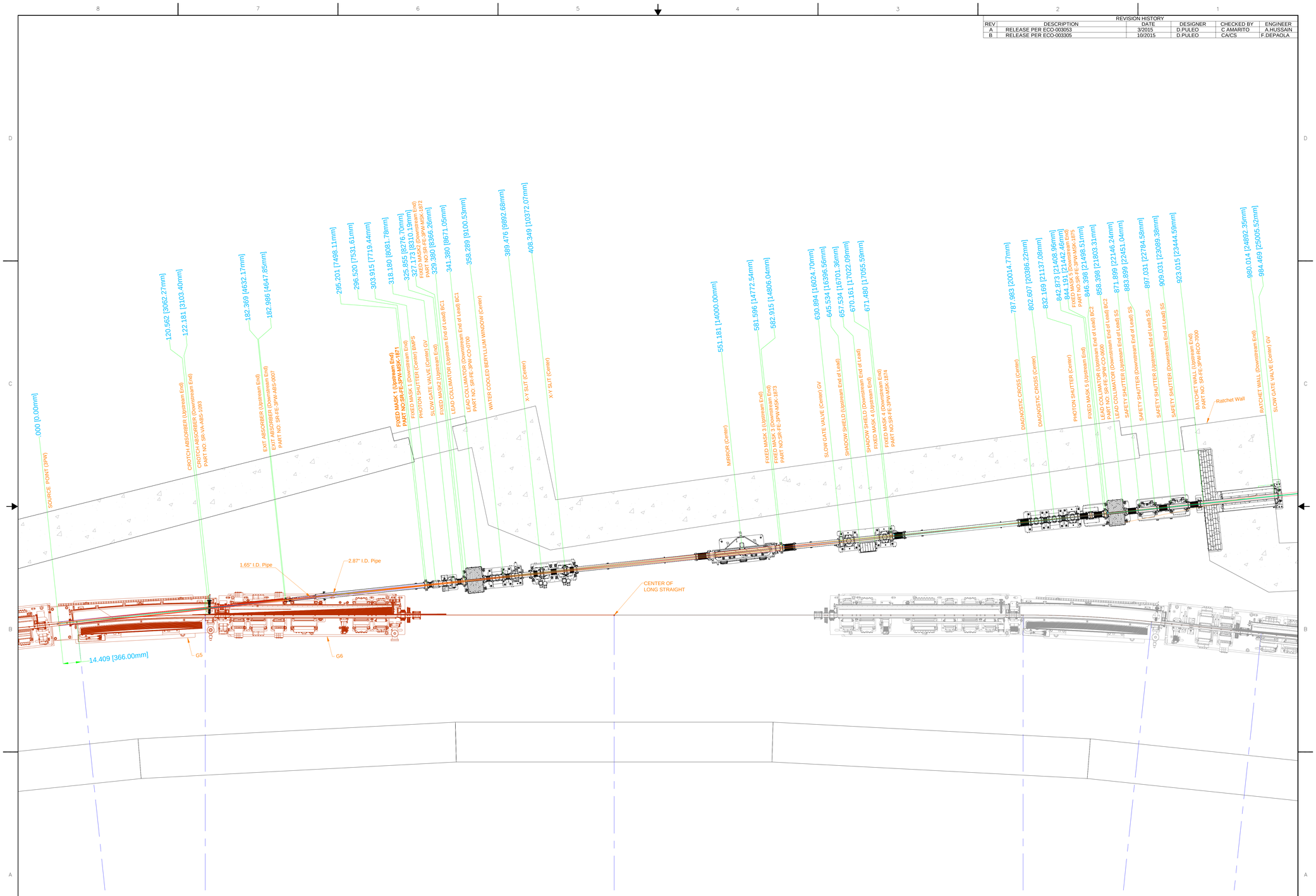
REVISION HISTORY					
REV	DESCRIPTION	DATE	DESIGNER	CHECKED BY	ENGINEER
A	RELEASE PER ECO-003053	3/2015	D.PULEO	C.AMARITO	A.HUSSAIN
B	RELEASE PER ECO-003305	10/2015	D.PULEO	CA/CS	F.DEPAOLA



XFP, CELL 17-BM, COMPONENT LAYOUT

HATCH LEGEND
Lead
Concrete or Stainless Steel
Lead (SS)

