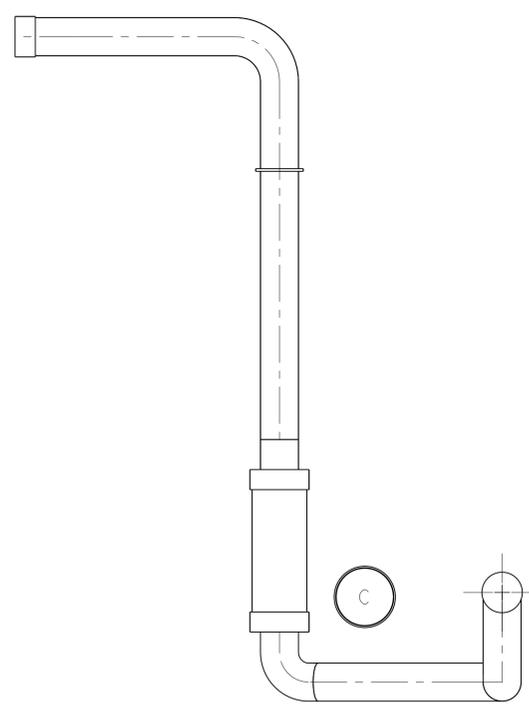
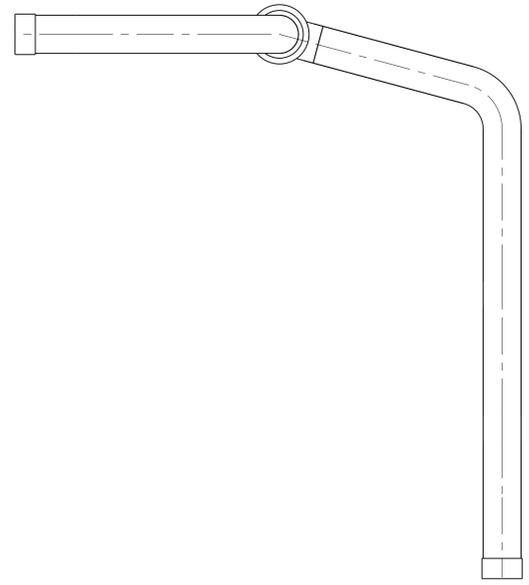


ITEM	PART NO.	RECD	DESCRIPTION	MATERIAL
4	-	I	SUPPORT FLANGE	SS 304L
3	-	I	PIPE, PER ASTM A312	SS 304L
2	-	I	PIPE, PER ASTM A312	SS 304L
1	-	I	BRAIDED FLEX HOSE, 2" ID X 6.1 L	SS 300 SERIES

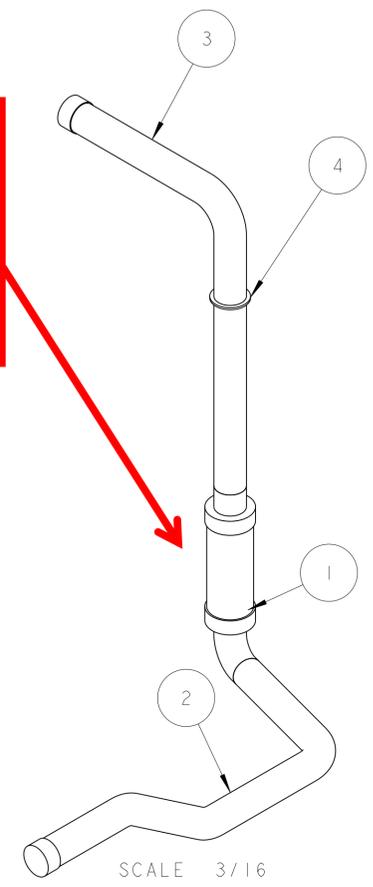
NOTES: (UNLESS OTHERWISE SPECIFIED)

