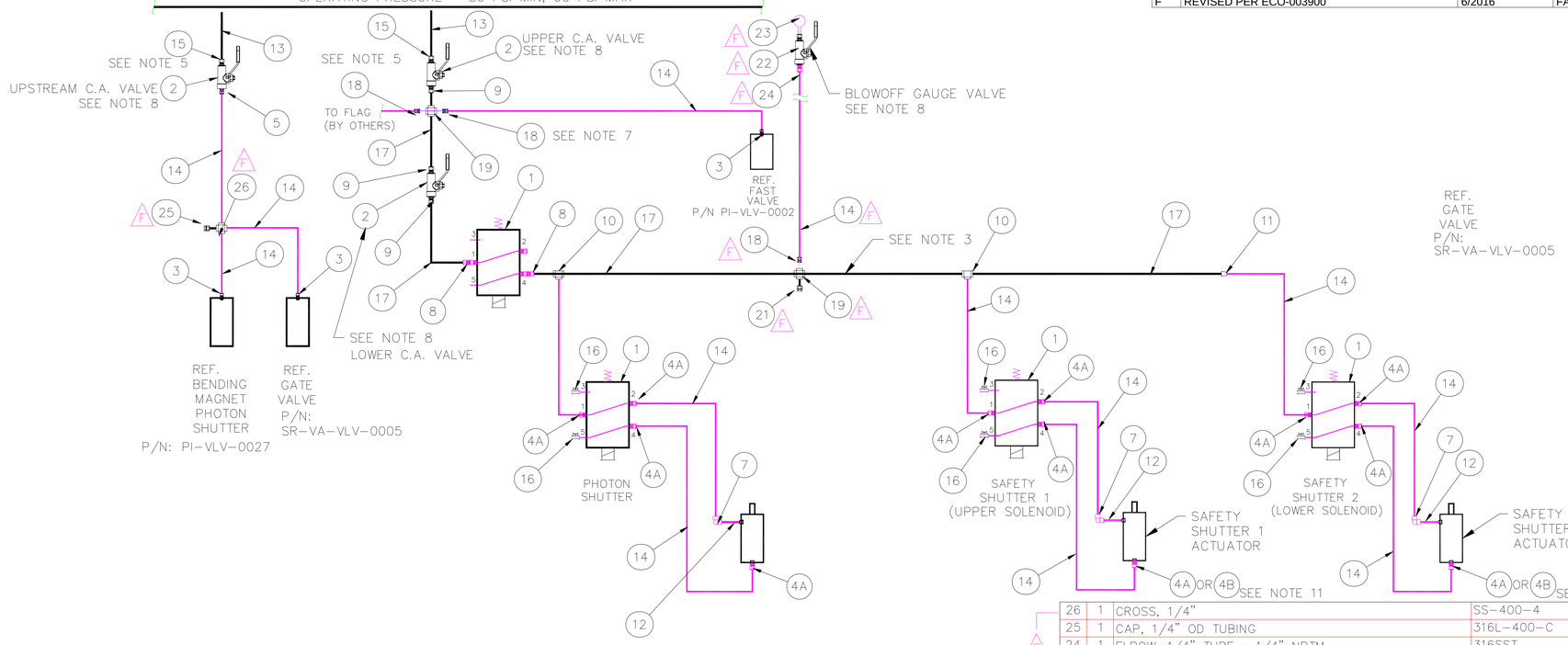
REVISION HISTORY					
REV	DESCRIPTION	DATE	DESIGNER	CHECKED BY	ENGINEER
A	RELEASE PER ECO-001380	4/2013	Y. KOH	C.AMARITO	LEWIS DOOM
B	RELEASE PER ECO-001593	8/2013	FAUSSETE	C.AMARITO	LEWIS DOOM
C	REVISED PER ECO-002507	8/2014	J TUOZZOLO	C.AMARITO	C AMUNDSEN
D	REVISED PER ECO-002797	12/2014	D.PULEO	C.AMARITO	C AMUNDSEN
E	REVISED PER ECO-003153	9/2015	FAUSSETE	C.AMARITO	BREITFELLER
F	REVISED PER ECO-003900	6/2016	FAUSSETE	CA/CS	BREITFELLER

FRONT END AIR SYSTEM

OPERATING PRESSURE = 80 PSI MIN, 90 PSI MAX



NOTES:

1. USE TWO PART THREAD SEALANT ON NPT FITTING.
   P/N: PRIMER 7471 P/N: LOCKTITE SEALANT 545
2. INSTALL ALL COMPRESSION FITTING
   PER SWAGELOK AN INSTALLER'S POCKET GUIDE FOR
   SWAGELOK TUBE FITTINGS, MS-13-151.
3. MOUNT AIR MANIFOLD TO VERTICAL UNISTRUTS ON FRONT END STANDS.
4. ALL SOLENOIDS ARE SHOWN IN DE'ENERGIZED STATE.
5. BALL VALVE MUST BE INSTALLED WITH VENT PORT ON
   DOWN STREAM SIDE.
6. SEE SHEET 2 FOR PICTURE OF AIR COMPONENTS.
7. LEAK TEST SYSTEM AT 100 PSI, PER ASME B31.3 USE A
   PRESSURE GAUGE CALIBRATED TO N.I.S.T. SPECIFICATIONS
   WITH CERTIFICATION THAT IS CURRENT. ISOLATE FAST VALVE
   BRANCH FROM THE REST OF THE SYSTEM, BY TEMPORARILY
   PLUGGING AT ITEM 18 AND REDUCER. APPLY THIN FILM BUBBLE
   SOLUTION TO ALL FITTINGS AND INSPECT. AFTER SYSTEM TEST,
   RE-INSTALL FAST VALVE BRANCH, AND LEAK TEST BRANCH AT
   OPERATING PRESSURE.

F 8. AFFIX IDENTITY LABELS TO COMPRESSED AIR VALVES.
   ON THE IDENTIFICATION LABELS, RECORD VALVE NAME,
   AS PER DWG LEADER LABEL, AND CELL NUMBER FORMAT XX-YY,
   EXAMPLE: UPPER C.A. VALVE-12-ID

F 9. APPLY DIRECTIONAL COMPRESSED AIR PIPE LABELS TO BRANCHES.

F 10. BLOWOFF PRESSURE GAUGE TO BE TESTED PER MAINTANANCE
   PROCEDURE PS-C-XFD-PRC-023, CALIBRATION OF GAUGE
   NOT REQUIRED.

