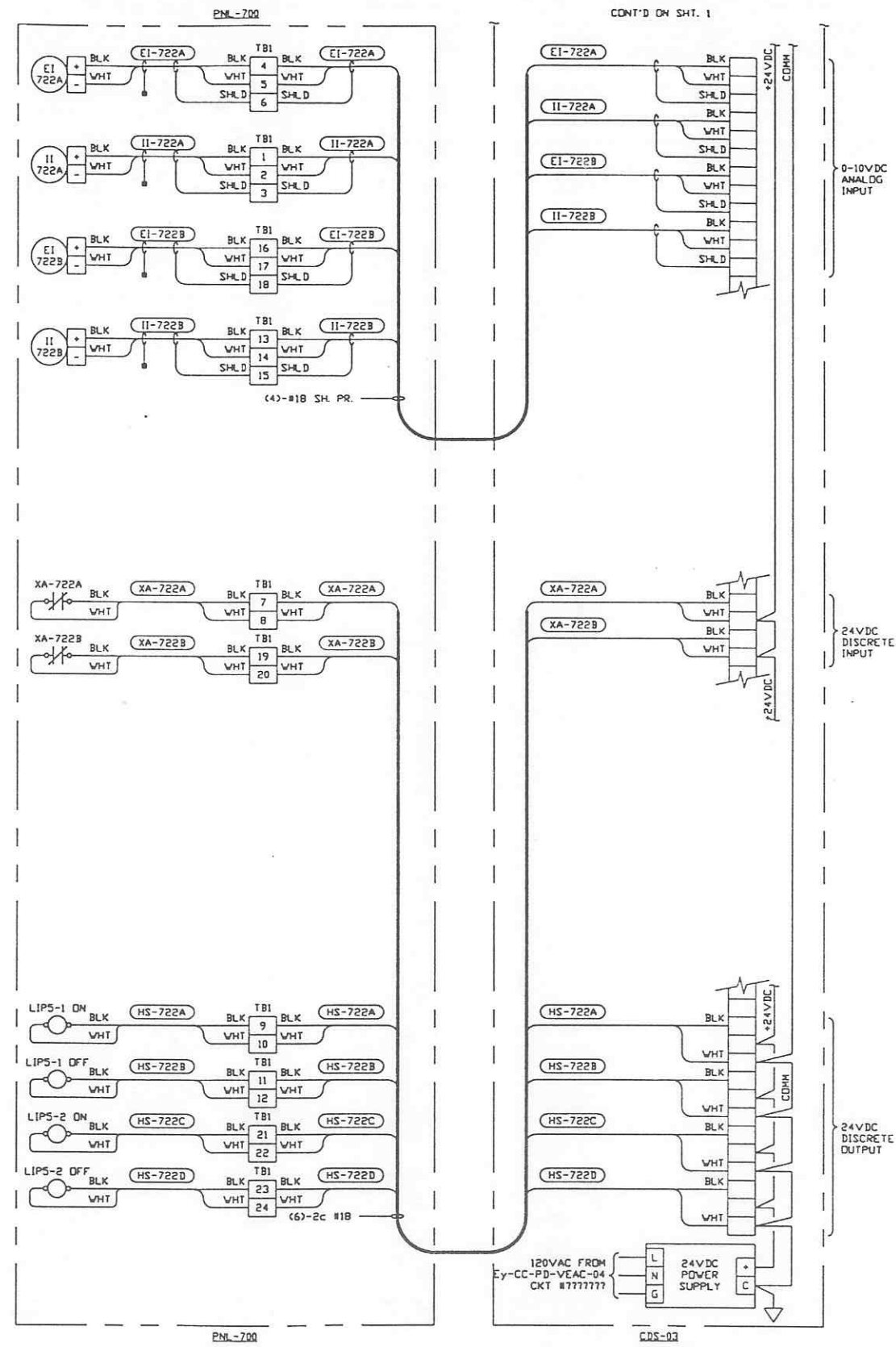
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DCOR
NEXT ASS'Y	0	ISSUE FOR LA DESIGN REVIEW			0224.97	0430

LIGO-D970142-00-V

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


PNL-700 WIRING DIAGRAM
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
LEFT END STATION

CAB FILE V0493707	SIZE D	DWG. NO. V049-3-707	REV. 0
SCALE NONE		SHEET 1 OF 1	



PRELIMINARY NOT FOR CONSTRUCTION

SEE SHEET 1 FOR REVISIONS

 PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
CDS INTERFACE DIAGRAM LIGO VACUUM EQUIPMENT LOUISIANA SITE LEFT END STATION			
CAD FILE V0493708\3708S2	SIZE D	DWG. NO. V049-3-708	REV. 0
SCALE NONE	SHEET 2 OF 2		

8

7

6

5

4

3

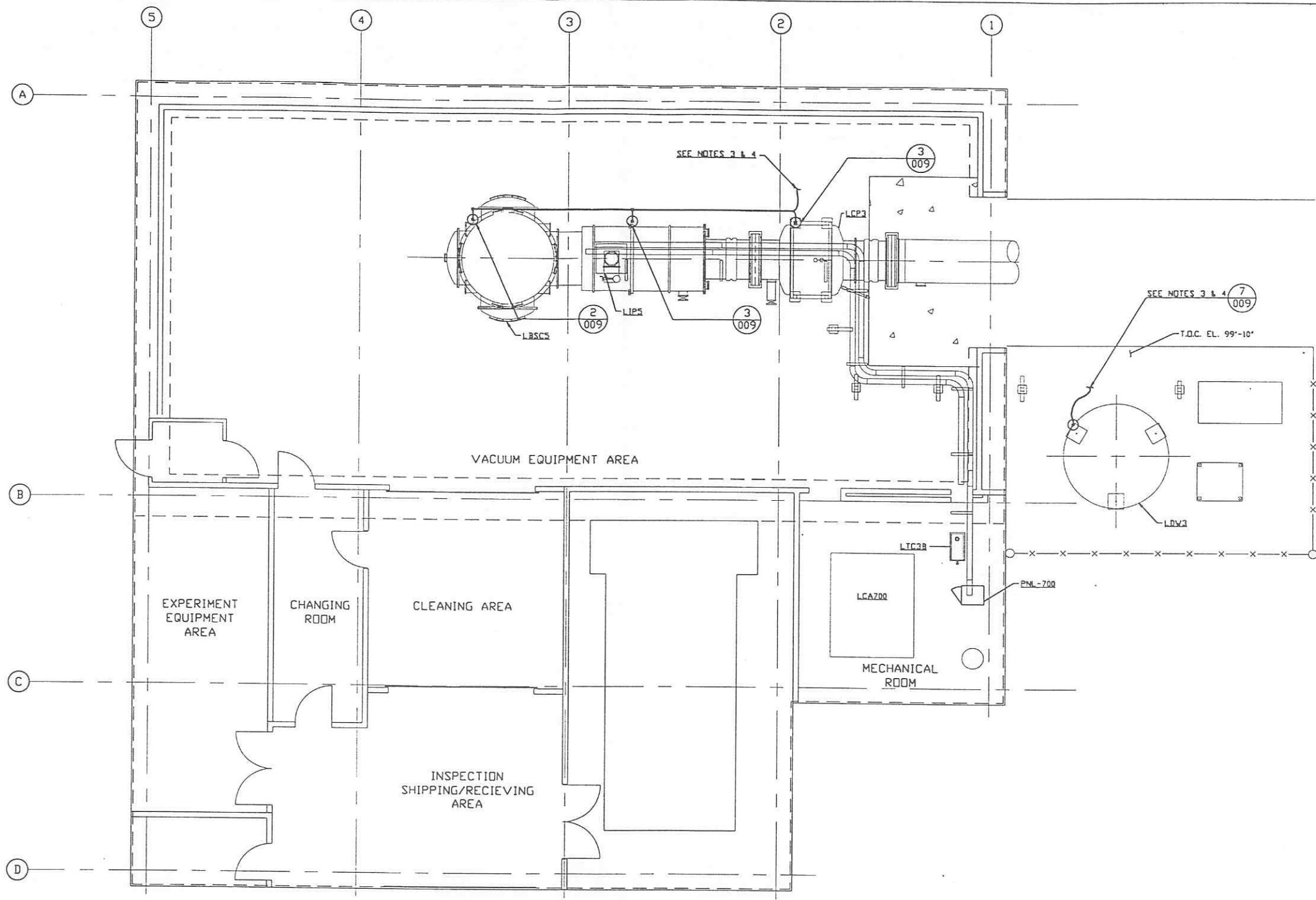
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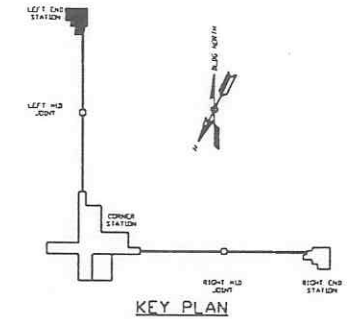
100 DETAILS ONLY



- NOTES:**
- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DVG. #V049-3-001 SHT. 1.
 - 2.) FOR LIST OF CIVIL CONTRACTORS REFERENCE DVGS. WITH CURRENT REVISIONS SEE PSI DVG. #V049-3-001 SHT. 2.
 - 3.) GROUND GRID IS BY OTHERS.
 - 4.) TIE GROUNDING CONDUCTOR TO EXISTING GROUND GRID. SEE PARSONS DVG. #LA-E-212.