NEXT ASSY: N/A

PROJECT: NSLS-II

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
DIMENSIONS IN BRACKETS ARE IN MILLIMETERS AND VALUES IN BRACKETS ARE FOR REFERENCE ONLY
INTERPRET DRAWING AS PER ANSI Y14.5-1994 OR Y14.2-1973

DIMENSIONAL TOLERANCES: X. ± 0.080, X.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	D PULEO	3/2015
CHECKED BY	C AMARITO	3/2015
RADIATION PROTECTION APPROVAL	A ACKERMAN	3/2015
ENGINEERING APPROVAL	A HUSSAIN	3/2015
SUPERVISOR	S SHARMA	3/2015
ESQ SAFETY APP.	S SELETSKY	10/15
CAP OFF SAFETY	R FULLER	10/15
ES&H APPROVAL	L.T. STEGLER	10/15
QA APPROVAL	J.LHARRES	10/15

STORAGE RING
XFP, CELL 17-BM, FRONT END
RAY TRACING

SHEET SIZE: E
DRAWING/PART NUMBER: SR-FE-3PW-7001
REVISION: B

ESH&Q RISK LEVEL: A-1
SHEET 1 OF 7

WBS# 7.01.05.02

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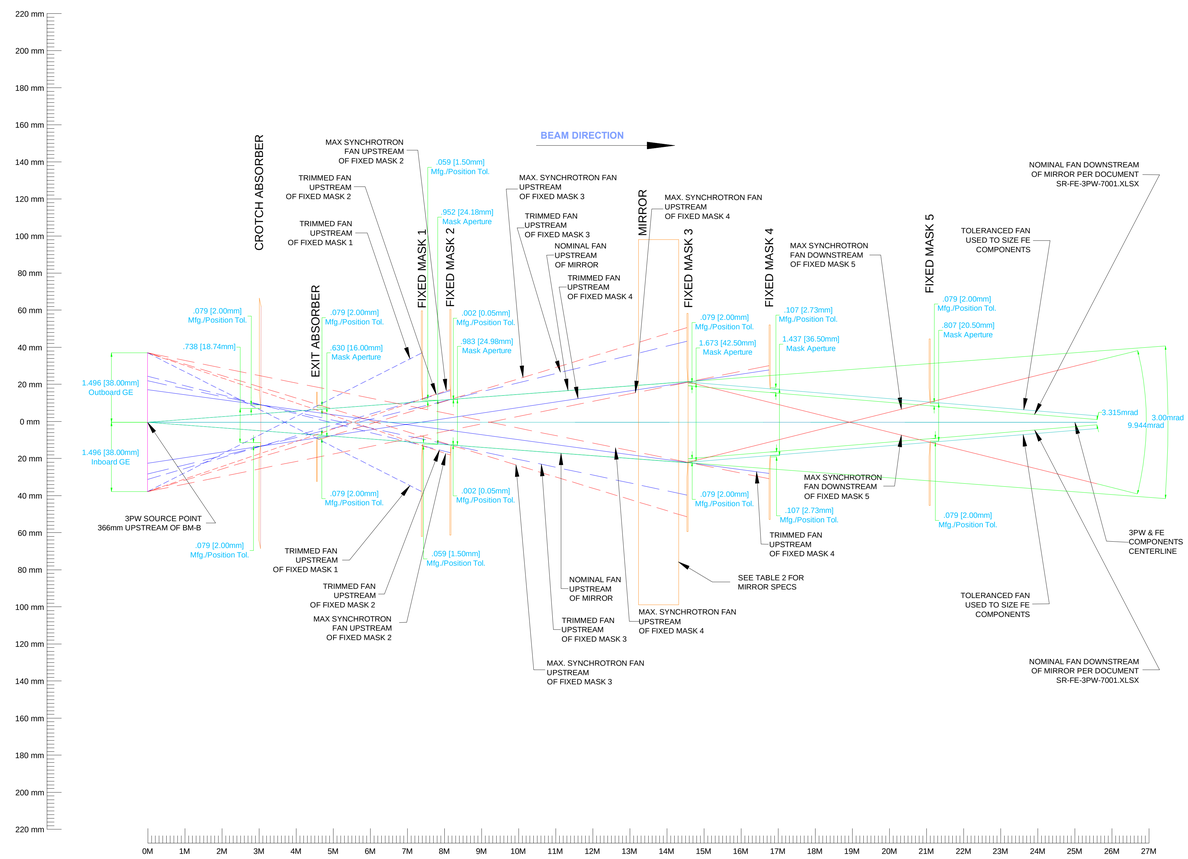


