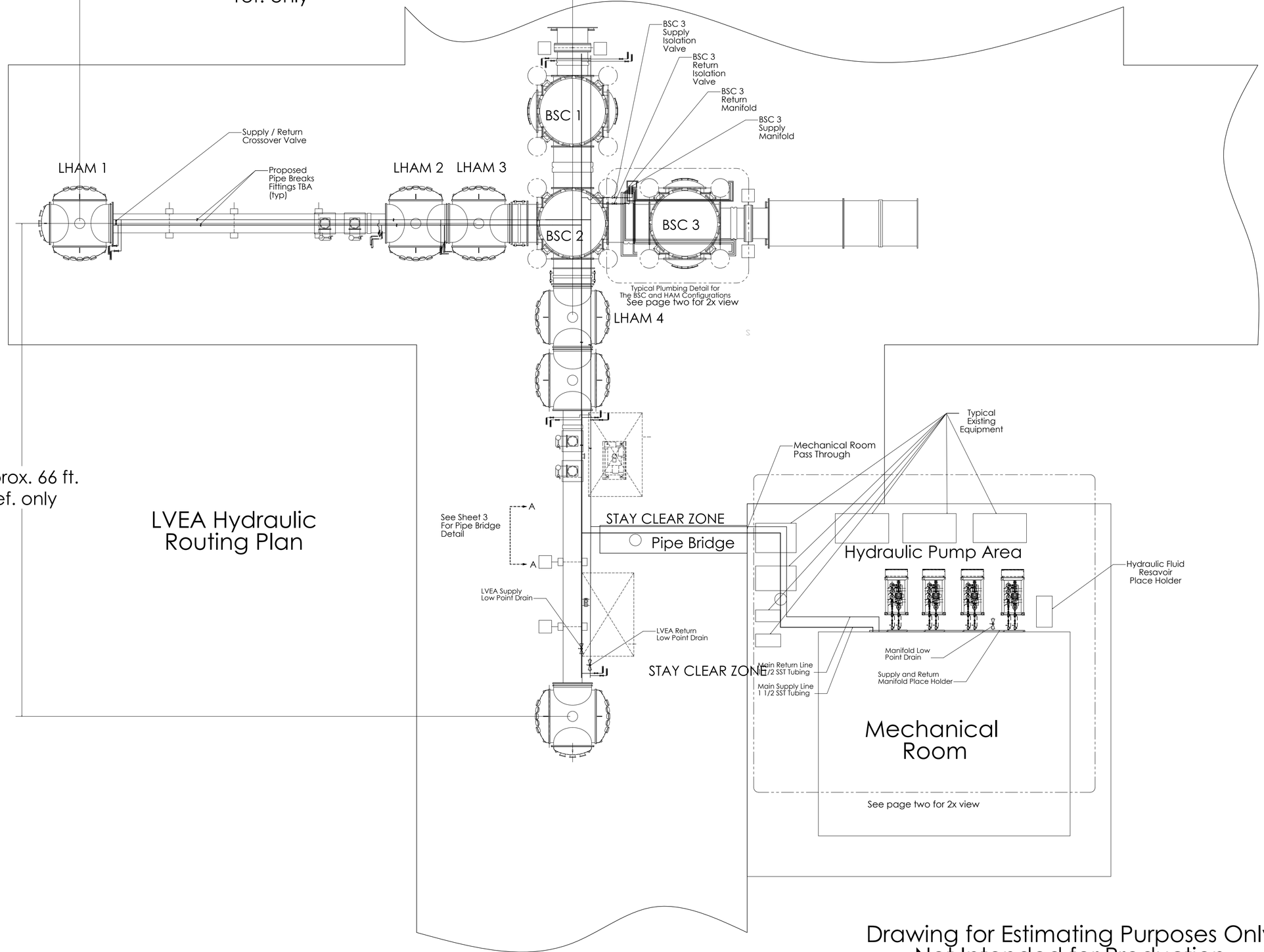
FILE NAME/LOCATION:

REV.	DATE	DCN #	DRAWING TREE #

approx. 66 ft.
ref. only



approx. 66 ft.
ref. only

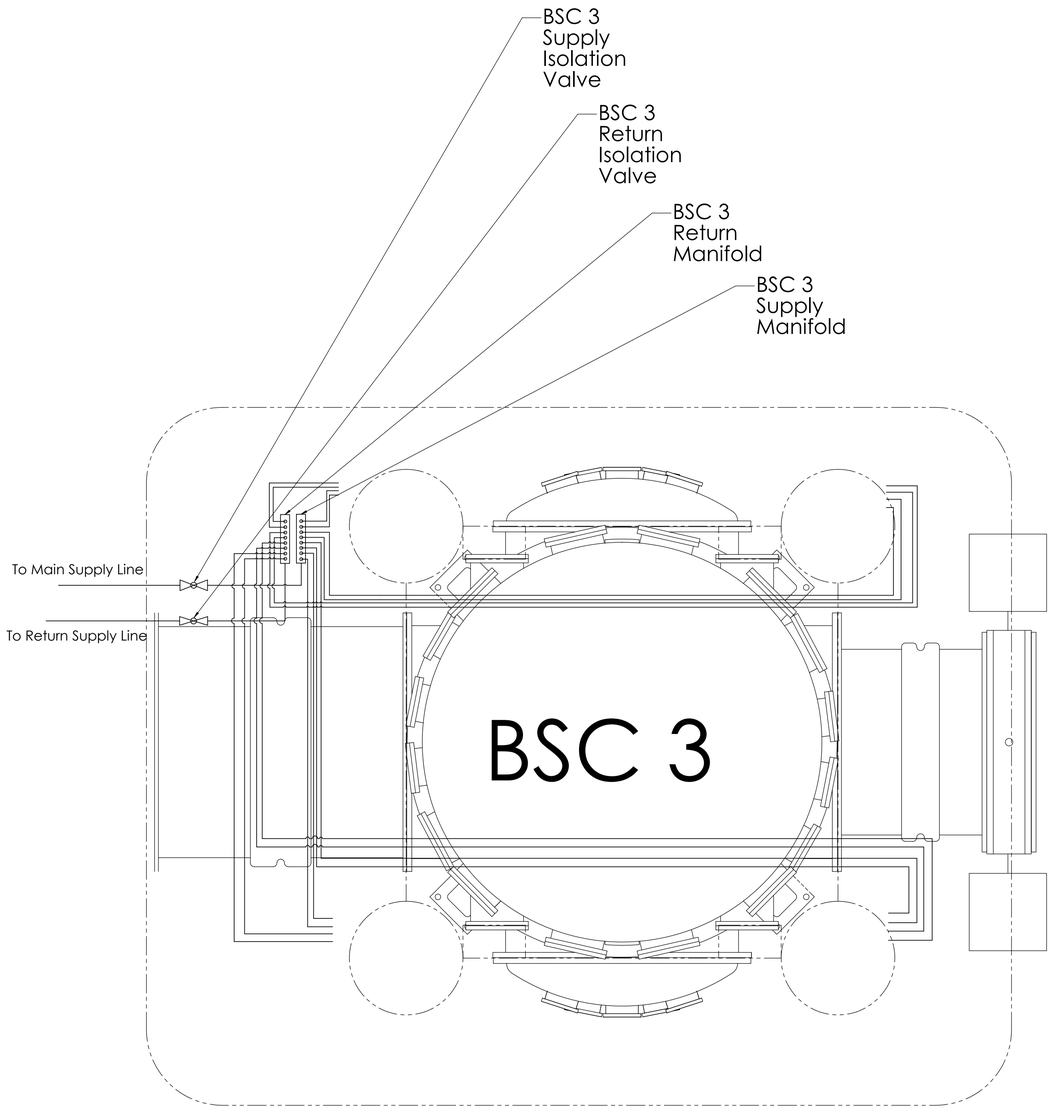
LVEA Hydraulic Routing Plan

Drawing for Estimating Purposes Only
Not Intended for Production

PARTS LIST			
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1. REMOVE ALL SHARP EDGES, R.02 MIN. 2. DO NOT SCALE FROM DRAWING. 3. ALL MACHINING FLUIDS SHALL BE WATER SOLUBLE AND FREE OF CHLORINATED HYDROCARBONS, SUCH AS CINCINNATI MILACRON'S CIMTECH 410 (STAINLESS STEEL) ④ SCRIBE, ENGRAVE OR STAMP DRAWING PART/NUMBER ON NOTED SURFACE OF PART AND A THREE DIGIT SERIAL NUMBER, BEGINNING WITH PART AT 001 FOR THE FIRST PART AND PROCEED CONSECUTIVELY. USE .07" HIGH CHARACTERS. EXAMPLE: D020188-001. A VIBRATORY TOOL MAY BE USED.	DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± 0.01 .XXX ± 0.005 ANGULAR ± 0.5 ° MATERIAL FINISH		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY SYSTEM SEI External Pre-Isolation SUB-SYSTEM HEPI NEXT ASSY PART NAME LVEA Hydraulic Routing Layout SIZE B DWG. NO. D030756 REV. 00 SCALE: 1:1 PROJECTION: SHEET 1 OF 3
	NAME	DATE	
DRAWN	H. Hammond	11/12/2003	
CHECKED			
APPROVED			

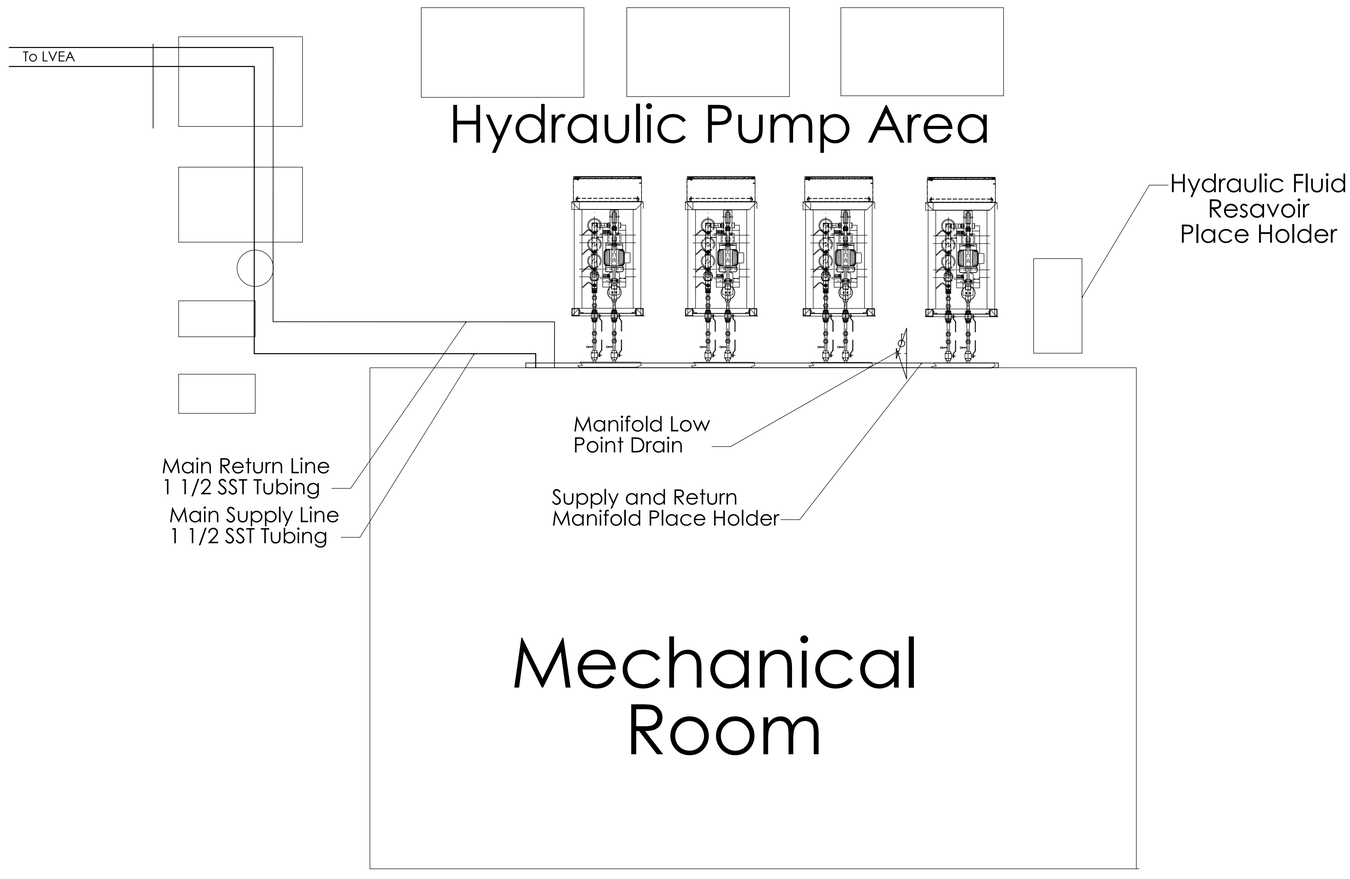
FILE NAME/LOCATION:

REV.	DATE	DCN #	DRAWING TREE #



Typical Plumbing Detail for The BSC and HAM Configurations

All manifold locations shown on pages 1 and 2 are notional only.
All manifolds and associated hardwre will be field fit



Drawing for Estimating Purposes Only
Not Intended for Production

PARTS LIST

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. REMOVE ALL SHARP EDGES, R.02 MIN.
2. DO NOT SCALE FROM DRAWING.
3. ALL MACHINING FLUIDS SHALL BE WATER SOLUBLE AND FREE OF SULFUR, CHLORINE AND SILICONE, SUCH AS CINCINNATI MILACRON'S CIMTECH 410 (STAINLESS STEEL)
4. SCRIBE, ENGRAVE OR STAMP DRAWING-PART/NUMBER ON NOTED SURFACE OF PART AND A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST PART AND PROCEED CONSECUTIVELY. USE .07" HIGH CHARACTERS. EXAMPLE: D020158-001. A VIBRATORY TOOL MAY BE USED.

DIMENSIONS ARE IN INCHES

TOLERANCIES:
.XX ± 0.01
.XXX ± 0.005

ANGULAR ± 0.5 °

MATERIAL

FINISH

	NAME	DATE
DRAWN	M. Hammond	11/12/2003
CHECKED		
APPROVED		

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: SEI External Pre-Isolation

SUB-SYSTEM: HEPI

NEXT ASSY

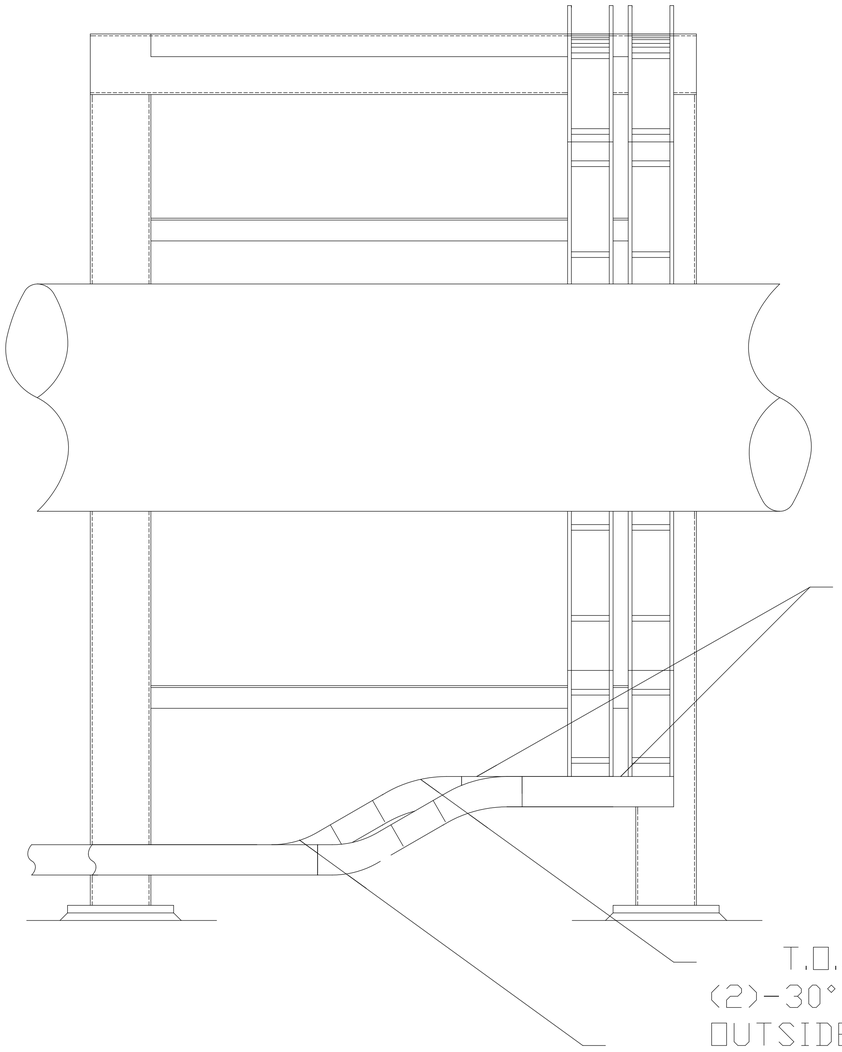
PART NAME: LVEA Hydraulic Routing Layout