F 11. FOR FRONT ENDS USING ACTUATOR P/N PI-ACTR-0067, USE
   ITEM NUMBER 4A.
   FOR FRONT ENDS USING ACTUATOR P/N PI-ACTR-0034, USE
   ITEM NUMBER 4B.

ITEM	QTY	NAME	MATERIAL/PART NUMBER	VENDOR
26	1	CROSS, 1/4"	SS-400-4	SWAGELOK
25	1	CAP, 1/4" OD TUBING	316L-400-C	SWAGELOK
F 24	1	ELBOW, 1/4" TUBE x 1/4" NPTM	316SST	SWAGELOK
23	1	PRESSURE GAUGE	4053K15	McMASTER
22	1	BALL VALVE	SS-43GEF4-LL	SWAGELOK
21	1	CAP, 1/2" OD TUBING	316L-810-C	SWAGELOK
19	2	CROSS 1/2"	SS-810-4	SWAGELOK
18	3	REDUCER 1/2" TO 1/4"	SS-400-R-8	SWAGELOK
F 17	6	TUBE, 1/2" OD X .049" WALL	STAINLESS STEEL	BNL
16	6	MUFFLER / SPEED CONTROL	AS3200-F02-ST	SMC
15	2	ADAPTER, MALE, 1/2' SWEAT X 1/2" NPTM	COPPER, #5520K11	McMASTER
14	15	TUBE, 1/4 " OD X .035" WALL	STAINLESS STEEL	BNL
13	2	TUBE, 1/2" OD X .049" WALL	COPPER	BNL
12	3	NIPPLE, 1/4" X 1-1/2" LG	BRASS, 4757T58	McMASTER
11	1	REDUCING UNION, 1/2" TUBE X 1/4" TUBE	316 SST, SS-810-6-4	SWAGELOK
F 10	2	REDUCING TEE, 1/2" X 1/4" X 1/2"	316 SST, SS-810-3-8-4	SWAGELOK
9	3	CONNECTOR, MALE, 1/2" TUBE X 1/2 NPTM	316 SST, SS-810-1-8	SWAGELOK
8	2	CONNECTOR, MALE, 1/2" TUBE X 1/4" NPTM	316 SST, SS-810-1-4	SWAGELOK
7	3	ELBOW, 1/4" TUBE X 1/4" NPTF	316 SST, SS-400-8-4	SWAGELOK
5	1	CONNECTOR, MALE, 1/2" NPTM X 1/4" TUBE OD	316 SST, SS-400-1-8	SWAGELOK
F 4B	2	CONNECTOR, MALE 1/4" TUBE x 3/8" NPT	316 SST, SS-400-1-6	SWAGELOK
F 4A	12	CONNECTOR, MALE, 1/4" TUBE X 1/4" NPTM	316 SST, SS-400-1-4	SWAGELOK
3	3	ADAPTER, MALE, 1/4" TUBE X 1/8" BST	316 SST, SS-400-1-2 RT	SWAGELOK
2	3	BALL VALVE, 1/2" NPT X 1/2" NPT	PI-VLV-0060	APOLLO VALVE
1	4	VALVE, LOW PWR SOLENOID	PI-VLV-0017	ASCO

Parts List

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
DIMENSIONS IN BRACKETS [xx.xx] (WHERE PRESENT) ARE MILLIMETERS AND ARE FOR REFERENCE ONLY
INTERPRET DRAWING AS PER ANSI Y14.5-1994 OR Y32.2-1975
DIMENSIONAL TOLERANCES: X. ± 0.060, .X ± 0.030, .XX ± 0.015, .XXX ± 0.005
ANGULAR TOLERANCE ± .5
FINISH 125
BREAK EDGES & SHARP CORNERS 0.005 MIN. TO 0.030 MAX.

BROOKHAVEN NATIONAL LABORATORY
BROOKHAVEN SCIENCE ASSOCIATES
UPTON, NEW YORK 11973
Exploring Life's Mysteries, Protecting Its Future

NSLS II NATIONAL SYNCHROTRON LIGHT SOURCE II

DRAWN BY	Y. KOH	4/2013
CHECKED BY	C. AMARITO	4/2013
VACUUM APPROVAL	N/A	N/A
ENGINEER APPROVAL	LEWIS DOOM	4/2013
SUPERVISOR APPROVAL	S. SHAMA	4/2013
ES&H APPROVAL	A. ACKERMAN	4/2013
QA APPROVAL	E. CHESWICK	4/2013

STORAGE RING
FRONT END, UTILITIES
AIR SCHEMATIC

SHEET SIZE: D
DRAWING/PART NUMBER: SR-FE-UT-0001
REVISION: F

NEXT ASSY:
PROJECT:
THIRD ANGLE PROJECTION
SCALE: NONE
WBS# 1.03.04.07.03
ESH&Q RISK LEVEL A-2
SHEET 1 OF 2

SR-FE-UT-0001

RELEASED – EFFECTIVE

Air components

XBPM1
NONE

XBPM2
NONE

SLIT 1
NONE

SLIT 2
NONE

SAFETY SHUTTER
Actuator (PI-ACTR-0033) X2
solenoid (PI-VLV-0017) X2

UPSTREAM
SAFETY SHUTTER 1

DOWNSTREAM
SAFETY SHUTTER 2

EXIT CHAMBER SUBASSY
Bending magnet photon shutter
(PI-VLV-0027)
All metal gate valve
(SR-VA-VLV-0005)

PHOTON SHUTTER
Actuator (PI-ACTR-0033)
Solenoid (PI-VLV-0017)