HORIZONTAL
SCALE: X:Z = 1:50

TABLE 1

XFP BEAMLINE RAYTRACE TOLERANCE

	STANDARD TOLERANCE				
	mm		inches		Comments
	+	-	+	-	
Crotch Absorber	2.0	2.0	0.079	0.079	Manufacturing & Position
Exit Absorber	2.0	2.0	0.079	0.079	Manufacturing & Position
FM at LCO1	0.1	0.0	0.004	0.000	Manufacturing
FM	1.5	1.5	0.059	0.059	Manufacturing & Position
LCO tube	1.5	1.5	0.059	0.059	Manufacturing & Position
Collimator lead Horizontal	1.5	0.0	0.059	0.000	Manufacturing & Assembly
Collimator lead Vertical	2.5	0.0	0.098	0.000	Manufacturing, Assembly, Heater tape & Heater Tape Clearance
Shadow Shield	3.0	3.0	0.118	0.118	Manufacturing & Position
RCO upstream lead Horizontal	7.85	0.0	.309	0.000	Clearance, Mfg & Position
Rco upstream lead Vertical	8.85	0.0	.348	0.000	Clearance, Mfg & Position
RCO tube (minimum)	4.0	-	0.157	-	Manufacturing & Position

TABLE 2

XFP BEAMLINE FE MIRROR SPECIFICATIONS

Mirror material	Silicon
Mirror attitude	Vertical up
Mirror size (LxW, m)	1.1 x 0.1
Mirror figure	Toroid
Mirror incidence angle (mrad)	3.5
Mirror acceptance (mrad V)	0.4
Mirror acceptance (mrad H)	3.0
Mirror center position	14

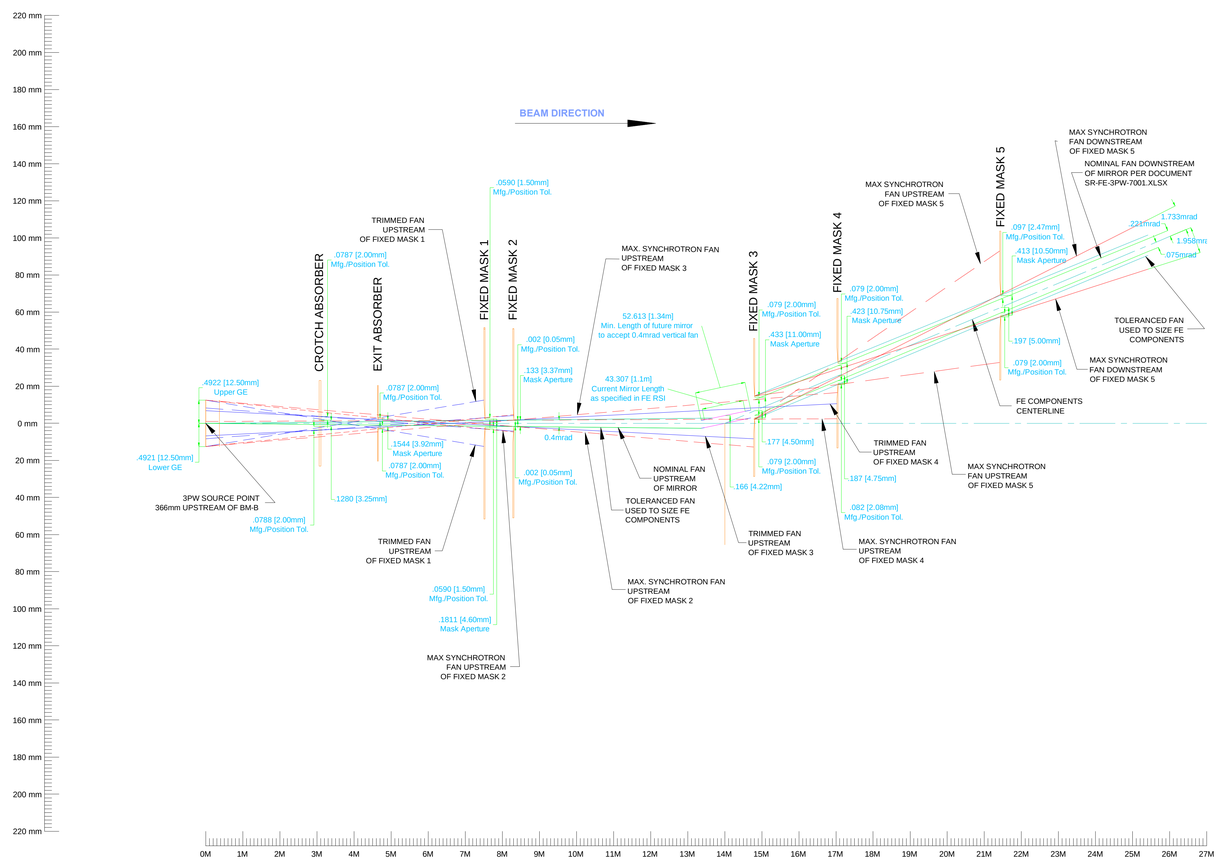
NOTE:

1. 3PW SOURCE POINT (ORIGIN) IS 366mm UPSTREAM OF BM-B.
2. MAX SYNCHROTRON FAN IS INTERCEPTED ONLY BY AIR COOLED FIXED MASKS.
3. TRIMMED SYNCHROTRON FAN IS INTERCEPTED BY CROTCH ABSORBER, EXIT ABSORBER AND FIXED MASKS.
4. MASK SIZE DOWNSTREAM OF MIRROR IS DEFINED BY DOCUMENT SR-FE-3PW-7001.XLXS PREPARED BY JENNIFER BOHON.
5. ALL MASK APERTURES SHOWN ARE NOMINAL VALUES WITH TOLERANCES SHOWN
6. ALL APERTURES & TOLERANCES ARE ASSUMED TO BE SYMMETRIC ABOUT THE COMPONENT CENTERLINE UNLESS OTHERWISE SHOWN.

XFP, CELL 17-BM, SYNCHROTRON RAY TRACING HORIZONTAL

E	SR-FE-3PW-7001	B
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL A-1	SHEET 2 OF 7	

RELEASED → EFFECTIVE



VERTICAL
SCALE: Y:Z = 1:50

TABLE 1

XFP BEAMLINE RAYTRACE TOLERANCE

	STANDARD TOLERANCE				
	mm		inches		Comments
	+	-	+	-	
Crotch Absorber	2.0	2.0	0.079	0.079	Manufacturing & Position
Exit Absorber	2.0	2.0	0.079	0.079	Manufacturing & Position
FM at LCO1	0.1	0.0	0.004	0.000	Manufacturing
FM	1.5	1.5	0.059	0.059	Manufacturing & Position
LCO tube	1.5	1.5	0.059	0.059	Manufacturing & Position
Collimator lead Horizontal	1.5	0.0	0.059	0.000	Manufacturing & Assembly
Collimator lead Vertical	2.5	0.0	0.098	0.000	Manufacturing, Assembly, Heater tape & Heater Tape Clearance
Shadow Shield	3.0	3.0	0.118	0.118	Manufacturing & Position
RCO upstream lead Horizontal	7.85	0.0	.309	0.000	Clearance, Mfg & Position
Rco upstream lead Vertical	8.85	0.0	.348	0.000	Clearance, Mfg & Position
RCO tube (minimum)	4.0	-	0.157	-	Manufacturing & Position

TABLE 2

XFP BEAMLINE FE MIRROR SPECIFICATIONS

Mirror material	Silicon
Mirror attitude	Vertical up
Mirror size (LxW, m)	1.1 x 0.1
Mirror figure	Toriod
Mirror incidence angle (mrad)	3.5
Mirror acceptance (mrad V)	0.4
Mirror acceptance (mrad H)	3.0
Mirror center position	14

NOTE:

1. **3PW SOURCE POINT (ORIGIN) IS 366mm UPSTREAM OF BM-B.**
2. **MAX SYNCHROTRON FAN IS INTERCEPTED ONLY BY AIR COOLED FIXED MASKS.**
3. **TRIMMED SYNCHROTRON FAN IS INTERCEPTED BY CROTCH ABSORBER, EXIT ABSORBER AND FIXED MASKS.**
4. **MASK SIZE DOWNSTREAM OF MIRROR IS DEFINED BY DOCUMENT SR-FE-3PW-7001.XLXS PREPARED BY JENNIFER BOHON.**
5. **ALL MASK APERTURES SHOWN ARE NOMINAL VALUES WITH TOLERANCES SHOWN.**
6. **ALL APERTURES & TOLERANCES ARE ASSUMEDTO BE SYMMETRIC ABOUT THE COMPONENT CENTERLINE UNLESS OTHERWISE SHOWN.**