LEFT MID STATION PLAN @ EL. 100'-0"



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LIGO-D970144-00-V

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-702	CABLE TRAY PLAN LOUISIANA LEFT END STATION		
V049-3-009	GROUNDING DETAILS		
V049-3-003	OVERALL SITE PLAN LOUISIANA		
V049-3-001	GENERAL NOTES & LEGEND		
REFERENCE DRAWINGS			

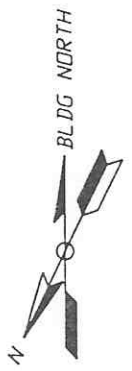
REV	DESCRIPTION	CHKD	DRWN	DATE	DESB
0	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430
DO NOT SCALE THIS DRAWING					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES					
TOLERANCES: FRACTIONAL & ANGULAR: ±0.005 1/8" - 3/8" BEND ±2° TWO PLACE DECIMAL & 21 THREE PLACE DECIMAL & 205 FINISHED SURFACE DIMS BREAK CORNERS IN OUT REMOVE ALL BURRS					
USED ON: NEXT ASS'Y:					

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

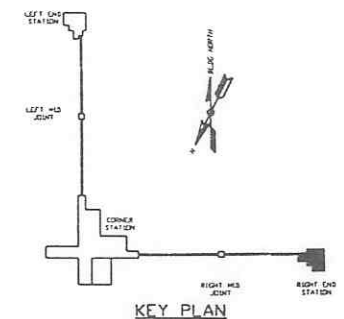
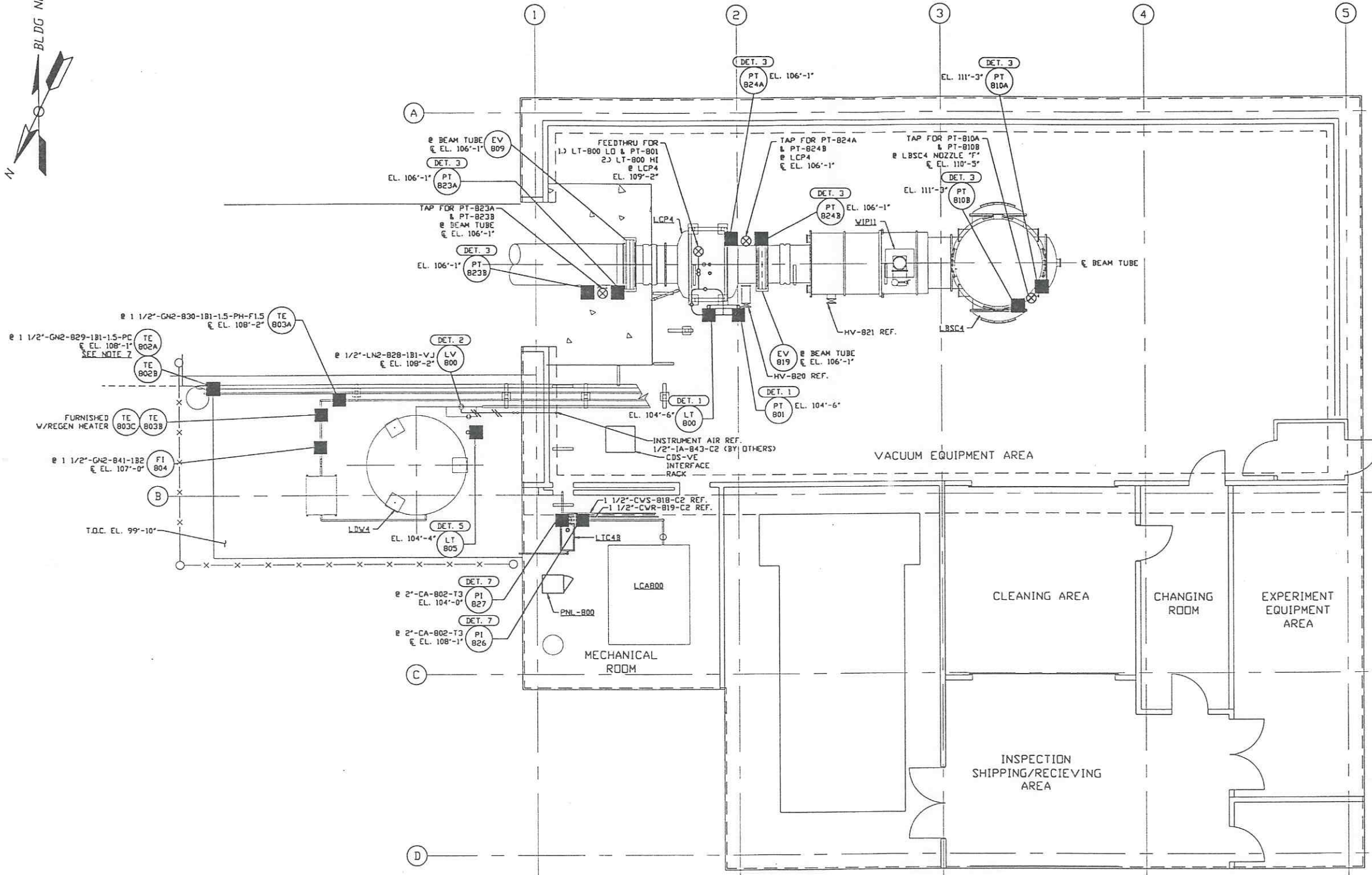
GROUNDING PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 LEFT END STATION

CAB FILE	SIZE	DWG. NO.	REV.
V0493709	D	V049-3-709	0

SCALE 3/16" = 1' - 0"
 SHEET 1 OF 1



- NOTES:**
- 1) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3) FOR INSTRUMENT INSTALLATION DETAILS SEE PSI DWG. #V049-3-008.
 - 4) ALL PROCESS TUBING SHALL BE 3/8" O.D. x .035 THK. SEAMLESS SSTL TYPE 304.
 - 5) TUBING ROUTING SHOWN ON PLAN IS DIAGRAMMATICAL AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH CONDUIT & PIPING SYSTEMS.
 - 6) ALL INSTRUMENT AIR TUBING SHALL BE 1/4" TYPE L OR LARGER COPPER WITH BRASS COMPRESSION CONNECTORS.
 - 7) DUAL THERMOCOUPLE TE-802A/B SHALL BE LOCATED WITHIN 6 INCHES OF THE CHECK VALVE HEAT TAPE.



RIGHT END STATION PLAN @ EL. 100'-0"

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-5-043	PIPING PLAN LOUISIANA RIGHT END STATION		
V049-5-008	EQUIP. ARRANGEMENT LOUISIANA RIGHT END STATION		
V049-3-008	INSTRUMENT INSTALLATION DETAILS		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		
V049-0-025	P & I D LOUISIANA RIGHT END STATION		

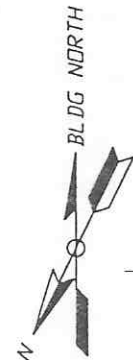
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL # ANGULAR/RADIUS 1/8"-20" BENDS ±2"
 TWO PLACE DECIMAL ±.01
 THREE PLACE DECIMAL ±.005
 FINISHED SURFACE ±.005
 BREAK CORNERS 1/8" OUT-REMOVE ALL BURRS

USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DCDN
DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430