SIZE: B | DWG. NO.: D030756 | REV.: 00

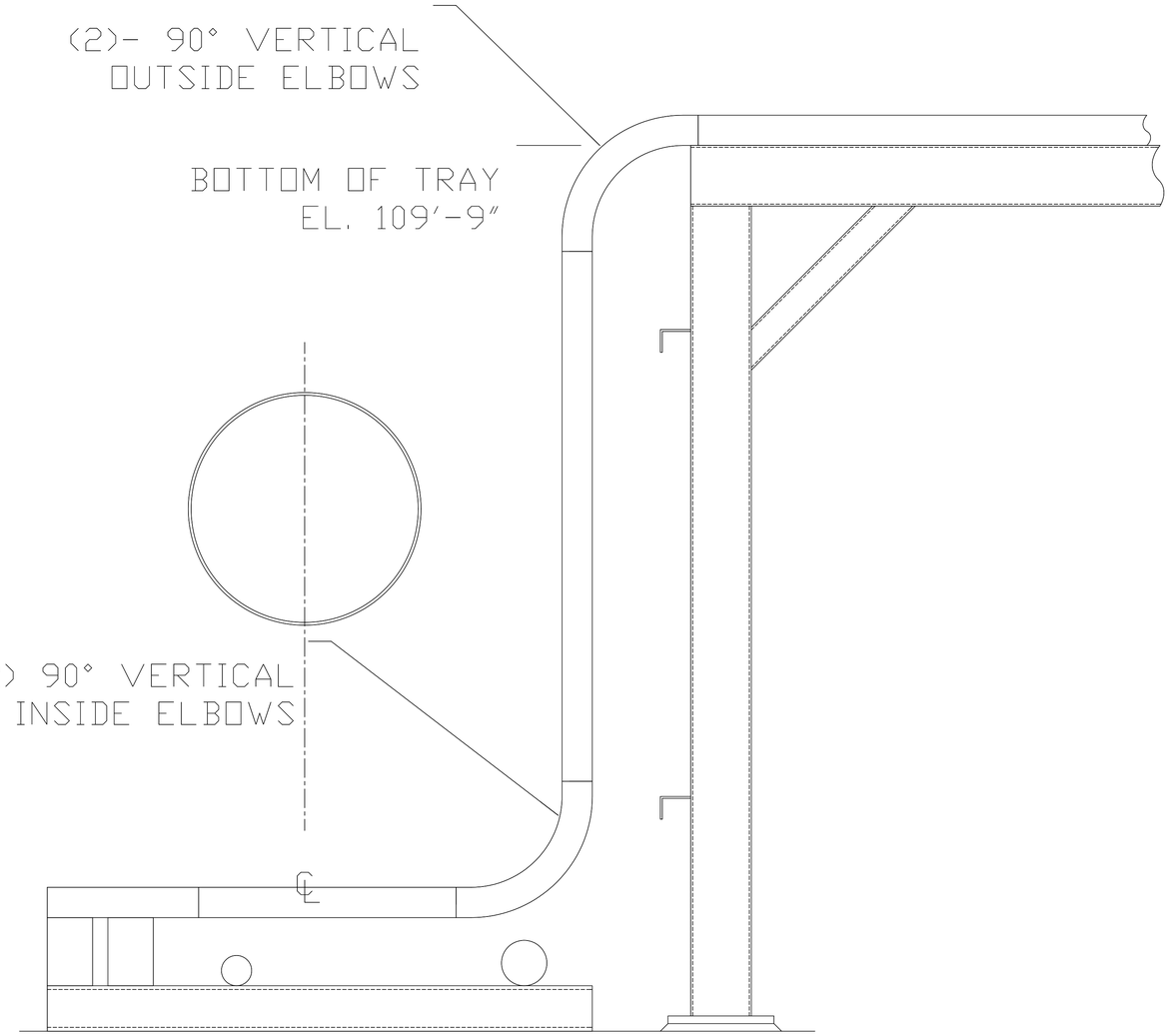
SCALE: 1:1 | PROJECTION: | SHEET 2 OF 3

FILE NAME/LOCATION:

REV.	DATE	DCN #	DRAWING TREE #



Section A-A
typ. Pipe Bridge
Detail
Reference Information
only



Drawing for Estimating Purposes Only
Not Intended for Production

PARTS LIST

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. REMOVE ALL SHARP EDGES, R.02 MIN.
2. DO NOT SCALE FROM DRAWING.
3. ALL MACHINING FLUIDS SHALL BE WATER SOLUBLE AND FREE OF SULFUR, CHLORINE AND SILICONE, SUCH AS CINCINNATI MILACRON'S CIMTECH 410 [STAINLESS STEEL]
4. SCRIBE, ENGRAVE OR STAMP DRAWING PART-NUMBER ON NOTED SURFACE OF PART AND A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001. FOR THE FIRST PART AND PROCEED CONSECUTIVELY. USE .07" HIGH CHARACTERS. EXAMPLE: D020158-001. A VIBRATORY TOOL MAY BE USED.

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± 0.01
.XXX ± 0.005

ANGULAR ± 0.5 °

MATERIAL

FINISH

	NAME	DATE
DRAWN	M. Hammond	11/2005
CHECKED		
APPROVED		

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: SEI External Pre-Isolation