XFP, CELL 17-BM, SYNCHROTRON RAY TRACING VERTICAL

E (SHEET SIZE)	SR-FE-3PW-7001 (DRAWING/PART NUMBER)	B (REVISION)
ESH&Q RISK LEVEL A-1	SHEET 3 OF 7	

RELEASED – EFFECTIVE

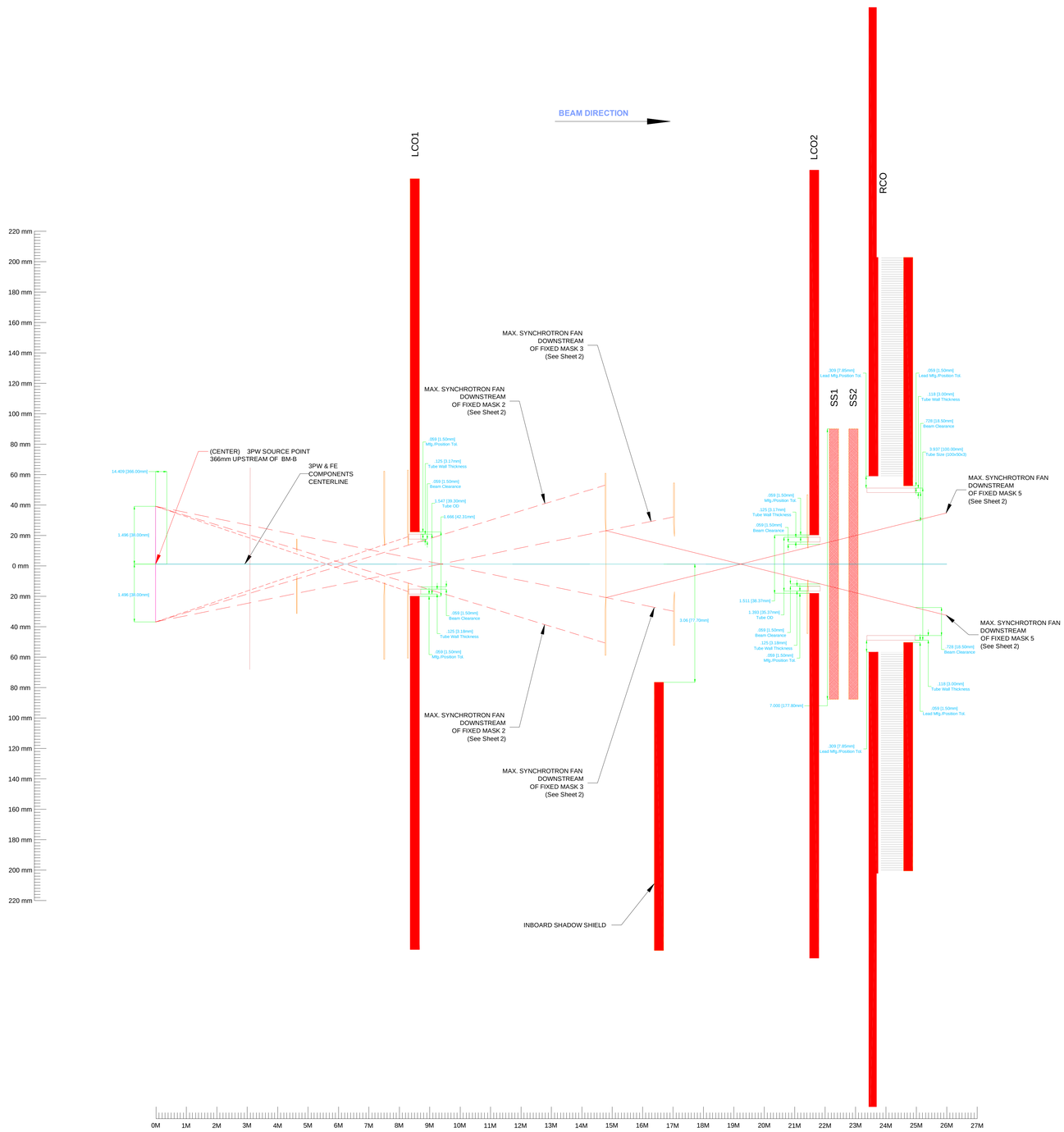


TABLE 1

XFP BEAMLINE RAYTRACE TOLERANCE

	STANDARD TOLERANCE				
	mm		inches		Comments
	+	-	+	-	
Crotch Absorber	2.0	2.0	0.079	0.079	Manufacturing & Position
Exit Absorber	2.0	2.0	0.079	0.079	Manufacturing & Position
FM at LCO1	0.1	0.0	0.004	0.000	Manufacturing
FM	1.5	1.5	0.059	0.059	Manufacturing & Position
LCO tube	1.5	1.5	0.059	0.059	Manufacturing & Position
Collimator lead Horizontal	1.5	0.0	0.059	0.000	Manufacturing & Assembly
Collimator lead Vertical	2.5	0.0	0.098	0.000	Manufacturing, Assembly, Heater tape & Heater Tape Clearance
Shadow Shield	3.0	3.0	0.118	0.118	Manufacturing & Position