- THIS IS A CRYOGENIC VACUUM COMPONENT.
- WELDING PROCEDURE: PER VENDOR SPECIFICATION WITH LBNL APPROVAL.
- CLEANING PROCEDURE: PER VENDOR SPECIFICATION WITH LBNL APPROVAL.
- PACKAGING AND STORAGE PROCEDURE OF THE COMPONENTS: PER VENDOR SPECIFICATION WITH LBNL APPROVAL.
- DIMENSIONS AND TOLERANCING PER ANSI Y14.5M-1982. UNITS ARE IN INCHES [mm] UNLESS OTHERWISE SPECIFIED.
- USE OF SULFUR OR SILICONE BEARING OILS, LUBRICANTS, OR COOLANTS ARE STRICTLY PROHIBITED.
- USE OF RESIN OR RUBBER BONDED ABRASIVES UNDER POWER IS STRICTLY PROHIBITED. USE VITREOUS BONDED ABRASIVES ONLY.
- VENDOR SUGGESTED CHANGES TO WELD PREPS; SUBJECT TO LBNL APPROVAL.
- FITTINGS MAY BE USED IN PLACE OF BENDS; SUBJECT TO LBNL APPROVAL.
- VENDOR SUGGESTED CHANGES TO TOLERANCES TO FACILITATE FABRICATION OR ASSEMBLY; SUBJECT TO LBNL APPROVAL.
- REMOVE ALL THE BURRS AND REAM THE ENDS FOR CIRCULARITY AND CLEAN ENDS.
- TUBE END SURFACE MUST BE PERPENDICULAR TO THE TUBE AXIS WITHIN +/- .010.
- PERFORM ACCEPTANCE TESTS PER LBNL SPECIFICATION M989. (B)
- A MARK DESIGNATING THE INSTALLED LENGTH WILL BE UTILIZED DURING FINAL INSTALLATION OF THE FEEDBOX ASSEMBLY. MARK, SCRIBE OR ETCH THIS LOCATION IN A PERMANENT MANNER, SUBJECT TO LBNL APPROVAL, TO AN ACCURACY OF ±0.063". (B)
- PROVIDE A MINIMUM LENGTH OF 4.0" OF STRAIGHT, SMOOTH PIPE ON THE INDICATED SIDE OF THE INSTALLED LENGTH MARK FOR PIPE WELDING DURING FINAL INSTALLATION OF THE FEEDBOX ASSEMBLY.
- PIPE MUST BE STRAIGHT AND SMOOTH (NO BUMPS) FOR 1.5" ON EITHER SIDE OF THE CENTER-PLANE OF THE SUPPORT. (B)
- CAP BOTH ENDS OF PIPE TO FACILITATE ACCEPTANCE TESTS. (B)

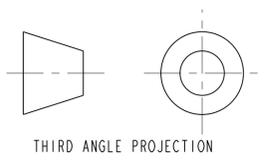


(C) Ø1.50 PIPE SCH 5S
(Ø1.900 [48.26] OD X
.065 WALL)
[1.65]

The LD1 pipe does not look the same in 25i246C as in 25i235B. Here it runs down vertically through the flex hose. In 25i235B it runs at an angle.