RATCHETWALL COLLIMATOR
NONE

FIXED MASK
NONE

Compound Refractive
Lens (IXS only)
NONE

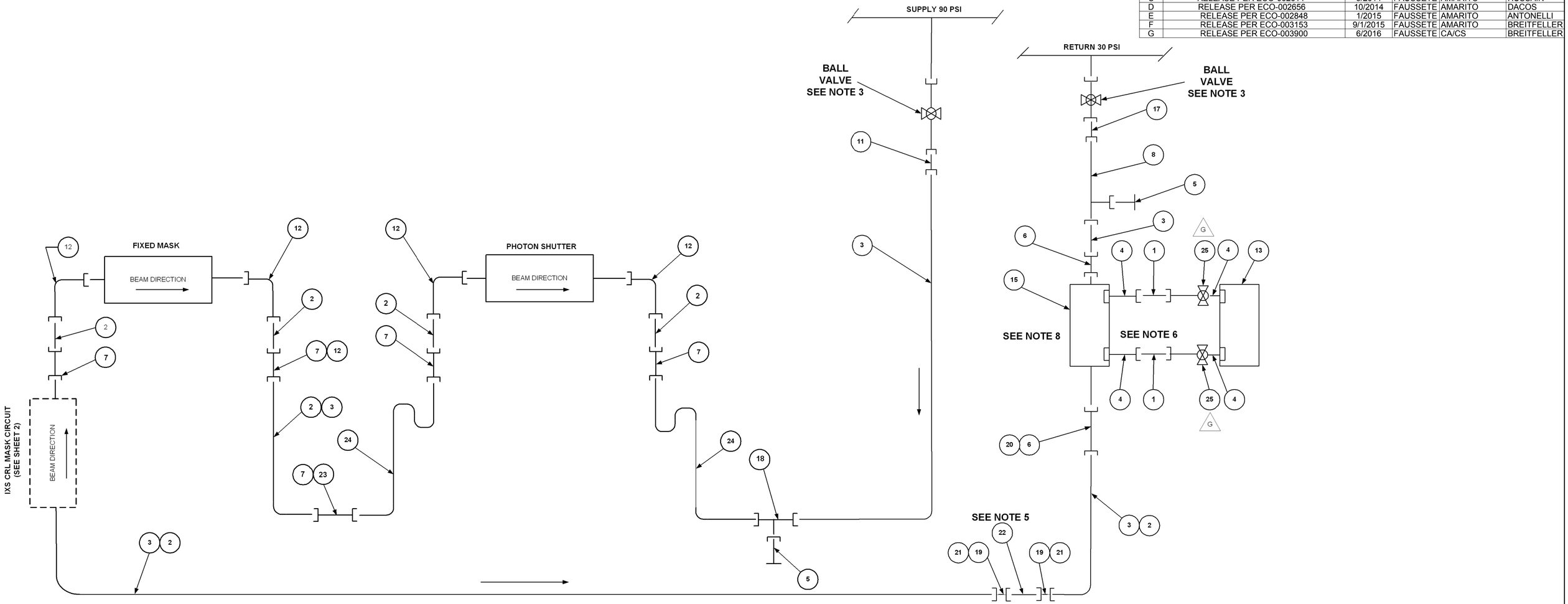
D SHEET SIZE	SR-FE-UT-0001 DRAWING/PART NUMBER	F REVISION
ESH&Q RISK LEVEL A-2	SHEET 2 OF 2	

SR-FE-UT-0001
B

C:\Mech-Eng\LTI\FE\CAD\SR-FE-CA-0001

RELEASED – EFFECTIVE

REVISION HISTORY					
REV	DESCRIPTION	DATE	DESIGNER	CHECKED BY	ENGINEER
A	RELEASE PER ECO-001445	6/2013	FAUSSETE	AMARITO	DOOM
B	RELEASE PER ECO-001563	5/2014	FAUSSETE	MASY	HUSSAIN
C	RELEASE PER ECO-002614	9/2014	FAUSSETE	AMARITO	HUSSAIN
D	RELEASE PER ECO-002656	10/2014	FAUSSETE	AMARITO	DACOS
E	RELEASE PER ECO-002848	1/2015	FAUSSETE	AMARITO	ANTONELLI
F	RELEASE PER ECO-003153	9/1/2015	FAUSSETE	AMARITO	BREITFELLER
G	RELEASE PER ECO-003900	6/2016	FAUSSETE	CA/CS	BREITFELLER



FLOW RATE (GPM)		
NOMINAL FLOW	WARNING POINT	TRIP POINT
$5.0^{+1.0}_{-0.2}$	4.0	3.0

NOTES,
1. USE TWO PART THREAD SEALANT ON NPT FITTIGS.
   PN: LOCKTITE PRIMER 7471, LOCKTITESEALANT 545
2. INSTALL ALL COMPRESSION FITTINGS PER SWAGELOK "AN INSTALLER'S POCKET GUIDE FOR SWAGELOK TUBE FITTINGS, MS-13-151
3. SEE UTILITY, COORDINATION PLAN DRAWING, FOR HEADER BALL VALVE IDENTIFICATION P1: UT-SR-PSYS-1011, P2: UT-SR-PSYS-2011, P3: UT-SR-PSYS-3011, P4: UT-SR-PSYS-4011, P5: UT-SR-PSYS-5011.
   SEE UTILITY, FLOW XMTR STD INTERFACE DRAWING, FOR TRANSMITTER IDENTIFICATION AND DETAIL UT-XMTR-STD-1100.
4. TARGET FLOW 5.5 GPM
5. ADD FLOW RESTRICTOR COIL AS REQUIRED.
6. LEAK TEST SYSTEM AT 150 PSI, PER ASME B31.3 USE A PRESSURE GAUGE CALIBRATED TO N.I.S.T. SPECIFICATIONS WITH CERTIFICATION THAT IS CURRENT. ISOLATE TRANSMITTER FROM THE REST OF SYSTEM. INSPECT ALL FITTINGS. AFTER TEST, OPEN TRANSMITTER VALVES AND CHECK ITS FITTINGS FOR LEAKS.
7. APPLY DI-WATER-CU AND FLOW DIRECTION LABELS TO BRANCHES.
8. MAINTAIN 8" MINIMUM STRAIGHT PIPE RUN UPSTREAM AND DOWNSTREAM OF FLOWMETER.

REFERENCE: FRONT END THERMAL ANALYSIS FOR NSLS-II (OCT. 26TH 2010). REVIEWED IN FRONT END FINAL DESIGN REVIEW.
https://ps.bnl.gov/acc/mech/frontends/Design%20Reviews/Final%20Design%20Review%2010-26-2010/Front%20End%20Thermal%20Analysis%2010-26-2010.pdf