SUB-SYSTEM: HEPI

NEXT ASSY

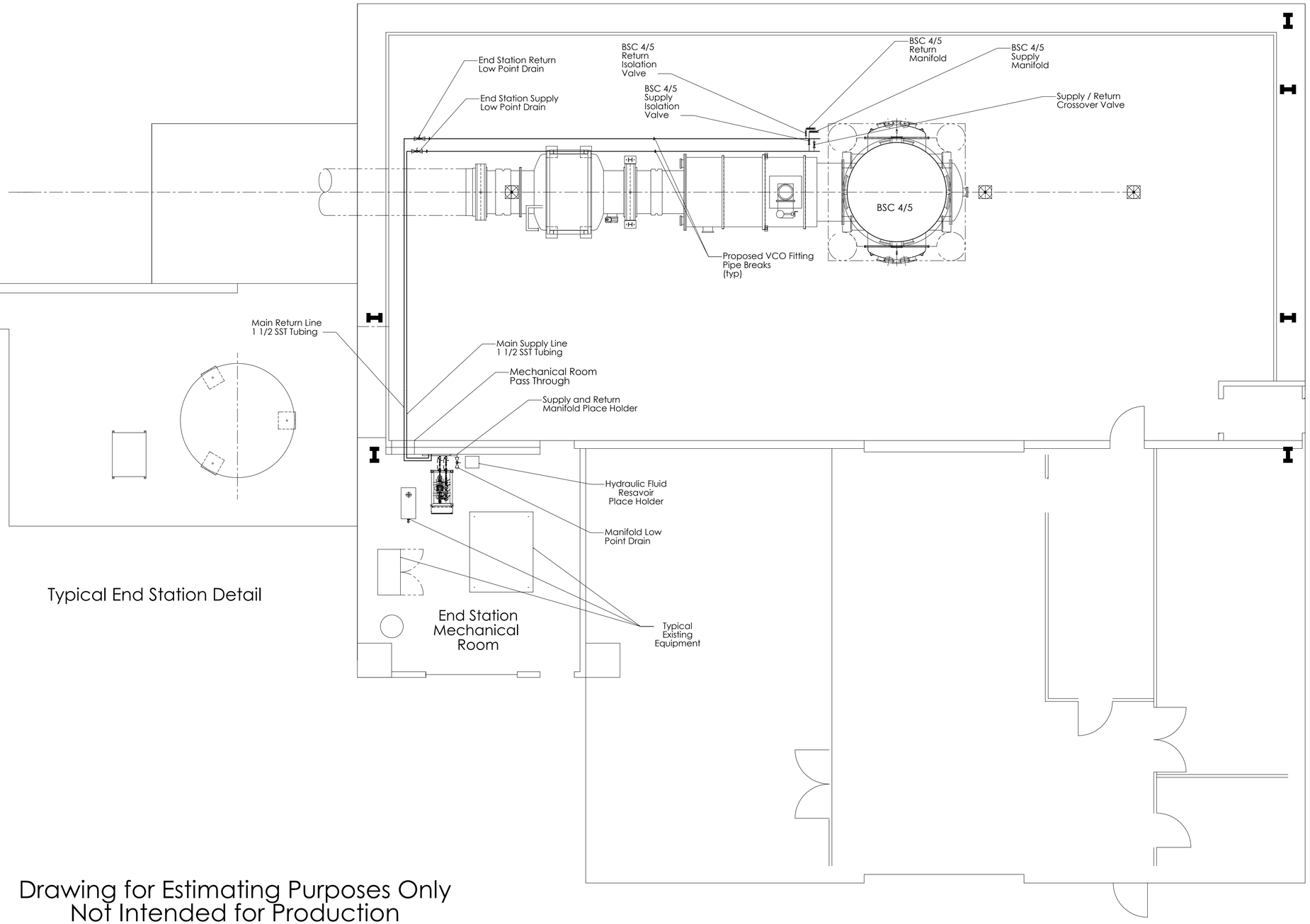
PART NAME: LVEA Hydraulic Routing Layout

SIZE: B | DWG. NO.: D030756 | REV.: 00

SCALE: 1:1 | PROJECTION: | SHEET 3 OF 3

FILE NAME/LOCATION:

REV.	DATE	DCN #	DRAWING TREE #



Typical End Station Detail

Drawing for Estimating Purposes Only
Not Intended for Production

PARTS LIST

NOTES: (UNLESS OTHERWISE SPECIFIED)

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3. ALL MACHINING FLUIDS SHALL BE WATER SOLUBLE AND FREE OF SULFUR, CHLORINE AND SILICONE, SUCH AS CINCINNATI MILACRON'S CIMTECH 410 (STAINLESS STEEL)

④ SCRIBE, ENGRAVE OR STAMP DRAWING PART/NUMBER ON NOTED SURFACE OF PART AND A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST PART AND PROCEED CONSECUTIVELY. USE .03" HIGH CHARACTERS. EXAMPLE: D020158-001. A VIBRATORY TOOL MAY BE USED.

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± 0.01
.XXX ± 0.005

ANGULAR ± 0.5 °

	NAME	DATE
DRAWN	M. Hammond	11/20/03
CHECKED		
APPROVED		

MATERIAL

FINISH

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: SEI External Pre-Isolation

SUB-SYSTEM: HEPI

NEXT ASSY

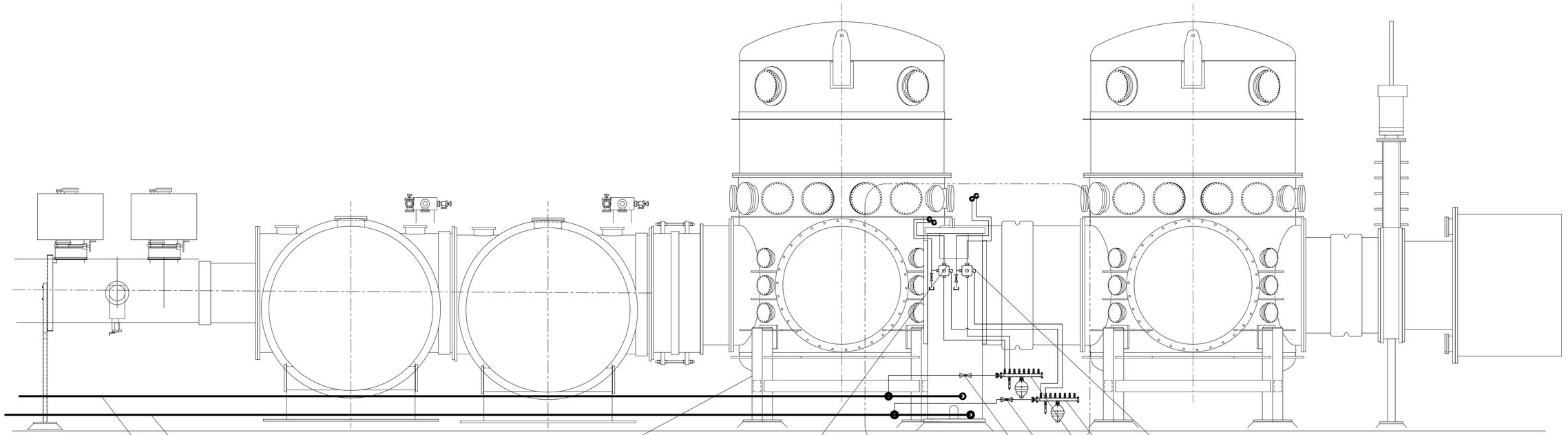
PART NAME: End Station Hydraulic Routing Layout