*** FOR ADDITIONAL TUBE DIMENSIONS, SEE SHEET 2

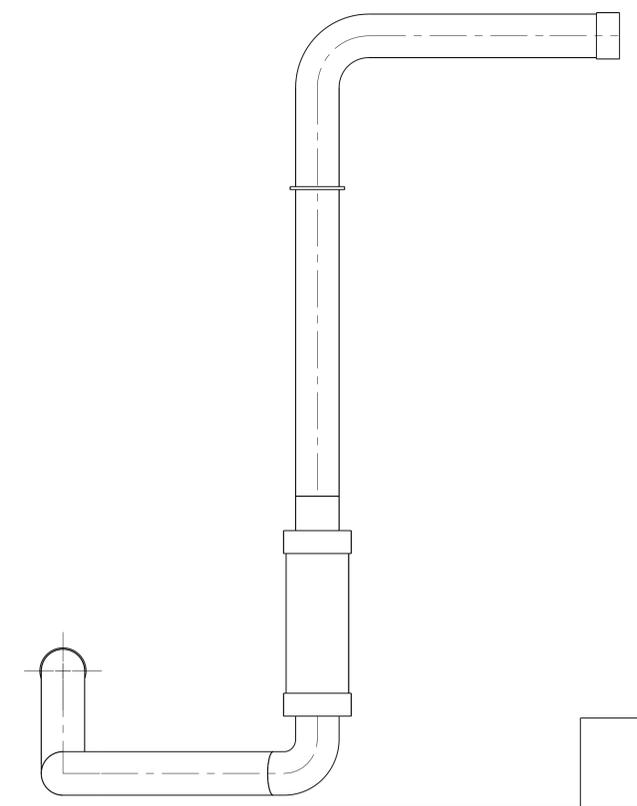