ITEM	QTY	DESCRIPTION	SIZE	PART NUMBER	VENDER
25	2	BALL VALVE	1/4" FNPT	SS-43GES4-LL	SWAGELOK
24	2	HOSE ASSY, BRAIDED ST. STL.	3/4" TUBE X 3/4" TUBE	PI-HOSE-0006	TEK STAINLESS PIPING PRODUCTS
23	1	UNION	3/4" COMP. X 3/4" COMP.	SS-1210-6	SWAGELOK
22	1	TUBE	3/8" OD, 0.035" WALL, ST. STL 304/304L		
21	2	REDUCING UNION	5/8" COMP. X 3/8" COMP.	SS-1010-6-6	SWAGELOK
20	1	FEMALE CONNECTOR	5/8" COMP. X 1/2" NPTF	SS-1010-7-8	SWAGELOK
19	2	REDUCING UNION	3/4" COMP. X 3/8" COMP.	SS-1210-6-6	SWAGELOK
18	1	UNION ("T")	3/4" COMP. X 3/4" COMP. X 3/4" COMP.	SS-1210-3	SWAGELOK
17	AR	BUSHING	3/4"NPTM X 1/2"NPTF, ST. STL 304/304L	4464K271	McMASTER
16	AR	BUSHING	1" NPTM X 1/2"NPTF, ST. STL 304/304L	4464K275	McMASTER
15	1	FLOW METER	1/2" NPTM X 1/2" NPTM (1/4" NPTF TAPS)	PI-FLW-0005	McCrometer
14					
13	1	TRANSMITTER	1/4" NPTF X 1/4" NPTF	PI-SNSR-0032	YOKOGAWA
12	4	UNION (ELBOW)	5/8" COMP X 5/8" COMP	SS-1010-9	SWAGELOK
11	AR	MALE CONNECTOR	3/4"NPTM X 3/4" COMP.	SS-1210-1-12	SWAGELOK
10	AR	MALE CONNECTOR	1"NPTM X 3/4" COMP.	SS-1210-1-16	SWAGELOK
9					
8	1	UNION ("T")	3/4" COMP. X 3/4" NPT. X 3/4" COMP.	SS-1210-3TMT	SWAGELOK
7	6	UNION	3/4" COMP X 5/8" COMP.	SS-1210-6-10	SWAGELOK
6	2	FEMALE CONNECTOR	3/4" COMP. X 1/2"NPTF,	SS-1210-7-8	SWAGELOK
5	2	PLUG	3/4"	SS-1210-P	SWAGELOK
4	4	MALE CONNECTOR	1/4" COMP. X 1/4"NPTM	SS-400-1-4	SWAGELOK
3	AR	TUBE	3/4" OD, .049" WALL, ST. STL. 304/304L		
2	AR	TUBE	5/8" OD, .049" WALL, ST. STL. 304/304L		
1	AR	TUBE	1/4" OD, .035" WALL, ST. STL. 304/304L		

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
DIMENSIONS IN BRACKETS [xx.xx] (WHERE PRESENT) ARE MILLIMETERS AND ARE FOR REFERENCE ONLY
INTERPRET DRAWING PER ASME Y14.5-1994 OR Y32.2-1975
DIMENSIONAL TOLERANCES / ANGULAR TOLERANCE
X. ± 0.060 ± .5°
.X ± 0.030
.XX ± 0.015
.XXX ± 0.005
FINISH 125
BREAK EDGES & SHARP CORNERS 0.005 MIN. TO 0.030 MAX.
THIRD ANGLE PROJECTION
SCALE: SEE DWG VIEW

BROOKHAVEN NATIONAL LABORATORY
BROOKHAVEN SCIENCE ASSOCIATES
UPTON, NEW YORK 11973
Exploring Life's Mysteries, Protecting its Future

DRAWN BY	FAUSSETE	6/1/2013
CHECKED BY	C. AMARITO	6/13
VACUUM APPROVAL	-	-
ENGINEER APPROVAL	DOOM	6/13
SUPERVISOR APPROVAL	SHARMA	6/13
ES&H APPROVAL	ACKERMAN	6/13
Q.A. APPROVAL	CHESWICK	6/13