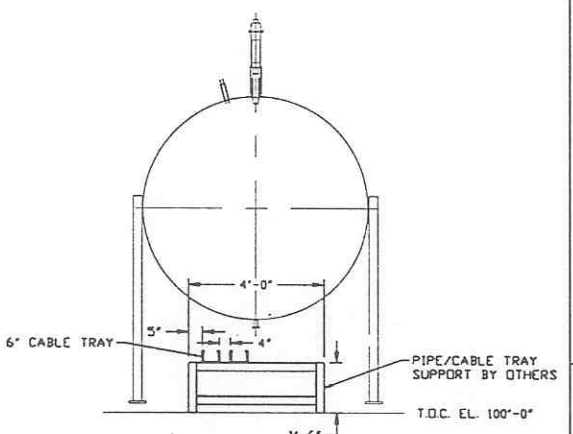
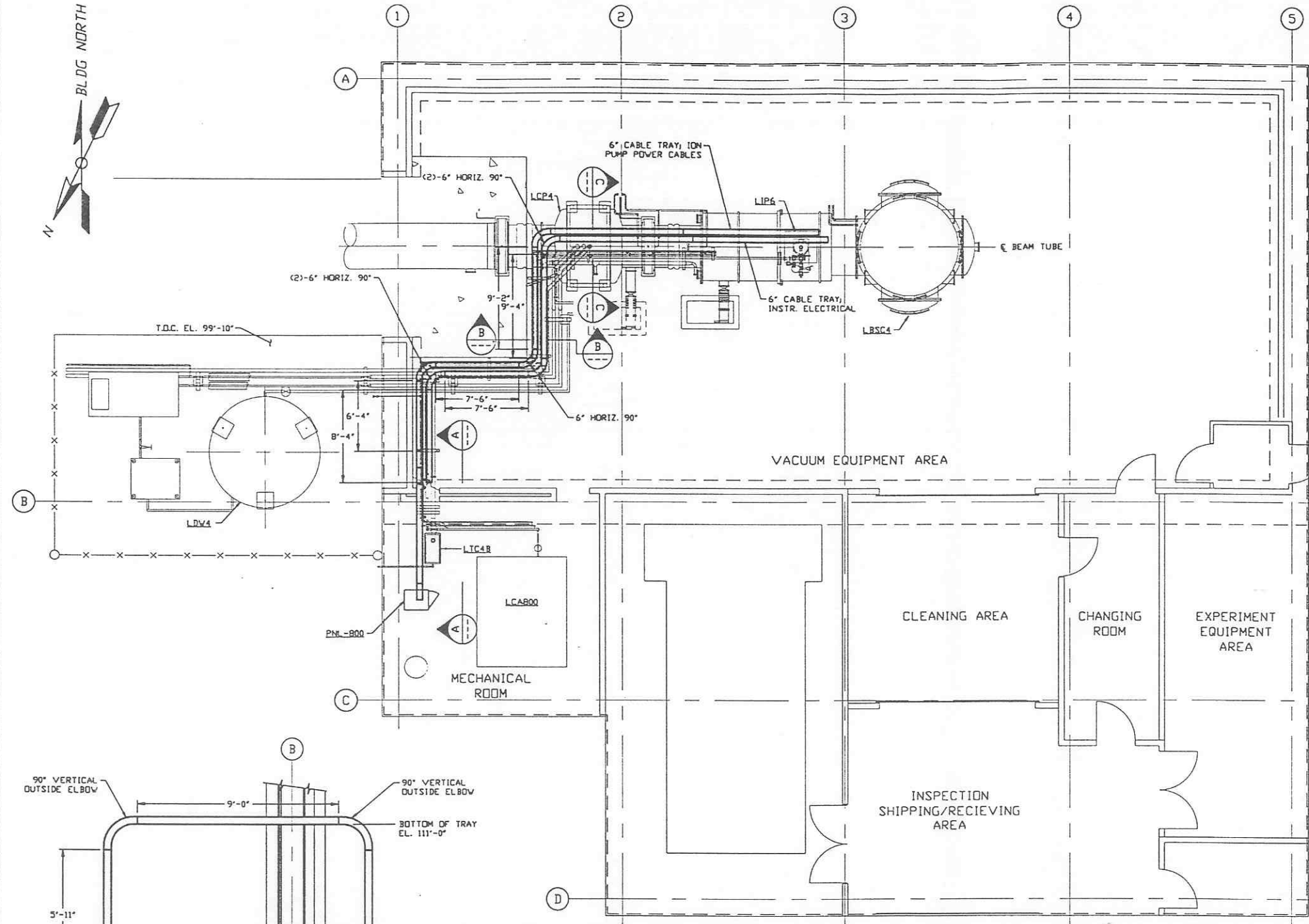
PROCESS SYSTEMS INTERNATIONAL, INC.
 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

INSTRUMENT PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 RIGHT END STATION

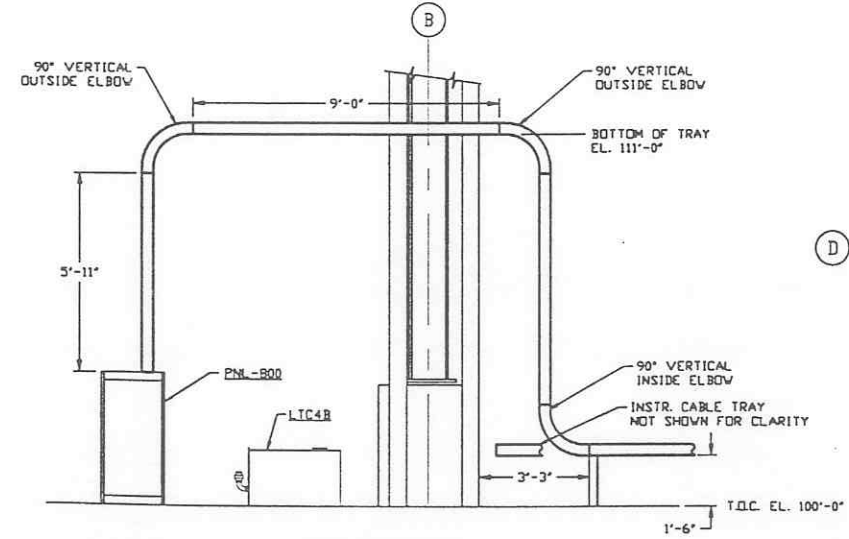
CAD FILE	DWG. NO.	REV.
V0493801	V049-3-801	0
SCALE	SHEET	
3/16" = 1' - 0"	1 OF 1	



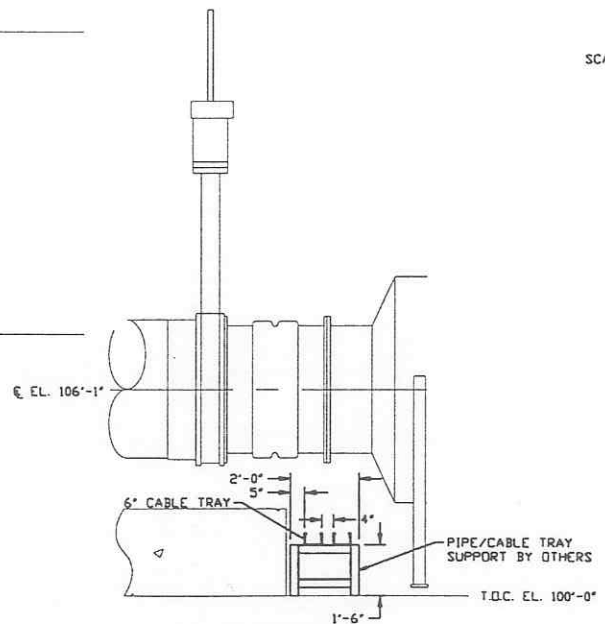
- NOTES:**
- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 2.) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.
 - 3.) ALL CABLE TRAY LENGTHS ARE 12'-0" UNLESS OTHERWISE SPECIFIED.
 - 4.) ALL CABLE TRAY SHALL BE GROUNDED PER M.E.C.
 - 5.) ALL CABLE TRAY SHALL BE FIELD SUPPORTED.
 - 6.) CABLE TRAY FOR ION PUMP POWER CABLES SHALL BE LABELED "DANGER HIGH VOLTAGE".
 - 7.) CABLE TRAY SHALL BE LADDER TYPE AND SHALL MEET LOAD/SPAN CLASS DESIGNATION 12A. CABLE TRAY SHALL BE OF ALUMINUM CONSTRUCTION.
 - 8.) CABLE TRAY SHALL HAVE SIDE CHANNEL FLANGES IN.
 - 9.) DIMENSIONS TO CABLE TRAY ARE MEASURED TO THE OUTSIDE EDGE OF FLANGE.



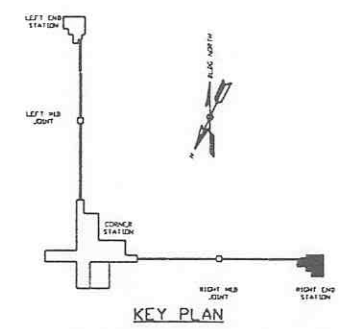
SECTION C REF. THIS SHT.
SCALE: 3/8" = 1'-0"



SECTION A REF. THIS SHT.
SCALE: 3/8" = 1'-0"



SECTION B REF. THIS SHT.
SCALE: 3/8" = 1'-0"