RCO upstream lead Horizontal	7.85	0.0	.309	0.000	Clearance, Mfg & Position
RCO upstream lead Vertical	8.85	0.0	.348	0.000	Clearance, Mfg & Position
RCO tube (minimum)	4.0	-	0.157	-	Manufacturing & Position

TABLE 2

XFP BEAMLINE FE MIRROR SPECIFICATIONS

Mirror material	Silicon
Mirror attitude	Vertical up
Mirror size (LxW, m)	1.1 x 0.1
Mirror figure	Toriid
Mirror incidence angle (mrad)	3.5
Mirror acceptance (mrad V)	0.4
Mirror acceptance (mrad H)	3.0
Mirror center position	14

NOTE:

1. **BREMSSTRAHLUNG SOURCE POINT (ORIGIN) IS UPSTREAM END OF BM-B.**
2. **ALL APERTURES & TOLERANCES ARE ASSUMED TO BE SYMMETRIC ABOUT THE COMPONENT CENTERLINE UNLESS OTHERWISE SHOWN.**

HORIZONTAL
SCALE: X:Z = 1:50

XFP, CELL 17-BM, MAX SYNCHROTRON COLLIMATOR LAYOUT HORIZONTAL

E	SR-FE-3PW-7001	B
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL A-1	SHEET 4 OF 7	