WBS# 1.03.04.07.03

NSLS II NATIONAL SYNCHROTRON LIGHT SOURCE II

STORAGE RING
FRONT END, UTILITIES
PIPING SCHEMATIC, HIGH FLOW

SHEET SIZE	DRAWING/PART NUMBER	REVISION
D	SR-FE-UT-0002	G

ESH&Q RISK LEVEL A2
SHEET 1 OF 2

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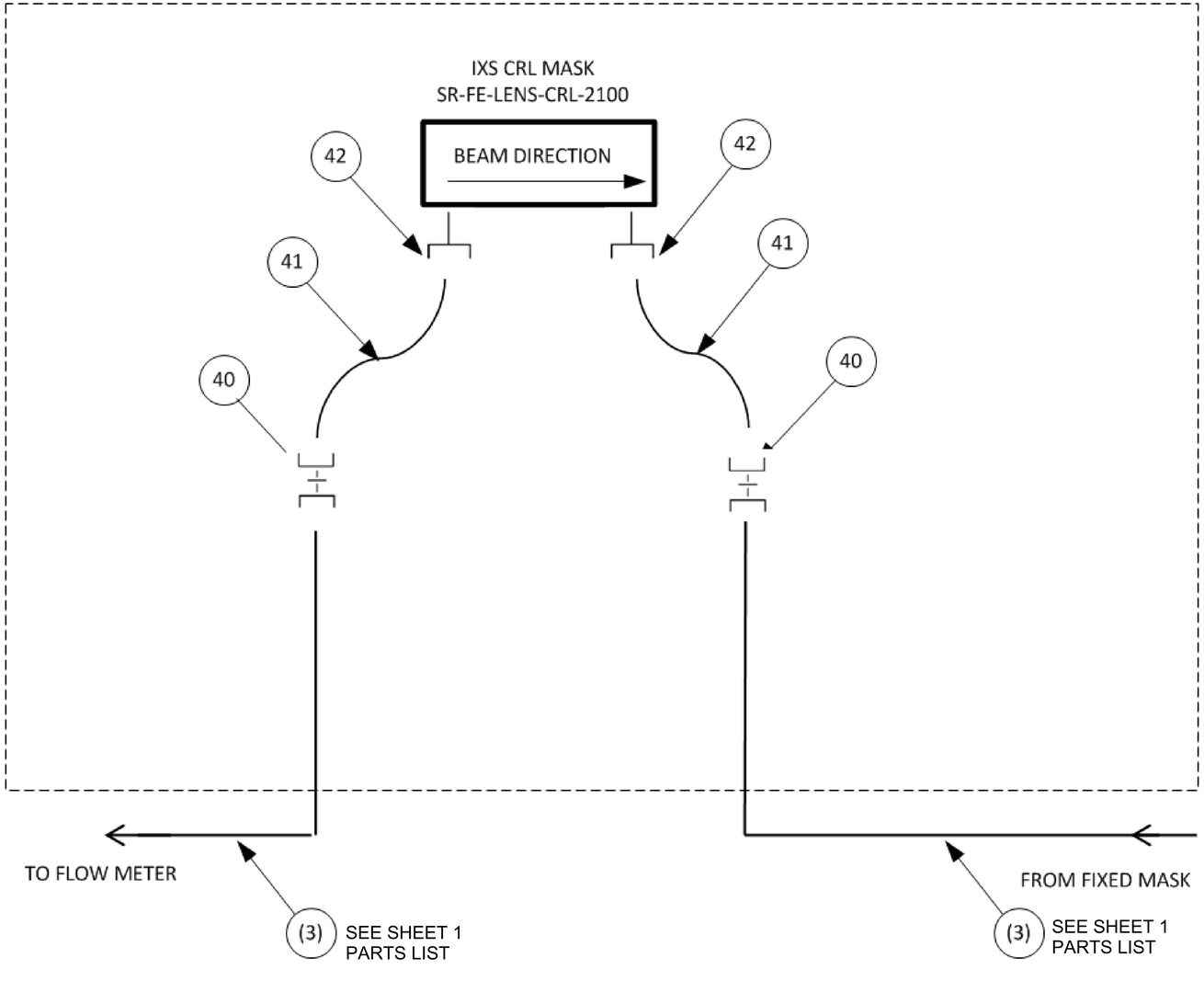
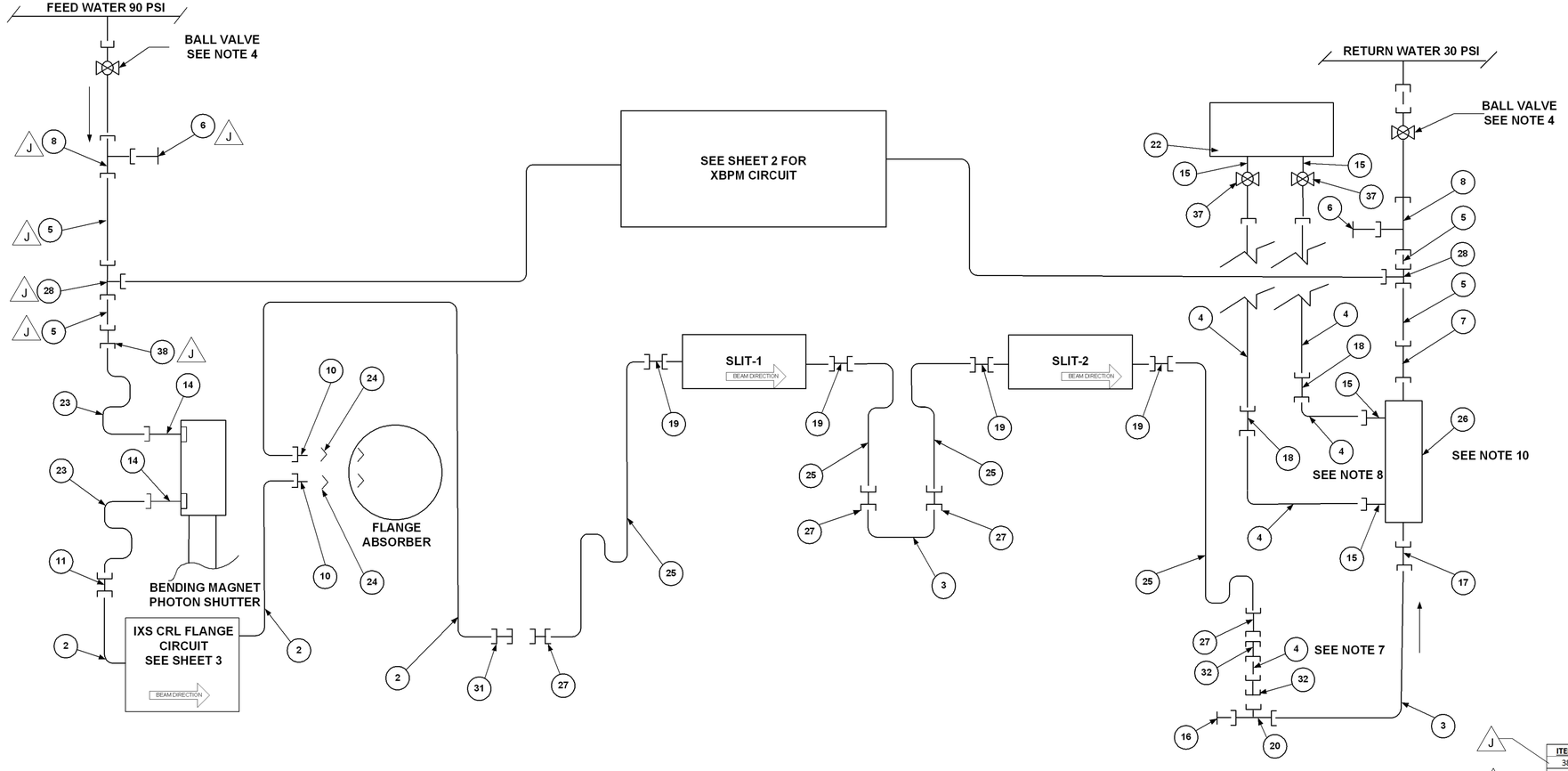


ITEM	QTY	DESCRIPTION	SIZE	PART NUMBER	VENDER
42	2	CONNECTOR, MALE WELD, MODIFIED	5/8" TUBE MALE WELD	SR-FE-LENS-CRL-2117	
41	2	HOSE ASSY, BRAIDED SS	5/8" TUBE x 5/8" TUBE x 32" LONG	SR-FE-LENS-CRL-2026	TEK STAINLESS
40	2	UNION (STRAIGHT, BULKHEAD)	5/8" COMP x 5/8" COMP, ST. STL. 304/304L	SS-1210-61	SWAGELOK

D	SR-FE-UT-0002	G
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL A2	SHEET 2 OF 2	

C:\Mech-Engr\LTS\RF\EUT\SR-FE-UT-0002.idw

REVISION HISTORY					
REV	DESCRIPTION	DATE	DESIGNER	CHECKED BY	ENGINEER
A	RELEASE PER ECO-001445	6/13	FAUSSETE	AMARITO	DOOM
B	RELEASE PER ECO-001563	5/14	FAUSSETE	ALMASY	HUSSAIN
C	RELEASE PER ECO-002377	7/14	FAUSSETE	AMARITO	HUSSAIN
D	RELEASE PER ECO-002614	10/14	FAUSSETE	AMARITO	HUSSAIN
E	RELEASE PER ECO-002656	10/14	FAUSSETE	AMARITO	DACOS
F	RELEASE PER ECO-002848	1/15	FAUSSETE	AMARITO	ANTONELLI
G	RELEASE PER ECO-003482	9/15	FAUSSETE	AMARITO	BREITFELLER
H	RELEASE PER ECO-003900	6/2016	FAUSSETE	CA/CS	BREITFELLER
J	RELEASE PER ECO-004445	8/2016	FAUSSETE	CA/CS	BREITFELLER