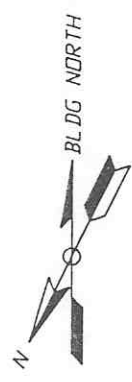
PRELIMINARY NOT FOR CONSTRUCTION

LIGO-D970146-00-V

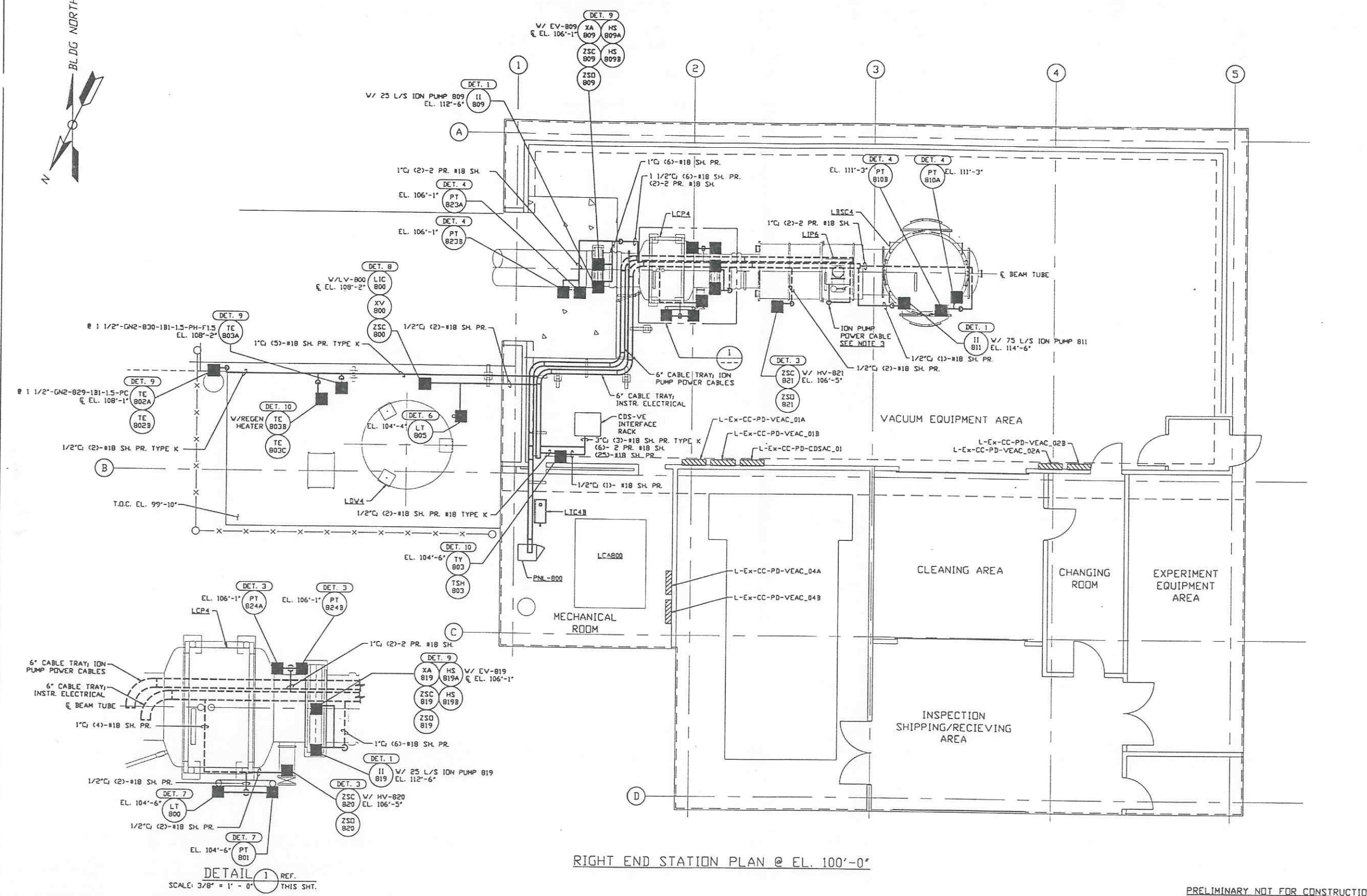
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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		
REFERENCE DRAWINGS			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			
TOLERANCES: FRACTIONAL: ANGULAR: APPROX 1/2" BEHND 1/2"			
TWO PLACE DECIMAL: AS THREE PLACE DECIMAL: 2002 FINISHED SURFACE: RIPS BREAK CORNERS: 1/4" CUT REMOVE ALL BURRS			
DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW	
USED ON	REV	DESCRIPTION	CHKD
NEXT ASS'Y.			DATE
			DEC
		ISSUE DESCRIPTION	

PROCESS SYSTEMS INTERNATIONAL, INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
CABLE TRAY PLAN LIGO VACUUM EQUIPMENT LOUISIANA SITE RIGHT END STATION			
CAD FILE	SIZE	DWG. NO.	REV.
V0493802	D	V049-3-802	0
SCALE	3/16" = 1'-0"	SHEET	1 OF 1



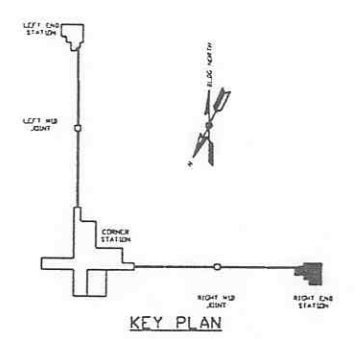
- NOTES:**
- 1) FOR PSI DWG LIST & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1
 - 2) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. V049-3-001 SHT. 2
 - 3) FOR INSTRUMENT ELECTRICAL INSTALLATION DETAILS SEE PSI DWG. #V049-3-007.
 - 4) CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - 5) ION PUMP POWER CABLES SHALL BE RUN IN 2" CABLE CHANNEL FROM ION PUMP DOWN TO 6" CABLE TRAY LOCATED UNDER BEAM TUBE.
 - 6) AT INDOOR INSTALLATIONS, CONDUIT SHALL BE EMT. AT OUTDOOR LOCATIONS, CONDUIT SHALL BE IMC.



RIGHT END STATION PLAN @ EL. 100'-0"

DETAIL 1 REF. THIS SHT.
SCALE: 3/8" = 1' - 0"

PRELIMINARY NOT FOR CONSTRUCTION



PROPRIETARY AND CONFIDENTIAL		V049-3-807	PNL-800 WIRING DIAGRAM		
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		V049-3-007	INSTRUMENT ELECTRICAL INSTALLATION DETAILS		
		V049-3-003	LOUISIANA OVERALL SITE PLAN		
		V049-3-001	GENERAL NOTES & LEGEND	V049-5-008	EQUIP. ARRANGEMENT LOUISIANA RIGHT END STATION
		V049-0-025	P & I D LOUISIANA RIGHT END STATION	V049-3-808	CDS INTERFACE DIAGRAM
DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES					
TOLERANCES: FRACTIONAL 1/16" ANGULAR/ARCS 1/8" - 20" BEND 1/2" TWO PLACE DECIMAL 1/32" THREE PLACE DECIMAL 1/64" FINISHED SURFACE RIMS BREAK CORNERS 1/8" OUT. REMOVE ALL BURRS					
DO NOT SCALE THIS DRAWING	0	ISSUE FOR LA DESIGN REVIEW			
USED ON:	REV	DESCRIPTION			
NEXT ASS'Y:					

LIGO-D970147-00-V

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

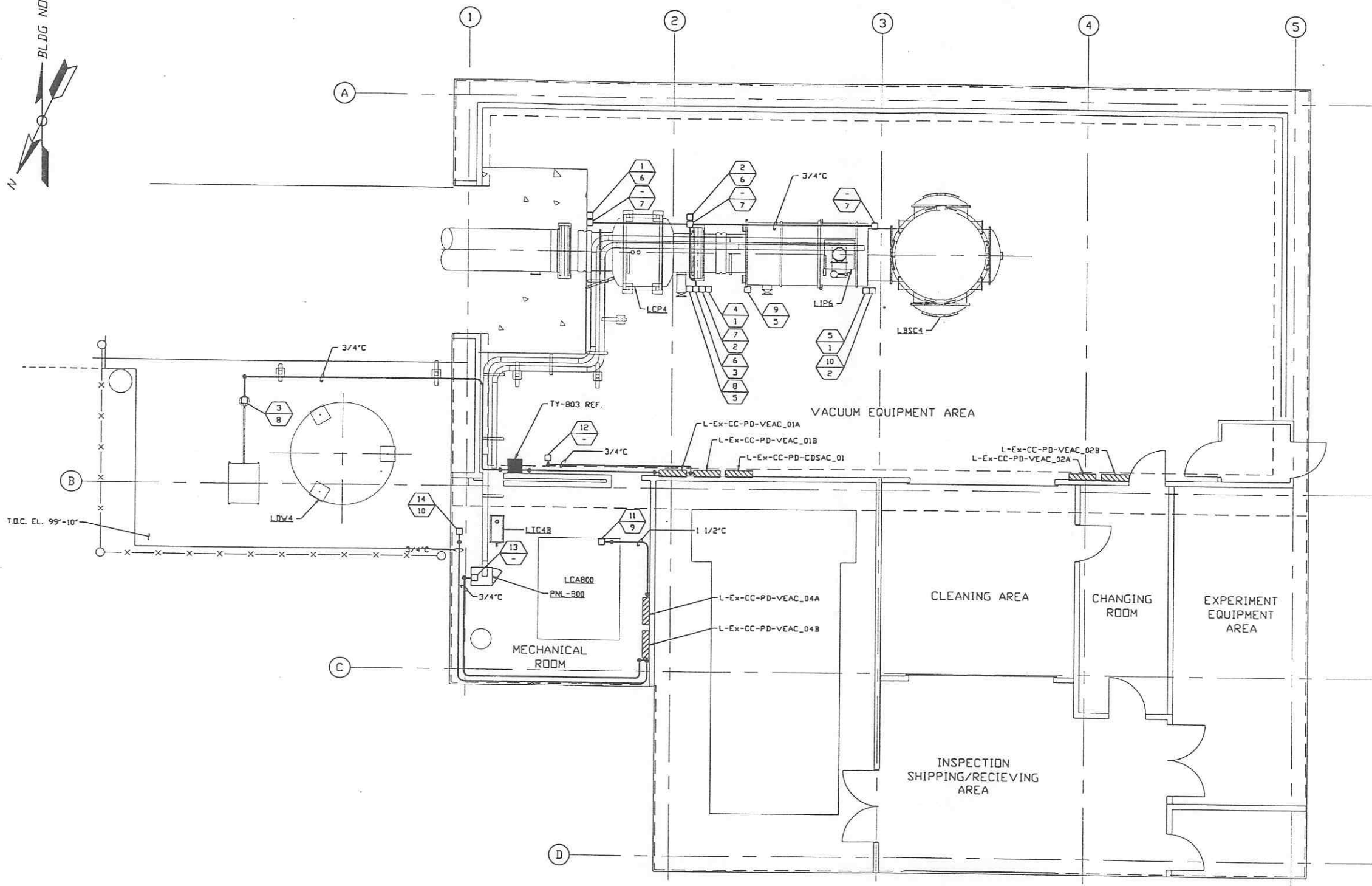
INSTRUMENT ELECTRICAL PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
RIGHT END STATION