RELEASED – EFFECTIVE

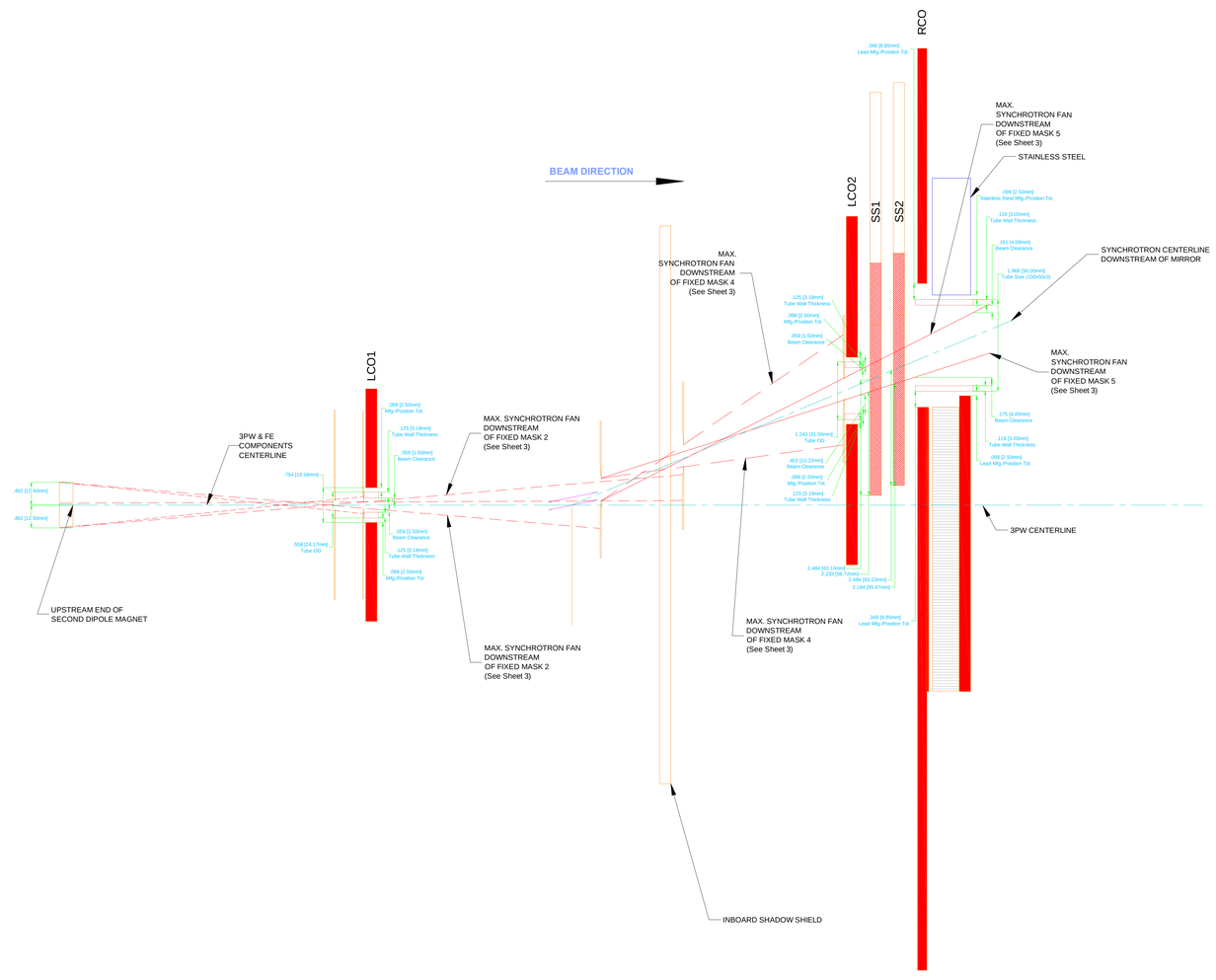


TABLE 1

XFP BEAMLINE RAYTRACE TOLERANCE

	STANDARD TOLERANCE				
	mm		inches		Comments
	+	-	+	-	
Crotch Absorber	2.0	2.0	0.079	0.079	Manufacturing & Position
Foil Absorber	2.0	2.0	0.079	0.079	Manufacturing & Position
FM at LCO1	0.1	0.0	0.004	0.000	Manufacturing
FM	1.5	1.5	0.059	0.059	Manufacturing & Position
LCO tube	1.5	1.5	0.059	0.059	Manufacturing & Position
Collimator lead Horizontal	1.5	0.0	0.059	0.000	Manufacturing & Assembly
Collimator lead Vertical	2.5	0.0	0.098	0.000	Manufacturing, Assembly, Heater tape & Heater Tape Clearance
Shadow Shield	3.0	3.0	0.118	0.118	Manufacturing & Position
RCO upstream lead Horizontal	7.85	0.0	.309	0.000	Clearance, Mfg & Position
RCO upstream lead Vertical	8.85	0.0	.348	0.000	Clearance, Mfg & Position
RCO tube (minimum)	4.0	-	0.157	-	Manufacturing & Position

TABLE 2

XFP BEAMLINE FE MIRROR SPECIFICATIONS

Mirror material	Silicon
Mirror attitude	Vertical up
Mirror size (LxW, m)	1.1 x 0.1
Mirror figure	Toroid
Mirror incidence angle (mrad)	3.5
Mirror acceptance (mrad V)	0.4
Mirror acceptance (mrad H)	3.0
Mirror center position	14

VERTICAL
SCALE: X:Z = 1:50

NOTE:

1. **BREMSSTRAHLUNG SOURCE POINT (ORIGIN) IS UPSTREAM END OF BM-B**
2. **ALL APERTURES & TOLERANCES ARE ASSUMED TO BE SYMMETRIC ABOUT THE COMPONENT CENTERLINE UNLESS OTHERWISE SHOWN.**

XFP, CELL 17-BM, MAX SYNCHROTRON COLLIMATOR LAYOUT VERTICAL

E (SHEET SIZE)	SR-FE-3PW-7001 (DRAWING/PART NUMBER)	B (REVISION)
ESH&Q RISK LEVEL A-1	SHEET 5 OF 7	

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