NOMINAL FLOW (GPM)	WARNING POINT (GPM)	TRIP POINT (GPM)
1.5 ± 0.2	1.2	.9

NOTES:
1. USE TWO PART THREAD SEALANT ON NPT FITTING. P/N: PRIMER 7471 P/N: LOCKTITE SEALANT 545
2. INSTALL COMPRESSION FITTINGS PER SWAGELOK AN INSTALLER'S POCKET GUIDE FOR SWAGELOK TUBE FITTINGS, MS-13-151.
3. SEE SHEET 2 FOR XBPM PIPING DIAGRAM.
4. SEE UTILITY, COORDINATION PLAN DRAWING, FOR HEADER BALL VALVE IDENTIFICATION
   P1: UT-SR-PSYS-1011, P2: UT-SR-PSYS-2011, P3: UT-SR-PSYS-3011, P4: UT-SR-PSYS-4011,
   P5: UT-SR-PSYS-5011.
   SEE UTILITY, FLOW XMTR STD INTERFACE DRAWING, FOR TRANSMITTER IDENTIFICATION
   AND DETAIL UT-XMTR-STD-1100.
5. TARGET FLOW = 1.5 GPM.
6. IXS CRL FLANGE CIRCUIT FOR CELL 10 ONLY.
7. ADD FLOW RESTRICTOR COIL AS REQUIRED.
8. LEAK TEST SYSTEM AT 150 PSI, PER ASME B31.3 USE A PRESSURE GAUGE CALIBRATED TO N.I.S.T.
   SPECIFICATIONS WITH CERTIFICATION THAT IS CURRENT. ISOLATE TRANSMITTER FROM THE REST OF
   SYSTEM. INSPECT ALL FITTINGS. AFTER TEST, OPEN TRANSMITTER VALVES AND CHECK ITS FITTINGS FOR LEAKS.
9. APPLY DI-WATER-CU AND FLOW DIRECTION LABELS TO BRANCHES.
10. MAINTAIN 8" MINIMUM STRAIGHT PIPE RUN UPSTREAM AND DOWNSTREAM OF FLOWMETER.

REFERENCE: FRONT END THERMAL ANALYSIS FOR NSLS-II (OCT. 26TH 2010). REVIEWED IN FRONT END FINAL DESIGN REVIEW.
https://ps.bnl.gov/acc/mech/frontends/Design%20Reviews/Final%20Design%20Review%2010-26-2010/Front%20End%20Thermal%20Analysis%2010-26-2010.pdf

ITEM	QTY	DESCRIPTION	SIZE	PART NUMBER	VENDER
38	1	UNION	1/2" TUBE TO X 3/8" TUBE	SS-810-6-6	SWAGELOK
37	2	BALL VALVE	1/4" FNPT	SS-43GES4-LL	SWAGELOK
36					
35					
34					
33					
32	2	REDUCING UNION	1/4" COMP X 3/4" TUBE	SS-400-R-12	SWAGELOK
31	1	REDUCING UNION	3/8" COMP X 3/4" TUBE	SS-600-R-12	SWAGELOK
30					
29					
28	2	UNION ("T)"	1/2 COMP X 1/2 COMP X 1/2 COMP	SS-810-3	SWAGELOK
27	4	BULKHEAD UNION	3/4" COMP X 3/4" COMP	SS-1210-61	SWAGELOK
26	1	FLOW METER	1/2" NPTM X 1/2" NPTM (1/4"NPTF TAPS)	PI-FLW-0005	McCROMETER
25	4	HOSE ASSY, BRAIDED SS	3/4" TUBE X 3/4" TUBE	PI-HOSE-0006	TEK STAINLESS PIPING PRODUCTS
24	2	FLARETITE COPPER SEAL 37 DEG	3/8" AN	PI FTNGS-0168	SWAGELOK
23	2	HOSE ASSY, BRAIDED SS	3/8" TUBE X 3/8" TUBE	PI-HOSE-0005	TEK STAINLESS PIPING PRODUCTS
22	1	TRANSMITTER	1/4" NPTF X 1/4" NPTF	PI-SNSR-0033	YOKOGAWA
21					
20	1	UNION, (" T ")	3/4 COMP X 3/4 COMP X 3/4 COMP	SS-1210-3	SWAGELOK
19	4	UNION (STRAIGHT)	3/4" COMP X 5/8" COMP.	SS-1210-6-10	SWAGELOK
18	2	UNION	1/4" COMP X 1/4" COMP.	SS-400-6	SWAGELOK
17	1	CONNECTOR	3/4" COMP X 1/2"NPTF	SS-1210-7-8	SWAGELOK
16	1	PLUG	3/4"	SS-1210-P	SWAGELOK
15	4	MALE CONNECTOR	1/4" NPTM X 1/4 NPTM	SS-400-1-4	SWAGELOK
14	2	MALE CONNECTOR	1/4" NPTM X 3/8 COMP.	SS-600-1-4RT	SWAGELOK
13					
12					
11	1	UNION	3/8" COMP X 3/8" COMP.	SS-600-6	SWAGELOK
10					
9					
8	1	UNION (" T ")	1/2" COMP. X 1/2" COMP. X 1/2" NPTM	SS-810-3-8TMT	SWAGELOK
7	1	FEMALE CONNECTOR	1/2" COMP. X 1/2" NPTF	SS-810-7-8	SWAGELOK
6	2	PLUG	1/2"	SS-810-P	SWAGELOK
5	AR	TUBE	1/2" OD, .049" WALL, ST. STL 304/304L		
4	AR	TUBE	1/4" OD, .035" WALL, ST. STL 304/304L		
3	AR	TUBE	3/4" OD, .049" WALL, ST. STL 304/304L		
2	AR	TUBE	3/8" OD, .035" WALL, ST. STL 304/304L		
1	AR	TUBE	5/8" OD, .049" WALL, ST. STL 304/304L		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN BRACKETS [xx.xx] (WHERE PRESENT) ARE MILLIMETERS AND ARE FOR REFERENCE ONLY
INTERPRET DRAWING PER ASME Y14.5-1994 OR Y32.2-1975
DIMENSIONAL TOLERANCES: X. ± 0.060, .X ± 0.030, .XX ± 0.015, .XXX ± 0.005
ANGULAR TOLERANCE ± .5°
FINISH 125
BREAK EDGES & SHARP CORNERS 0.005 MIN. TO 0.030 MAX.
THIRD ANGLE PROJECTION
SCALE: SEE DWG VIEW