CAD FILE	SIZE	DWG. NO.	REV.
V0493803	D	V049-3-803	0

SCALE: 3/16" = 1' - 0" SHEET 1 OF 1



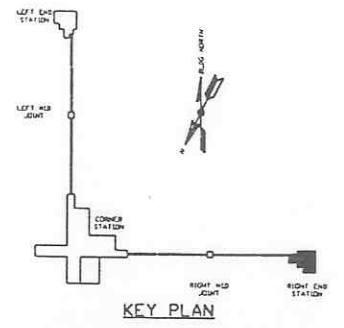
- NOTES:**
- FOR ELECTRICAL INSTALLATION DETAILS SEE PSI DVG. V049-3-006.
 - CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
 - ALL RECEPTACLES SHALL BE IDENTIFIED WITH PANEL AND CKT. NUMBER.
 - EACH 3Ø CIRCUIT SHALL HAVE DEDICATED NEUTRAL AND GROUND.
 - FOR GENERAL NOTES & LEGEND SEE PSI DVG. #V049-3-001 SHT. 1.
 - FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DVG. #V049-3-001 SHT. 2.
 - POWER DISTRIBUTION PANELS ARE FURNISHED BY OTHERS.
 - AT INDOOR INSTALLATIONS, CONDUIT SHALL BE EMT. AT OUTDOOR INSTALLATIONS, CONDUIT SHALL BE IMC.



DISTRIBUTION SYSTEM FEEDER SCHEDULE

FEEDER NUMBER	SOURCE	LOAD CENTER LOCATION	CKT #	EQUIPMENT SERVED	CONDUIT	FILL
1	Ex-CC-PD-VEAC_01	TBD		GATE VALVE LGV11	3/4"	3-#12, #10 GND
2	Ex-CC-PD-VEAC_01	TBD		GATE VALVE LGV12	3/4"	3-#12, #10 GND
3	Ex-CC-PD-VEAC_01	TBD		REGN HEATER	3/4"	3-#10, #8 GND
4	Ex-CC-PD-VEAC_01	TBD		BAKEOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
5	Ex-CC-PD-VEAC_01	TBD		BAKEOUT/CLEAN ROOM	1 1/2"	4-#6, #8 GND
6	Ex-CC-PD-VEAC_01	TBD		GENERAL/ION PUMP/AUX TURBO	3/4"	2-#12, #12 GND
7	Ex-CC-PD-VEAC_01	TBD		BAKEOUT CONTROL	3/4"	2-#12, #12 GND
8	Ex-CC-PD-VEAC_01	TBD		TURBO PUMP	3/4"	4-#12, #10 GND
9	Ex-CC-PD-VEAC_01	TBD		TURBO PUMP	3/4"	4-#12, #10 GND
10	Ex-CC-PD-VEAC_01	TBD		BAKEOUT CONTROL	3/4"	2-#12, #12 GND
11	Ex-CC-PD-VEAC_01	TBD		AIR COMPRESSOR	1 1/2"	3-#4, #6 GND
12	Ex-CC-PD-VEAC_03	TBD		VE CONTROL TRANSFORMER	3/4"	2-#12, #12 GND
13	Ex-CC-PD-VEAC_04	TBD		2500 L/S ION PUMP	3/4"	2-#12, #12 GND
14	Ex-CC-PD-VEAC_04	TBD		TURBO BACKING PUMP	3/4"	4-#10, #8 GND

RIGHT END STATION PLAN @ EL. 100'-0"



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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-807	PNL-800 WIRING DIAGRAM		
V049-3-006	ELECTRICAL INSTALLATION DETAILS		
V049-3-003	LOUISIANA OVERALL SITE PLAN		
V049-3-001	GENERAL NOTES & LEGEND		
REFERENCE DRAWINGS			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL ±
 ANGULAR ± 1/8" BEND ± 2"
 TWO PLACE DECIMAL ± .01
 THREE PLACE DECIMAL ± .005
 FINISHED SURFACE INGS
 BREAK CORNERS IN OUT-
 REMOVE ALL BLURS

DO NOT SCALE THIS DRAWING
 USED ON:
 NEXT ASS'Y:

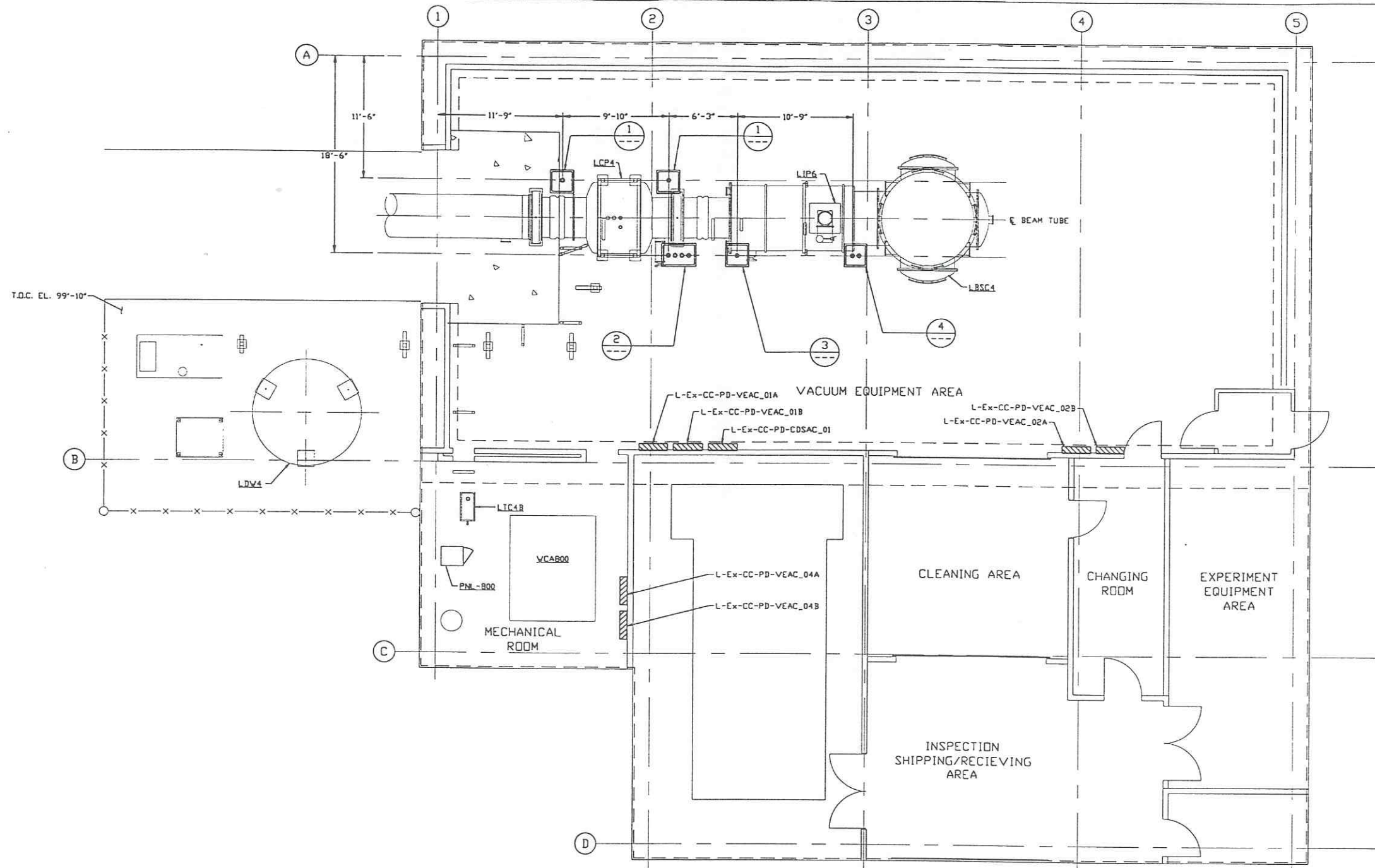
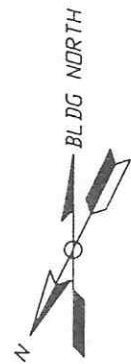
REV	DESCRIPTION	CHKD	DRWN	DATE	DESB
0	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430