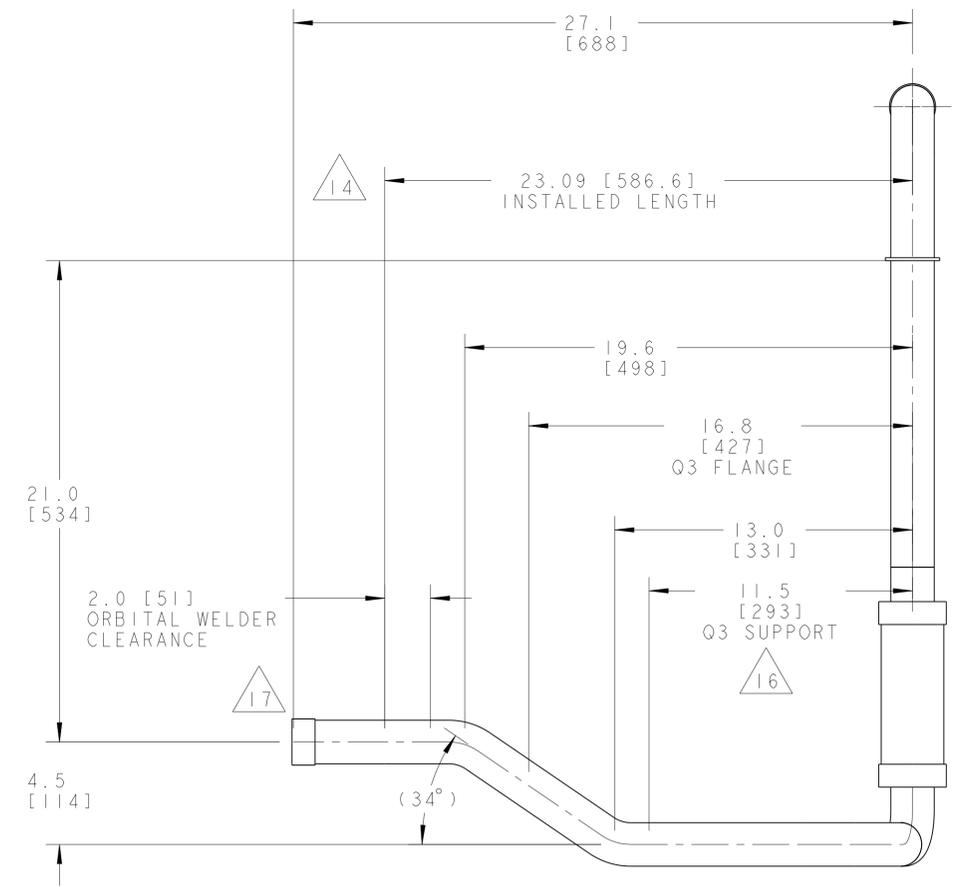
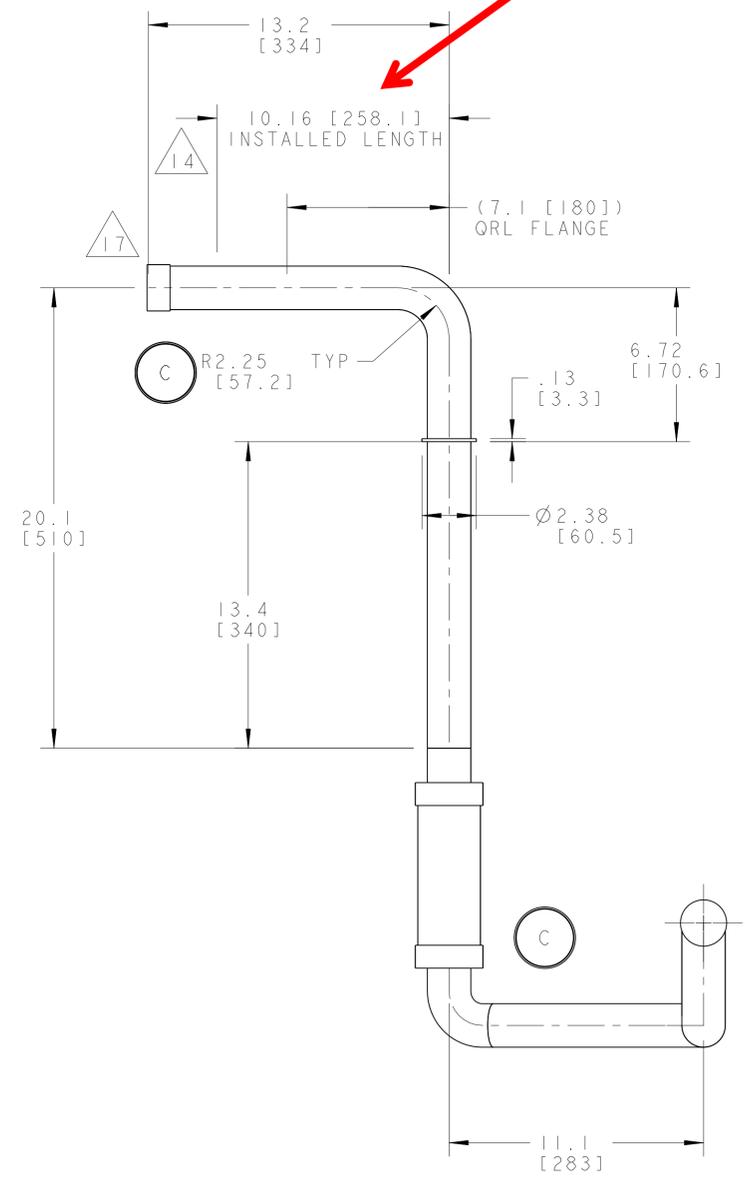
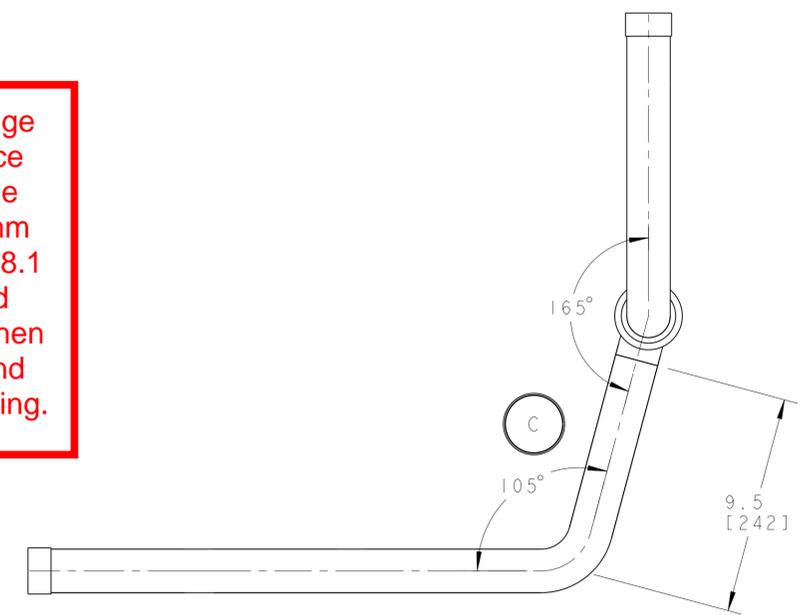