BROOKHAVEN NATIONAL LABORATORY
BROOKHAVEN SCIENCE ASSOCIATES
UPTON, NEW YORK 11973
Exploring Life's Mysteries, Protecting its Future

NSLS II NATIONAL SYNCHROTRON LIGHT SOURCE II

DRAWN BY	FAUSSETE	6/1/2013
CHECKED BY	C. AMARITO	6/13
VACUUM APPROVAL	-	-
ENGINEER APPROVAL	DOOM	6/13
SUPERVISOR APPROVAL	SHARMA	6/13
ES&H APPROVAL	ACKERMAN	6/13
Q.A. APPROVAL	CHESWICK	6/13

STORAGE RING
FRONT END, UTILITIES
PIPING SCHEMATIC, LOW FLOW

SHEET SIZE: D
DRAWING/PART NUMBER: SR-FE-UT-0003
REVISION: J
WBS# 1.03.04.07.03
ESH&Q RISK LEVEL: A2
SHEET 1 OF 3

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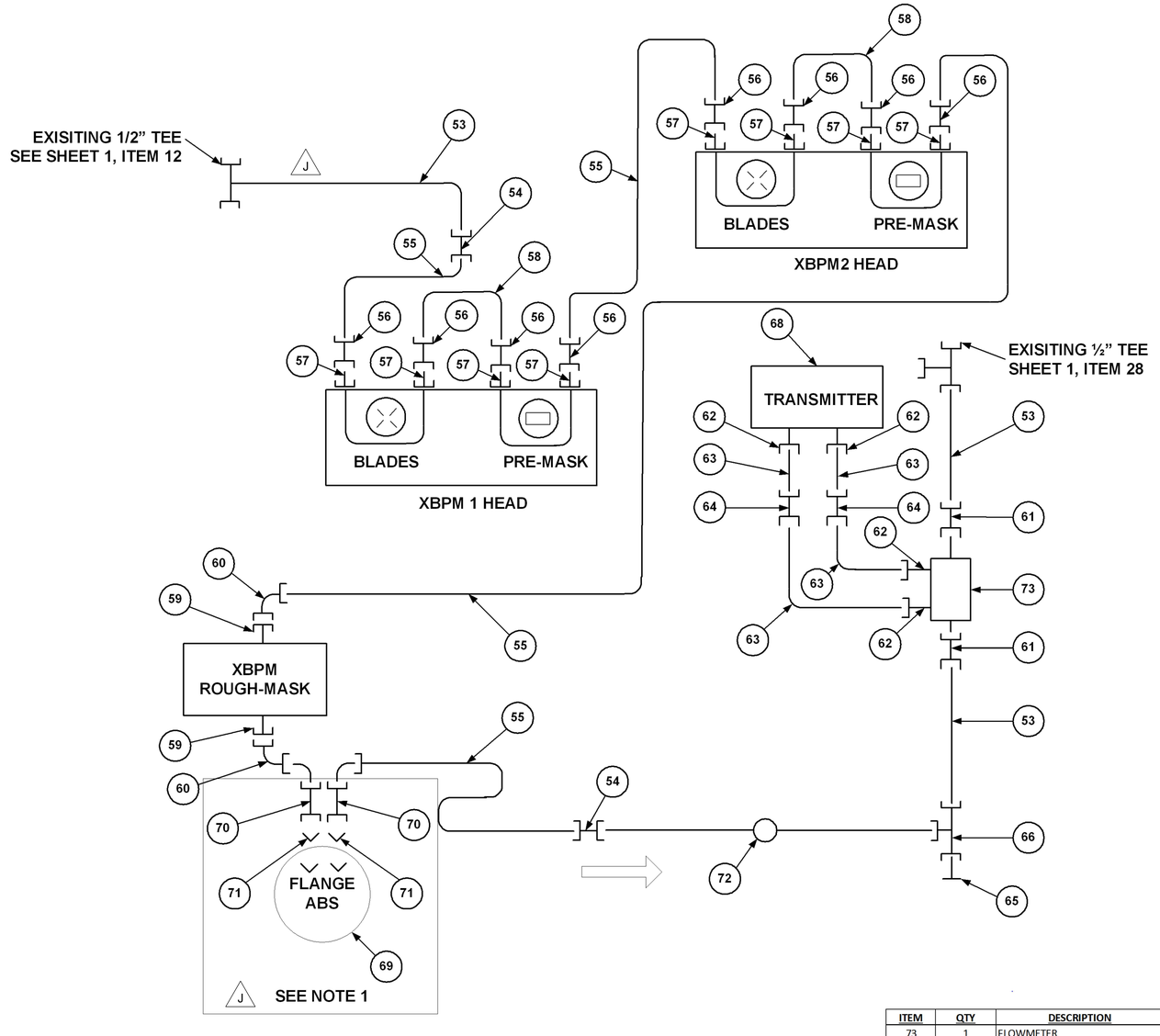

ITEM	QTY	DESCRIPTION	SIZE	PART NUMBER	VENDER
73	1	FLOWMETER		5300	ORIPAC
72	1	FLOW RESTRICTOR			
71	2	FLARETITE COPPER SEAL 37 DEG	3/8" AN	PI FTNGS-0168	SWAGELOK
70	2	MALE CONNECTOR, AN	1/2" COMP. X 3/8 AN	SS-810-6-6AN	SWAGELOK
69	1	FLANGE ABSORBER	FRONT ENDS, ABSORBER, 6"	SR-FE-ABS-1200	
68	1	TRANSMITTER	DIFFERENTIAL PRESSURE TRANSMITTER	EJA110E-JFS3G-712ED/FF1/D1	YOKOGAWA
67					
66	1	UNION "T"	1/2" COMP	SS-810-3	SWAGELOK
65	1	PLUG	1/2"	SS-810-P	SWAGELOK
64	2	CONNECTOR	1/4" COMP X 1/4" COMP	SS-400-6	SWAGELOK
63	AR	TUBE	1/4" TUBE, 304 STAINLESS STEEL, ANNEALED		
62	2	CONNECTOR	1/4" COMP X 1/4" NPTM	SS-400-1-4	SWAGELOK
61	2	CONNECTOR	1/2" COMP X 1/2" NPTF	SS-810-7-8	SWAGELOK
60	2	UNION	1/2" COMP UNION ELBOW	SS-810-9	SWAGELOK
59	2	CONNECTOR	1/2" TUBE X 3/8" NPTM	SS-8-TA-1-6	SWAGELOK
58	1	HOSE	1/2" X 24" SS BRD HOSE W/ 1/2" OD SS TUBE ENDS	SS-FJ8TA8TA8-24	SWAGELOK
57	4	CONNECTOR	10mm TUBE X 1/4 NPTM	SS-10-MTA-1-4	SWAGELOK
56	4	CONNECTOR	1/2" COMP. X 1/4" NPTF	SS-810-7-4	SWAGELOK
55	1	HOSE	1/2" X 48" LG. SS BRD HOSE W/ 1/2" OD SS TUBE ENDS	SS-FJ8TA8TA8-48	SWAGELOK
54	2	MALE CONNECTOR	1/2" COMP. X 1/2" COMP	SS-810-6	SWAGELOK
53	AR	TUBE	1/2" TUBE, 304 STAINLESS STEEL, ANNEALED		
52					
51					
50					