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

POWER PLAN
 LIGO VACUUM EQUIPMENT
 LOUISIANA SITE
 RIGHT END STATION

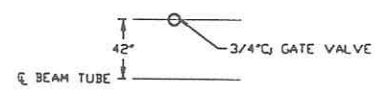
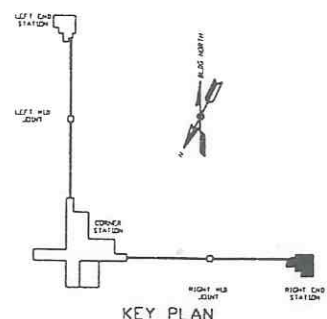
CAD FILE	SIZE	DWG. NO.	REV.
V0493804	D	V049-3-804	0

SCALE 3/16" = 1' - 0"
 SHEET 1 OF 1

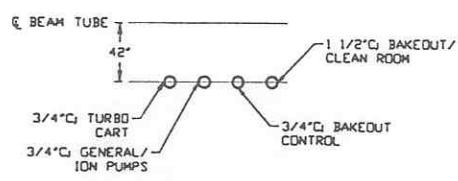


- NOTES:**
- 1.) PROVIDE PULL TAPE IN EACH CONDUIT.
 - 2.) ALL UNDERGROUND INSTALLATION AND DETAILS ARE BY OTHERS.
 - 3.) POWER SOURCE SHALL BE AS FOLLOWS:
 - A) BAKEOUT/CLEAN ROOM 480/277VAC
 - B) GATE VALVE 480/277VAC
 - C) GENERAL/IDN PUMPS 120VAC
 - D) BAKEOUT CONTROL 120VAC
 - E) TURBO CART 208/120VAC
 - 4.) FOR EQUIPMENT POWER REQUIREMENTS, REFER TO PSI DOCUMENT #V049-1-047.
 - 5.) FOR GENERAL NOTES & LEGEND SEE PSI DWG. #V049-3-001 SHT. 1.
 - 6.) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DWG. #V049-3-001 SHT. 2.

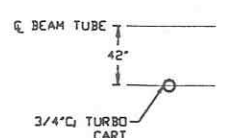
RIGHT END STATION PLAN @ EL. 100'-0"



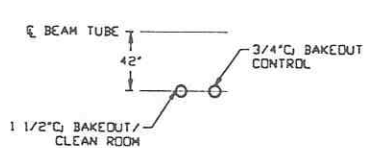
DETAIL 1 REF. THIS SHT.
NO SCALE



DETAIL 2 REF. THIS SHT.
NO SCALE



DETAIL 3 REF. THIS SHT.
NO SCALE



DETAIL 4 REF. THIS SHT.
NO SCALE

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
	REFERENCE DRAWINGS		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± ANGULAR/ROUND 1/16" - 3/16" BENCH 1/32" TWO PLACE DECIMAL ± .01 THREE PLACE DECIMAL ± .005 FINISHED SURFACE RIMS BREAK CORNERS IN OUT REMOVE ALL BURRS

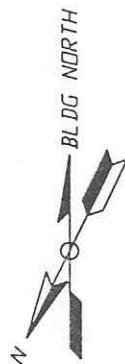
REV	DESCRIPTION	CHKD	DRWN	DATE	DEDR
1	ISSUE FOR LA DESIGN REVIEW			02.24.97	0430
0	ISSUE FOR INSTALLATION			12.03.96	0374

LIGO-D970149-01-V

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

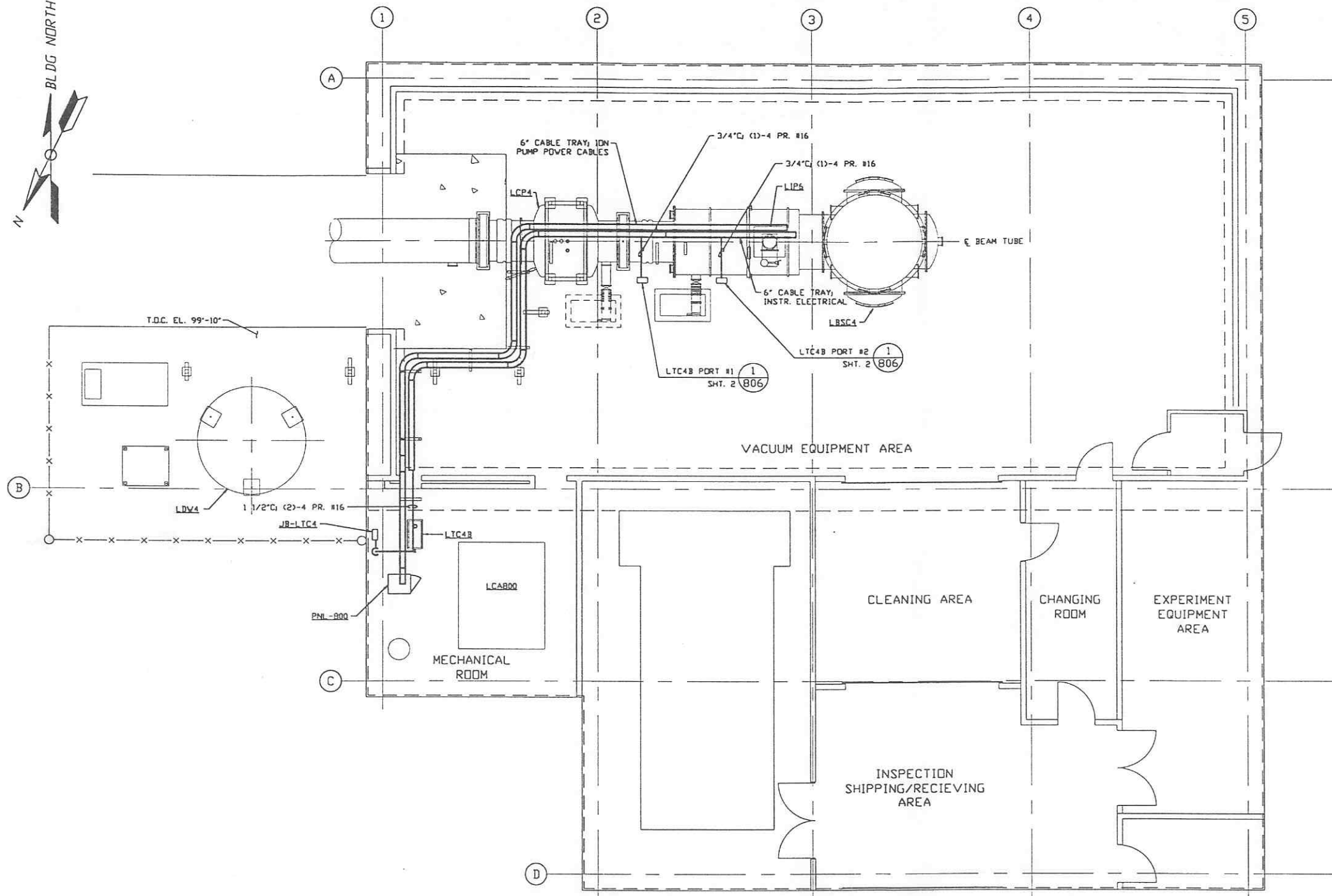
ELECTRICAL CONDUIT STUB-UP PLAN
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
RIGHT END STATION

CAD FILE: V0493805
SCALE: 3/16" = 1' - 0"
SHEET: 1 OF 1

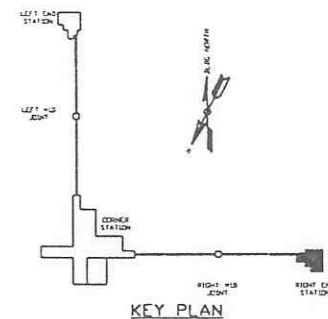


NOTES:

- 1.) FOR GENERAL NOTES & LEGEND SEE PSI DVG. #V049-3-001 SHT. 1.
- 2.) FOR LIST OF CIVIL CONTRACTOR REFERENCE DWGS. WITH CURRENT REVISIONS SEE PSI DVG. #V049-3-001 SHT. 2.
- 3.) CONDUIT IS SHOWN DIAGRAMMATICALLY AND SHALL BE FIELD VERIFIED SO AS TO OPTIMIZE SUPPORTING MEANS AND TO AVOID INTERFERENCES WITH PIPING SYSTEMS.
- 4.) IDENTIFY ALL CONNECTION BOXES WITH BLACK PHENOLIC TAGS WITH WHITE LETTERING. LETTERING SHALL BE 3/8" HIGH.
- 5.) ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.