REV	DWG	CHK	ZONE	DATE	CHANGES
C	RLM	JPZ		4/3/03	REROUTE, R2.25 WAS R3.5, PIPE CALL OUT
B	ARH	SPV		01/08/03	REVISED DRAWING NOTES 13, 16 & 17, ADDED CERN BOX TO SHEET 2, MINOR DRAWING DIMENSIONAL CHANGES.
A	ARH	SPV		11-06-02	INITIAL RELEASE

TOLERANCES		SHOP ORDERS	
X.X ± 0.1	FRAC. ± 1/64	ACCT NO.	NO.
X.XX ± 0.03	Angles ± 1.00°	DEL TO	DATE ISSD
X.XXX ± 0.010	FINISH 125 \sqrt{Ra}	SURFACE TREATMT	DATE RECD
DO NOT SCALE PRINT		IDENT METHOD	TAG
THREADS ARE CLASS 2		PROJECT NUMBER	N/A
CHAMFER ENDS OF ALL SCREW THREADS 30°		PROJECT NAME	N/A
CUT ROUND, 1.5 THREAD RELIEF ON MACHINED THREADS		DWG BY	R LA MANTIA
BREAK EDGES .016 MAX. ON MACHINED WORK		DATE	12-Dec-01
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE		CHK BY	Jon Zbasnik/S.Virostek
IN ACCORDANCE WITH ASME Y14.5M & B46.1		DATE	05-Nov-02
		APP BY	Jon Zbasnik/S.Virostek
		DATE	05-Nov-02

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY			
UNIVERSITY OF CALIFORNIA - BERKELEY			
LHC IR FEEDBOX CRYOGENICS PIPE, LDI			
MICROFILMED:	DWG. TYPE	SHOWN ON	SCALE: 7/32
	ASSEM	-	DO NOT SCALE PRINTS
PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CODE	SHEET 1 OF 2
	Z5LCE2	LH2003	DWG. NO. 2512464
			SIZE C

The distnaces from the QRL flange don't seem correct. The distance between the QRL flange and the installed length should be 144 mm from the QRL flange. Here it is 78.1 mm. This appears to be an old dimension, left over from 2001 when the connection was by flange and sleeve rather than by persistent ring.



ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY
UNIVERSITY OF CALIFORNIA - BERKELEY