J

NOMINAL FLOW (GPM)	WARNING POINT (GPM)	TRIP POINT (GPM)
0.25 - 0.30 GPM	0.18 GPM	0.12 GPM

J

NOTES:
1. INSTALL AT ID-03, PER SR-FE-IVUN0-1100 AND ID-16, PER SR-FE-IVU16-1000 ONLY J

D	SR-FE-UT-0003	J
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL A2	SHEET 2 OF 3	

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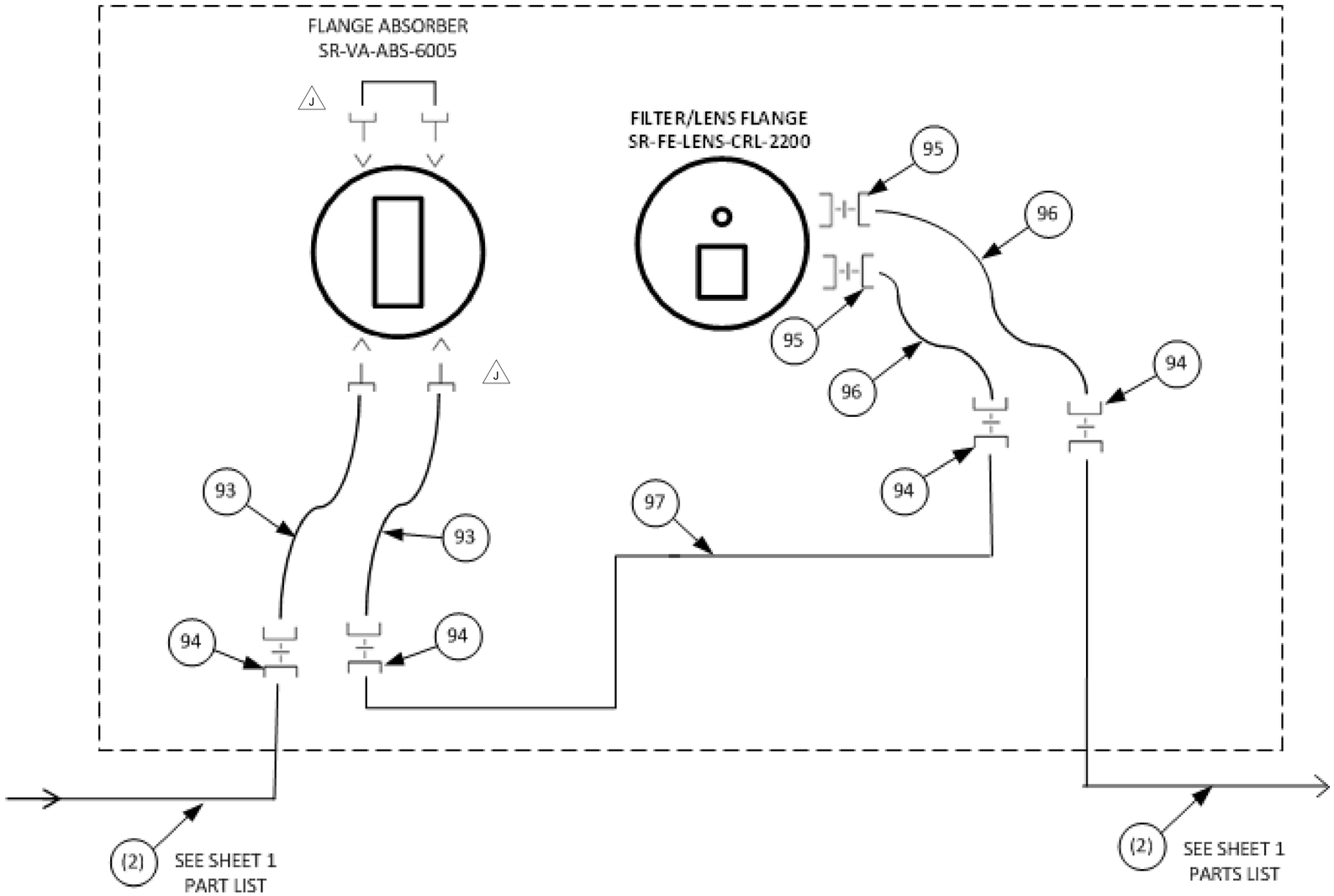

NOTES:
1. INSTALL AT ID-10, PER SR-FE-IVUN0-1100 ONLY △J

ITEM	QTY	DESCRIPTION	SIZE	PART NUMBER	VENDER
97	AR	TUBE	3/8" OD, 0.035" WALL, ST STL 304/304L		
96	2	HOSE ASSY, BRAIDED SS	3/8" TUBE x 3/8" TUBE x 36" LONG	SR-FE-LENS-CRL-2028	TEK STAINLESS
95	2	UNION (REDUCER, BULKHEAD)	1/4" COMP. x 3/8" COMP.	SS-600-61-4	SWAGELOK
94	4	UNION (STRAIGHT, BULKHEAD)	3/8" COMP x 3/8" COMP	SS-600-61	SWAGELOK
93	2	HOSE ASSY, BRAIDED SS	3/8" TUBE x 3/8" TUBE x 22" LONG	SR-FE-LENS-CRL-2027	TEK STAINLESS

D	SR-FE-UT-0003	J
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL A2	SHEET 3	OF 3

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