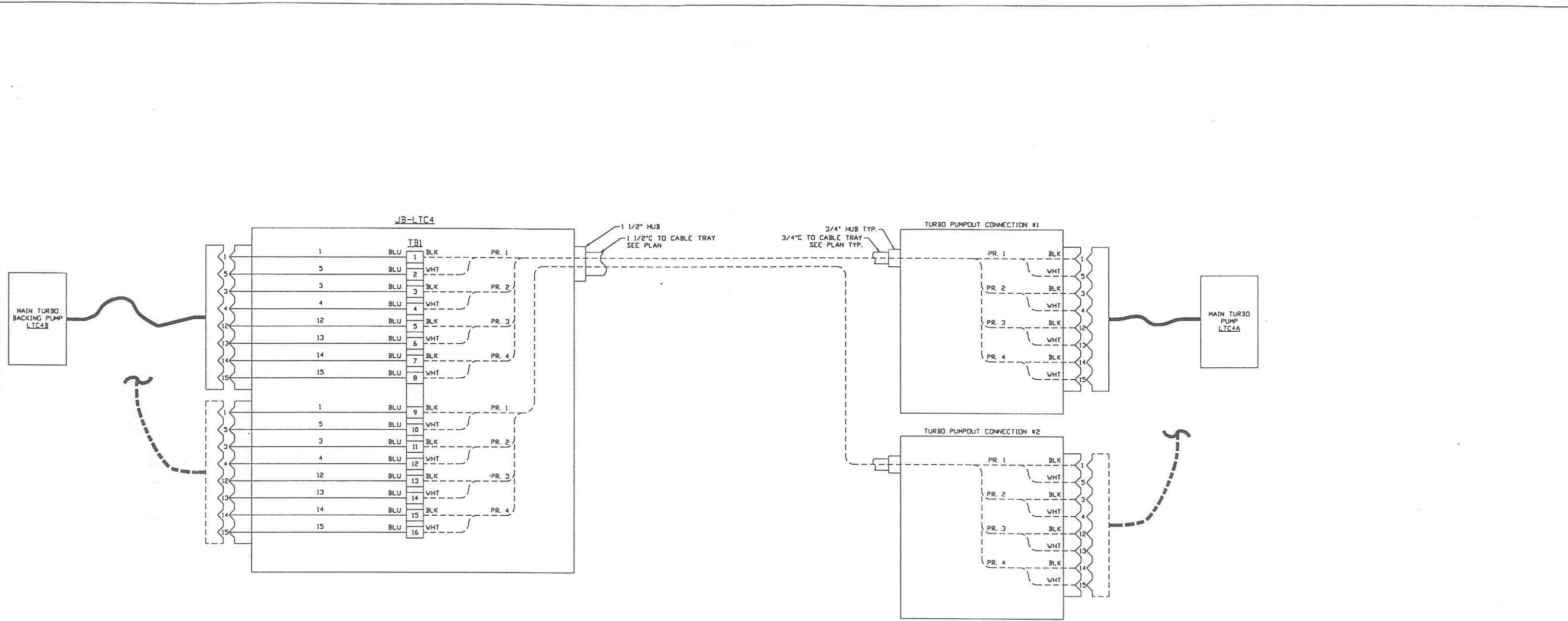
RIGHT END STATION PLAN @ EL. 100'-0"



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LIGO-D970150-00-Y

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<p>V049-3-008 EQUIP. ARRANGEMENT LOUISIANA RIGHT END STATION</p>		<p>V049-3-802 CABLE TRAY PLAN LOUISIANA RIGHT END STATION</p>		<p>V049-3-003 LOUISIANA OVERALL SITE PLAN</p>		<p>V049-3-001 GENERAL NOTES & LEGEND</p>		<p>V049-3-806 VACUUM CART INTERFACE PLAN LIGO VACUUM EQUIPMENT LOUISIANA SITE RIGHT END STATION</p>		<p>CAD FILE: V0493806/3806S2 SIZE: D DWG. NO.: V049-3-806 REV: 0</p>	
<p>DWG. NO. DESCRIPTION DWG. NO. DESCRIPTION</p>		<p>SCALE: 3/16" = 1' - 0" SHEET: 1 OF 2</p>		<p>CHKD: [Signature] DRWN: [Signature] DATE: 02.24.97 DEC: 0430</p>		<p>ISSUE DESCRIPTION</p>		<p>SCALE: 3/16" = 1' - 0" SHEET: 1 OF 2</p>		<p>SCALE: 3/16" = 1' - 0" SHEET: 1 OF 2</p>	



MAIN TURBO CART INTERFACE WIRING DIAGRAM

DETAIL 1 REF.
SCALE: NONE --- V049-3-806

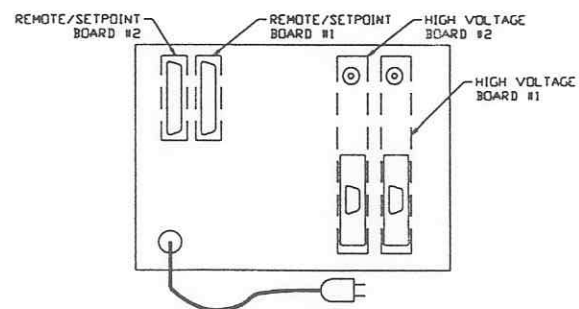
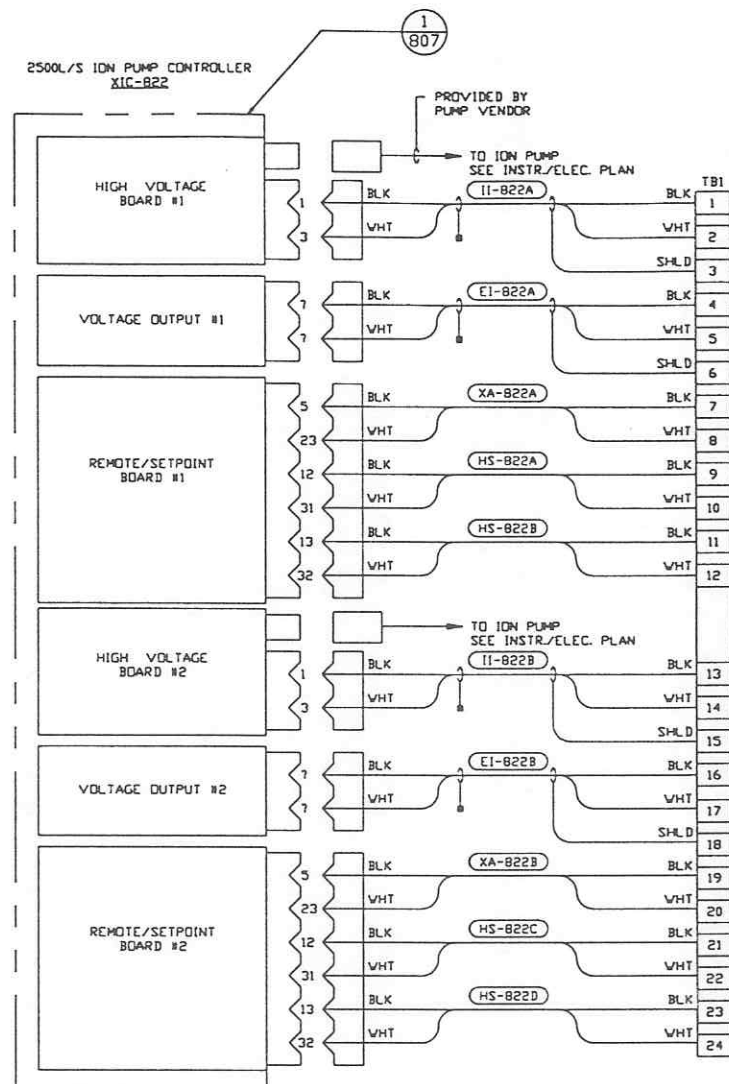
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SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL, INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
VACUUM CARTS INTERFACE PLAN LIGO VACUUM EQUIPMENT LOUISIANA SITE RIGHT MID STATION			
CAD FILE V0493806\3806S2	SIZE D	DWG. NO. V049-3-806	REV. 0
SCALE NONE	SHEET 2 OF 2		

NOTES:

1) ALL WIRING IS #18 AWG.