LHC IR FEEDBOX
CRYOGENICS
PIPE, LDI

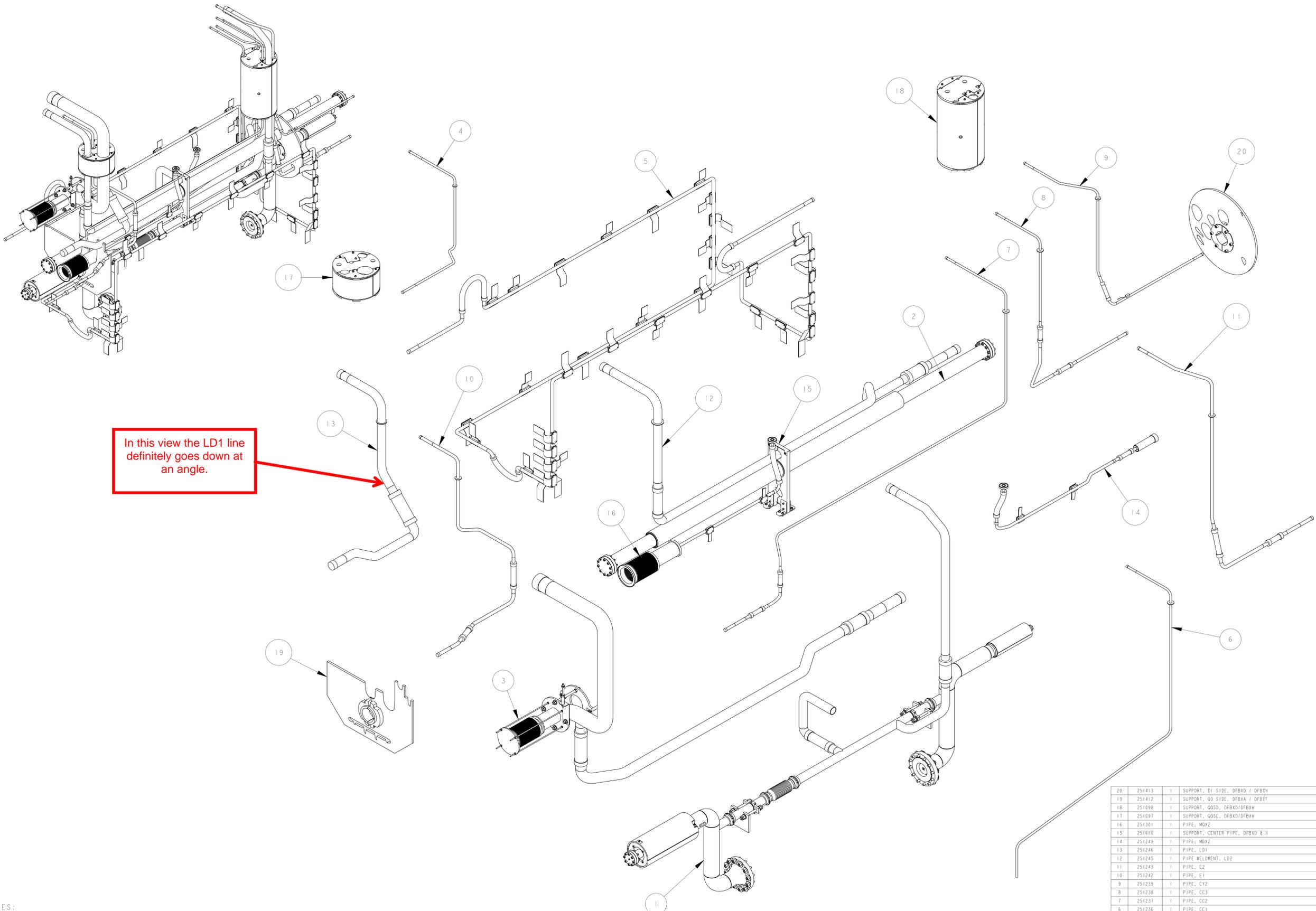
MICROFILMED:	DWG. TYPE ASSEM	SHOWN ON -	SCALE: 1/4	DO NOT SCALE PRINTS
PATENT CLEAR:	DESIGN ACCT. NO. Z5LCE2	CATEGORY CODE LH2003	SHEET 2 OF 2	
			DWG. NO. 2512464	REV. C

D

C

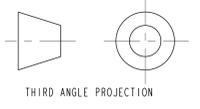
B

A



In this view the LD1 line definitely goes down at an angle.

- NOTES:
1. ALL CAPPED PIPE EXTENSIONS WILL BE CUT DURING FINAL INSTALLATION OF THE FEEDBOX.
 2. DIMENSIONS ARE IN INCHES [mm] UNLESS OTHERWISE SPECIFIED.
 3. ALL PIPES TO BE INSULATED PER MLI SPECIFICATION PROVIDED BY VENDOR AND SUBJECT TO LBNL APPROVAL. IN LOCATIONS WHERE PIPES PASS THROUGH SUPPORT ASSEMBLIES, INSULATION IS TO BE WRAPPED WITH KAPTON TAPE FOR PROTECTION FROM ABRASION DURING THERMAL CYCLING.