SIZE: B | DWG. NO.: D030757 | REV.: 00

SCALE: 1:1 | PROJECTION: | SHEET 1 OF 1

FILE NAME/LOCATION:

REV.	DATE	DCN #	DRAWING TREE #



Drawing for Estimating Purposes Only
Not Intended for Production

PARTS LIST

NOTES: (UNLESS OTHERWISE SPECIFIED)

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2. DO NOT SCALE FROM DRAWING.
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④ SCRIBE, ENGRAVE OR STAMP DRAWING PART/NUMBER ON NOTED SURFACE OF PART AND A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST PART AND PROCEED CONSECUTIVELY. USE .20" HIGH CHARACTERS, EXAMPLE: T000198-001. A VIBRATORY TOOL MAY BE USED.

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± 0.01
.XXX ± 0.005

ANGULAR ± 0.5 °

MATERIAL

FINISH

	NAME	DATE
DRAWN	M. Hammond	11/20/03
CHECKED		
APPROVED		

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM SEI External Pre-Isolation

SUB-SYSTEM HEPI

NEXT ASSY

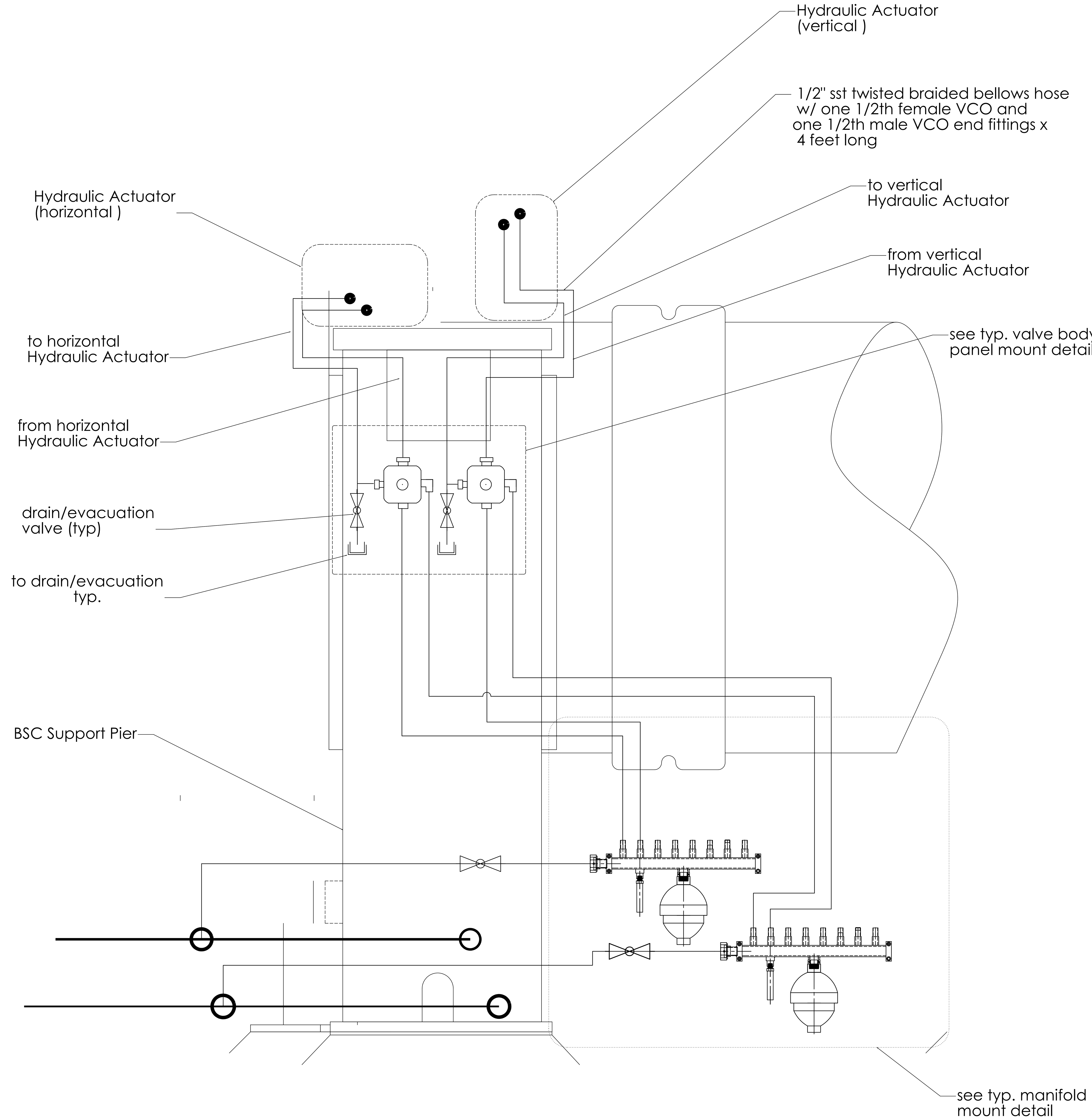
PART NAME EPI LVEA Elevation Layout

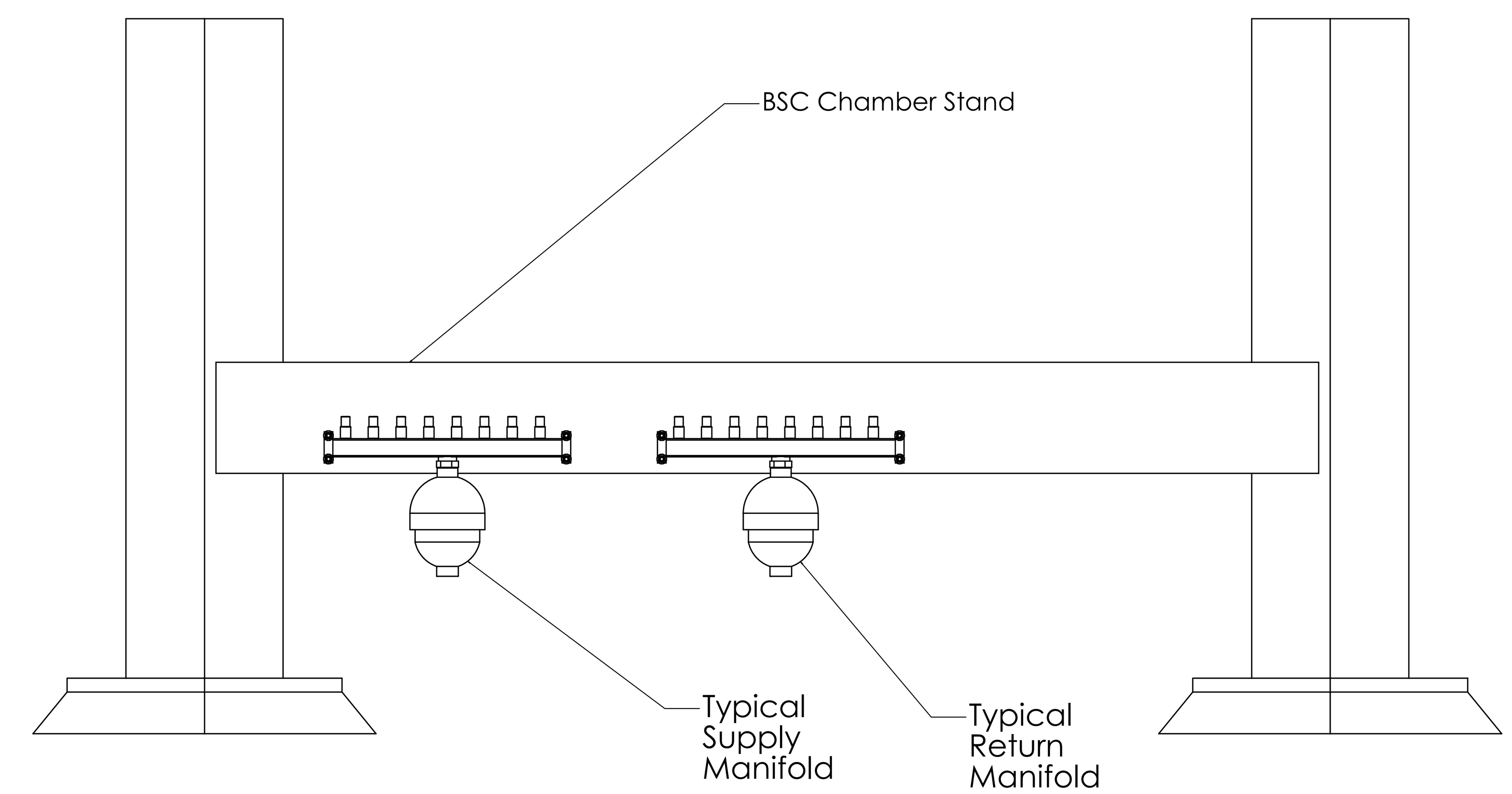
SIZE B | DWG. NO. D030773 | REV. 00

SCALE: 1:1 | PROJECTION: | SHEET 1 OF 3

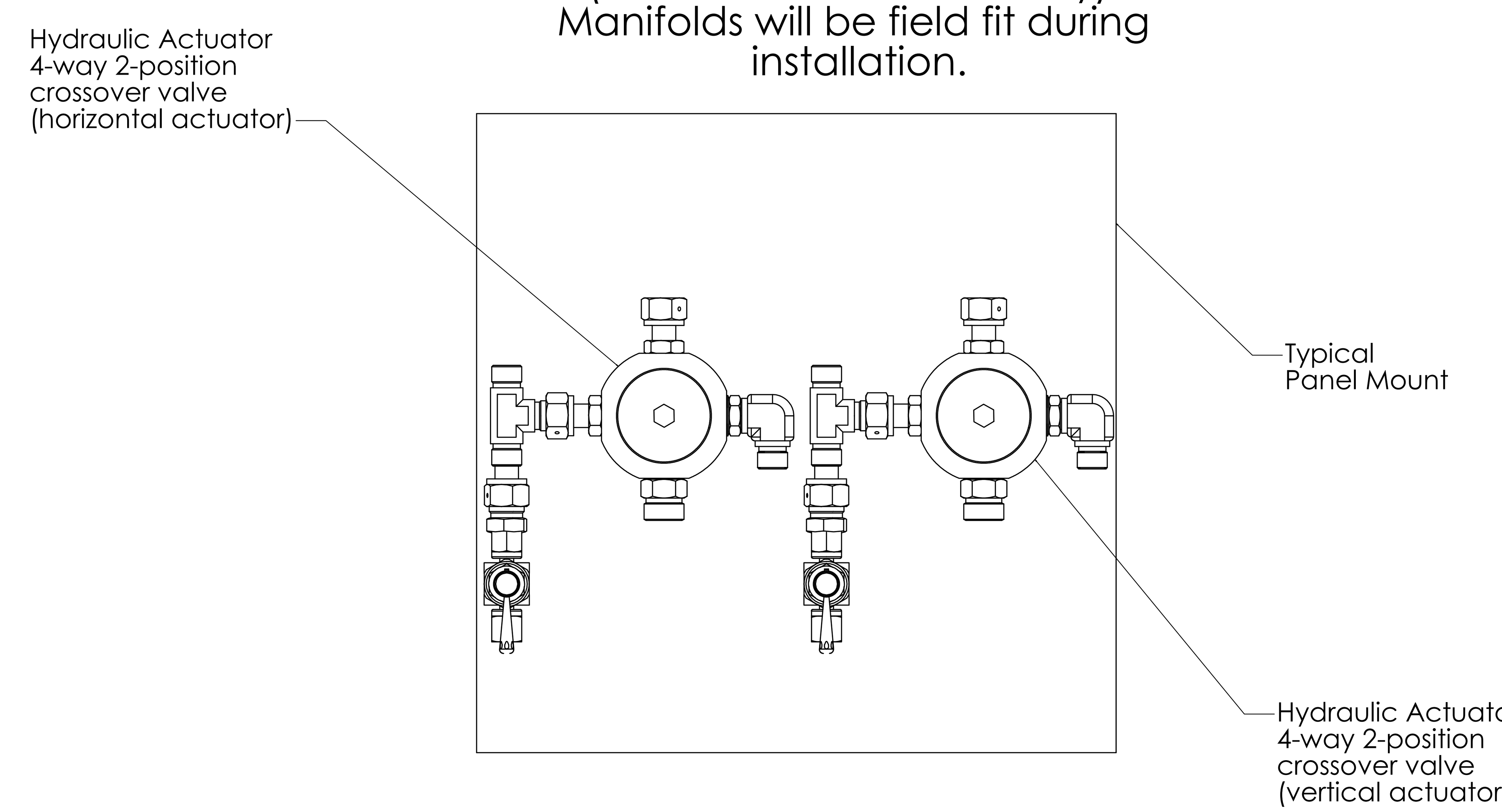
FILE NAME/LOCATION: / ctorrie/engmech/

REV.	DATE	DCN #	DRAWING TREE #





Typical Manifold Installation
(Reference illustration only).
Manifolds will be field fit during
installation.



Typical Cross Over Valve Installation