REAR VIEW OF ION PUMP CONTROLLER

DETAIL 1 REF. NO SCALE --- V049-3-807

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DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION
V049-3-803	INSTR. ELEC. PLAN LOUISIANA RIGHT END STATION		
V049-3-802	CABLE TRAY PLAN LOUISIANA RIGHT END STATION		

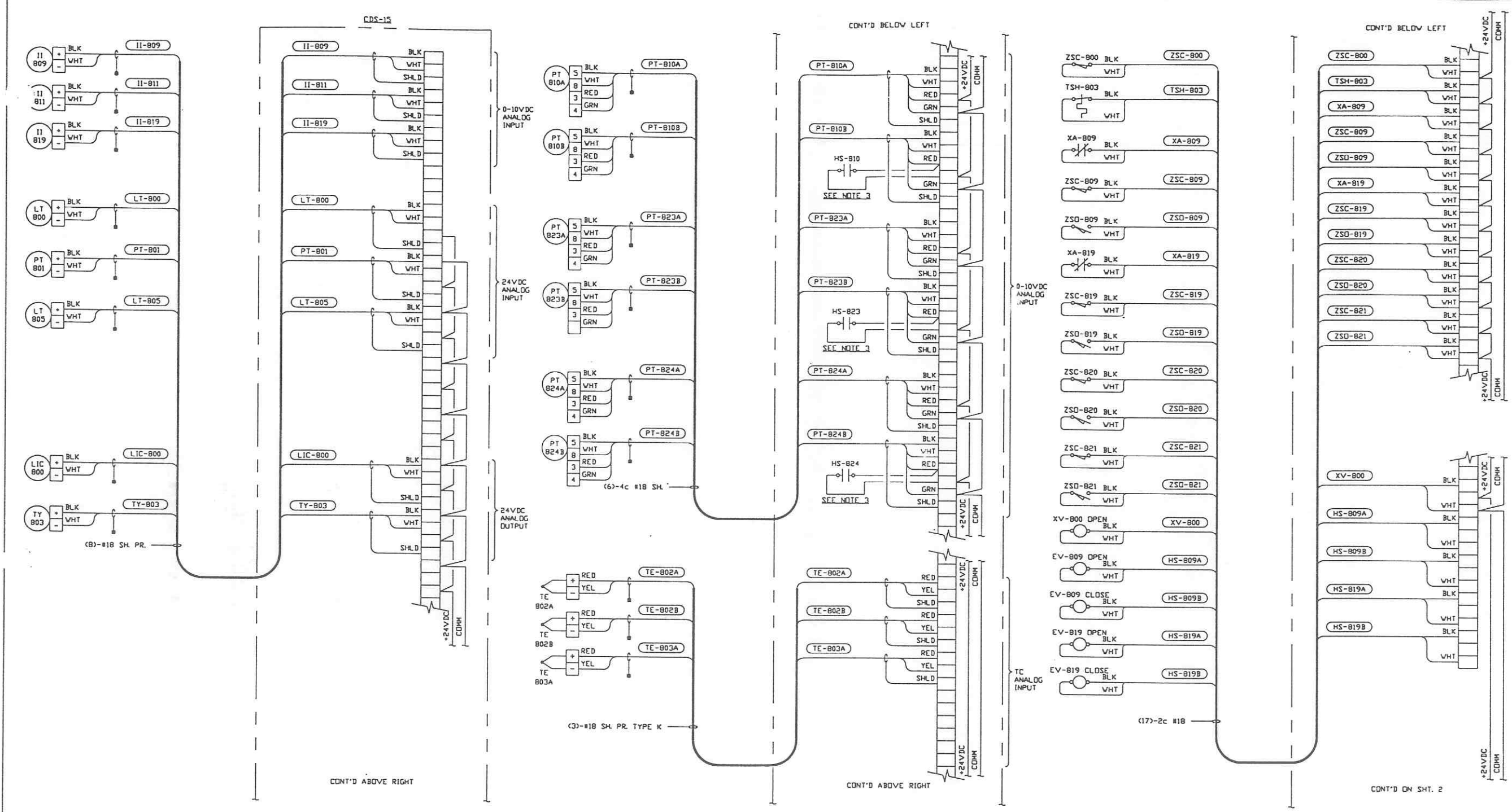
DO NOT SCALE THIS DRAWING	REV	DESCRIPTION	CHKD	DRWN	DATE	DEC
0		ISSUE FOR LA DESIGN REVIEW			02.24.97	0430

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PNL-800 WIRING DIAGRAM
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
RIGHT END STATION

CAD FILE	SIZE	DWG. NO.	REV.
V0493807	D	V049-3-807	0

SCALE: NONE SHEET: 1 OF 1



- NOTES:**
- 1) FOR PSI DVG. LIST & LEGEND SEE PSI DVG. 8V049-3-001 SHT. 1.
 - 2) FOR LIST OF CIVIL CONTRACTOR REFERENCE DVGs. WITH CURRENT REVISIONS SEE PSI DVG. V049-3-001 SHT. 2.
 - 3) COLD CATHODE POWER SWITCHING NOT BY PSI.
 - 4) LIMIT SWITCHES ON VALVES ARE SHOWN WHEN VALVE IS IN THE CLOSED POSITION.

24VDC DISCRETE INPUT

24VDC DISCRETE OUTPUT

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L160-D910152-00-V

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

CDS INTERFACE DIAGRAM
LIGO VACUUM EQUIPMENT
LOUISIANA SITE
RIGHT END STATION

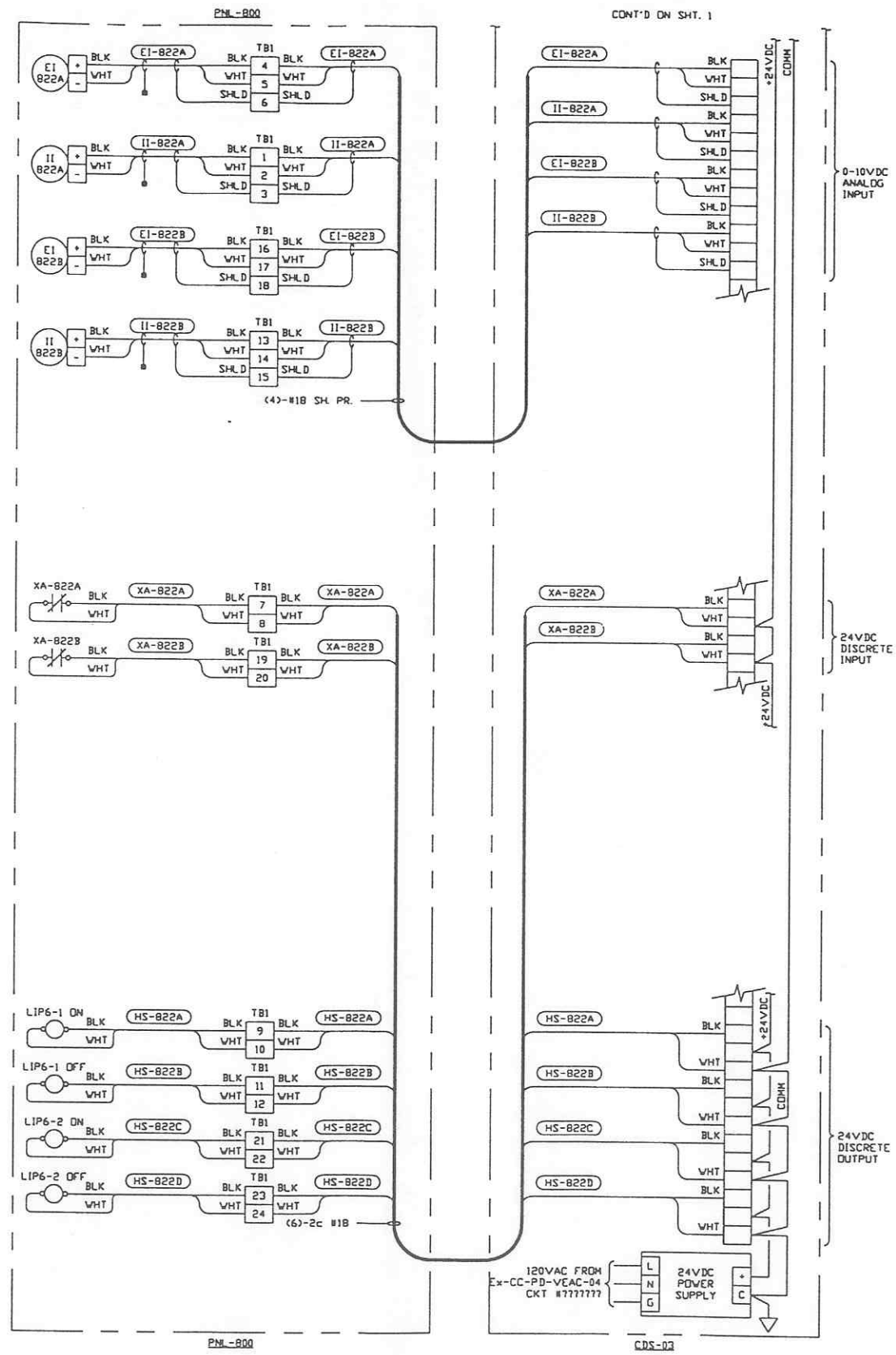
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DVG. NO.	DESCRIPTION	DVG. NO.	DESCRIPTION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR/AROUND 18°-30° BEND 12°
TWO PLACE DECIMAL ± .01
THREE PLACE DECIMAL ± .005
FINISHED SURFACE DIMS
BREAK CORNERS 1/16" OUT
REMOVE ALL BURRS

DO NOT SCALE THIS DRAWING	REV	ISSUE FOR LA DESIGN REVIEW	DESCRIPTION	CHKD	DRWN	DATE	DESB
0						02.24.97	0430

CAD FILE	SIZE	DWG. NO.	REV.
V0493808\3808S1	D	V049-3-808	0



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SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKER DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
CDS INTERFACE DIAGRAM LIGD VACUUM EQUIPMENT LOUISIANA SITE RIGHT END STATION			
CAD FILE	SIZE	DWG. NO.	REV.
V0493808\3808S2	D	V049-3-808	0
SCALE	NONE	SHEET	2 OF 2

1/16/01