REV	DWG	CHK	ZONE	DATE	CHANGES
B	ARH	DPO		02/20/02	UPDATED SUBASSEMBLY VIEWS
A	MJK	DPO		1/12/02	INITIAL RELEASE

UNLESS OTHERWISE SPECIFIED	
COEFFICIENTS	X.X ± 0.1 FRACTION ± 1/64
	X.XX ± 0.03 ANGLES ± 1.0°
	X.XXX ± 0.010 FINISH 125 μm
DO NOT SCALE PRINT	
TOLERANCES	
CHAMFER ENDS OF ALL SCREW THREADS 30°	
KEYWAYS	1/16" MIN
BREAK EDGES .015 MAX. ON MACHINED WORK	
REMOVE BURRS, WELD SPATTER & LOOSE SCALE	
IN ACCORDANCE WITH ASME 11.4 SM 11.4.1	

SHOP ORDERS		DATE	NO.	REVISION
DATE	NO.	REVISION	DATE	NO.
ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY				
LHC IR FEEDBOX CRYOGENICS				
PIPING	DFBXDH	1P2,8	RH	24C362
DWG. TYPE	ASSEM	24C3626	SCALE	1.37/1.00
DATE	13-Mar-02	PATENT CLEAR.	DESIGN ACCT. NO.	ZSLCE2
DATE	11/29/02	DATE	11/29/02	DATE
DATE	11/29/02	DATE	11/29/02	DATE

ITEM	PART NO.	REQD	DESCRIPTION	MATERIAL
20	251413	1	SUPPORT, D1 SIDE, DFBXD / DFBXH	NEMA 610
19	251412	1	SUPPORT, Q3 SIDE, DFBXA / DFBXF	NEMA 610
18	251098	1	SUPPORT, Q0SD, DFBXD/DFBXH	NEMA 610
17	251097	1	SUPPORT, Q0SC, DFBXD/DFBXH	NEMA 610
16	251301	1	PIPE, M0X2	
15	251610	1	SUPPORT, CENTER PIPE, DFBXD & H	
14	251249	1	PIPE, M0X2	
13	251246	1	PIPE, LD1	
12	251245	1	PIPE WELDMENT, LD2	
11	251243	1	PIPE, E2	
10	251242	1	PIPE, E1	
9	251239	1	PIPE, CY2	
8	251238	1	PIPE, CC3	
7	251237	1	PIPE, CC2	
6	251236	1	PIPE, CC1	
5	251212	1	PIPE, EX	
4	251303	1	PIPE, CY1	
3	251253	1	PIPE WELDMENT, YB	
2	251855	1	Y PIPE & JACKET ASSEMBLY	
1	251247	1	PIPE WELDMENT, LD3 AND BUS DUCT	