(Reference illustration only).
Valves will be field fit during
installation.

Drawing for Estimating Purposes Only
Not Intended for Production

PARTS LIST

NOTES: (UNLESS OTHERWISE SPECIFIED)

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3. ALL MACHINING FLUIDS SHALL BE WATER SOLUBLE AND FREE OF SULFUR, CHLORINE AND SILICONE, SUCH AS CINCINNATI MILACRON'S CIMTECH 410 (STAINLESS STEEL)

⟨4⟩ SCRIBE, ENGRAVE OR STAMP DRAWING PARTNUMBER ON NOTED SURFACE OF PART AND A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST PART AND PROCEED CONSECUTIVELY. USE .07" HIGH CHARACTERS. EXAMPLE: D020188- 001. A VIBRATORY TOOL MAY BE USED.

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± 0.01
.XXX ± 0.005

ANGULAR ± 0.5 °

MATERIAL --

FINISH --

	NAME	DATE
DRAWN	M. Hammond	11/20/03
CHECKED		
APPROVED		

LIGO **CALIFORNIA INSTITUTE OF TECHNOLOGY** **MASSACHUSETTS INSTITUTE OF TECHNOLOGY**

SYSTEM SEI External Pre-Isolation

SUB-SYSTEM HEPI

NEXT ASSY

PART NAME EPI LVEA Elevation Layout

SIZE B **DWG. NO.** D030773 **REV.** 00

SCALE: 1:16 **PROJECTION:** SHEET 2 OF 3

FILE NAME/LOCATION:

REV.	DATE	DCN #	DRAWING TREE #

pier #4 pier #3 pier #4 pier #3

accumulator

PI

Differential Pressure Sensor

accumulator

to/from pump station

Contamination Containment Volume/Shell

Point of Separation for Actuator R&R

VCO female male

VCO male female