D

C

B

A

2512356 B 1

B

8 7 6 5 4 3 2 1

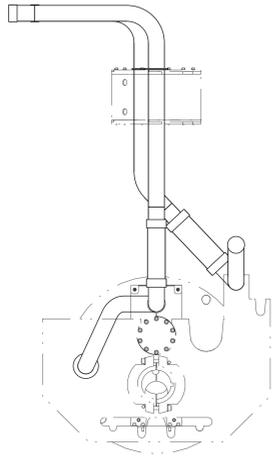
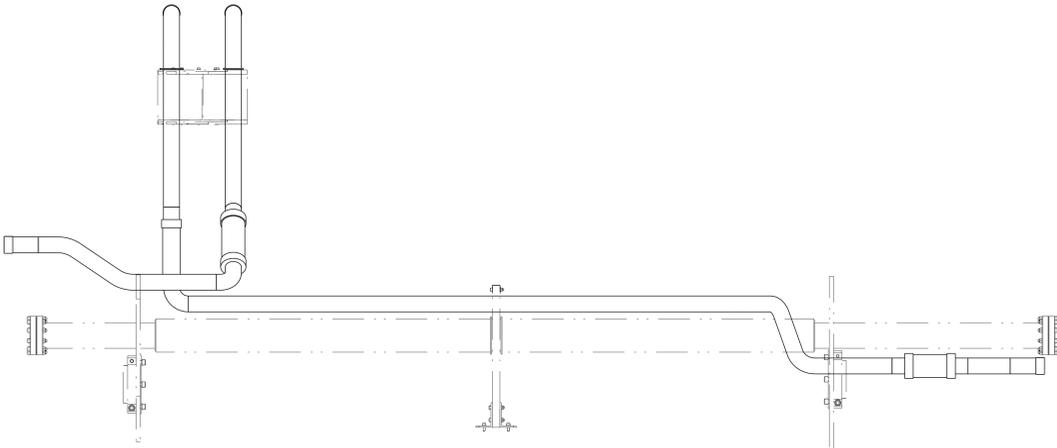
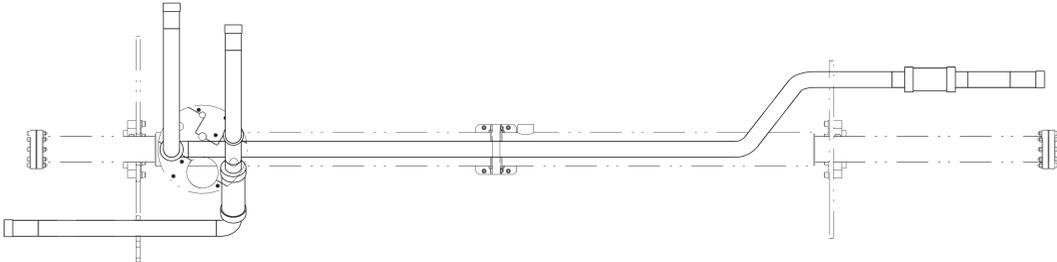
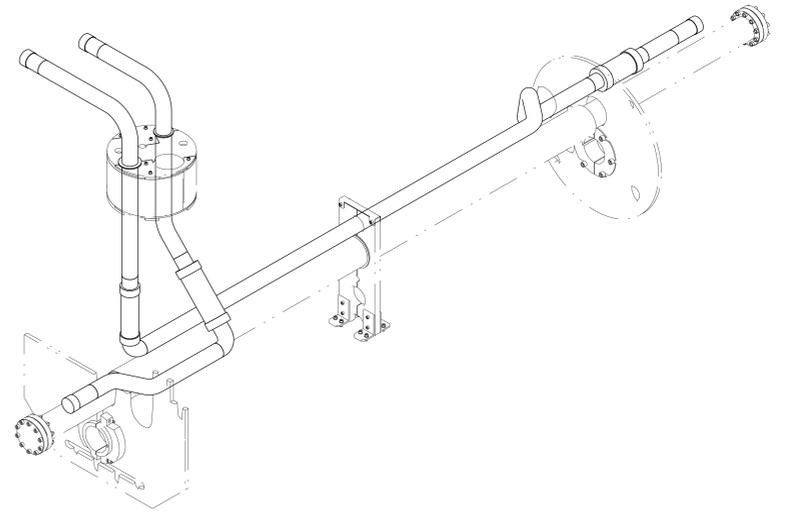
D

D

LD LINES

SHOWN FOR REFERENCE ONLY

One LD line is definitely shorter than the other. I think they should be the same length.



C

C

B

B

A

A

8 7 6 5 4 3 2 1

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY				UNIVERSITY OF CALIFORNIA - BERKELEY	
LHC IR FEEDBOX CRYOGENICS					
PIPING DFBXD&H IP2, 8 RH 24C362					
MICROFILMED:	DWG. TYPE	SHOWN ON	SCALE	DO NOT SCALE PRINTS	
	ASSEM	24C3626	1/3/100		
PATENT CLEAR:	DESIGN ACCT. NO.	CATEGORY CODE	DWG. NO.	SIZE	REV.
	ZSLCE2	LH2003	2512356	B	

2512356 B 4