4-way, 2-position, Crossover Manual Valve

Point of Separation for Valve R&R

Horizontal Hydraulic Actuator Crossover Valve Configuration

VCO

Drain/Evacuation Diaphragm valve

Vacuum Pump

VCO

Fluid Receiver

Single Return

Single Supply

Point of Separation for Actuator R&R

VCO female male

VCO male female

4-way, 2-position, Crossover Manual Valve

Point of Separation for Valve R&R

Vertical Hydraulic Actuator Crossover Valve Configuration

VCO

Drain/Evacuation Diaphragm valve

Vacuum Pump

VCO

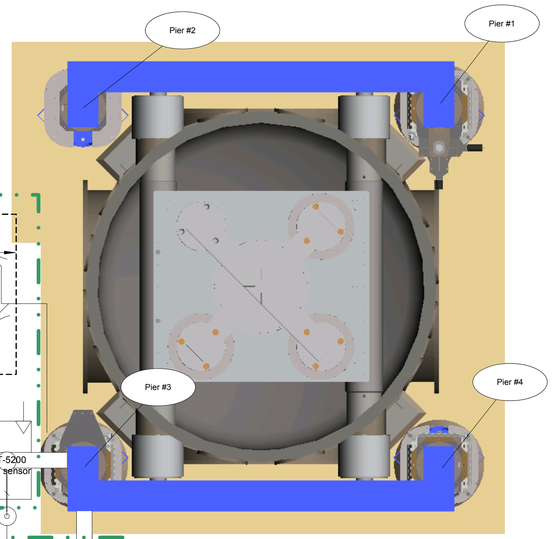
Fluid Receiver

Single Return

Single Supply

pier #1

pier #1



R

R

servo-valve

R2

R1

horizontal hydraulic actuator

L4C geophone

DIT-5200 pos. sensor

DIT-5200 pos. sensor

L4C geophone

R

R2

servo-valve

R

R1

vertical hydraulic actuator

Drawing for Estimating Purposes Only
Not Intended for Production

PARTS LIST

NOTES: (UNLESS OTHERWISE SPECIFIED)

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DIMENSIONS ARE IN INCHES

TOLERANCES:
XX ± 0.01
.XXX ± 0.005

ANGULAR ± 0.5 °

MATERIAL

FINISH

	NAME	DATE
DRAWN	M. Hammond	11/20/01
CHECKED		
APPROVED		

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: SEI External Pre-Isolation

SUB-SYSTEM: HEPI

NEXT ASSY

PART NAME: Piping & Instrumentation Diagram

SIZE: B | DWG. NO.: D020214 | REV.: 01

SCALE: 1:16 | PROJECTION: | SHEET 3 OF 3