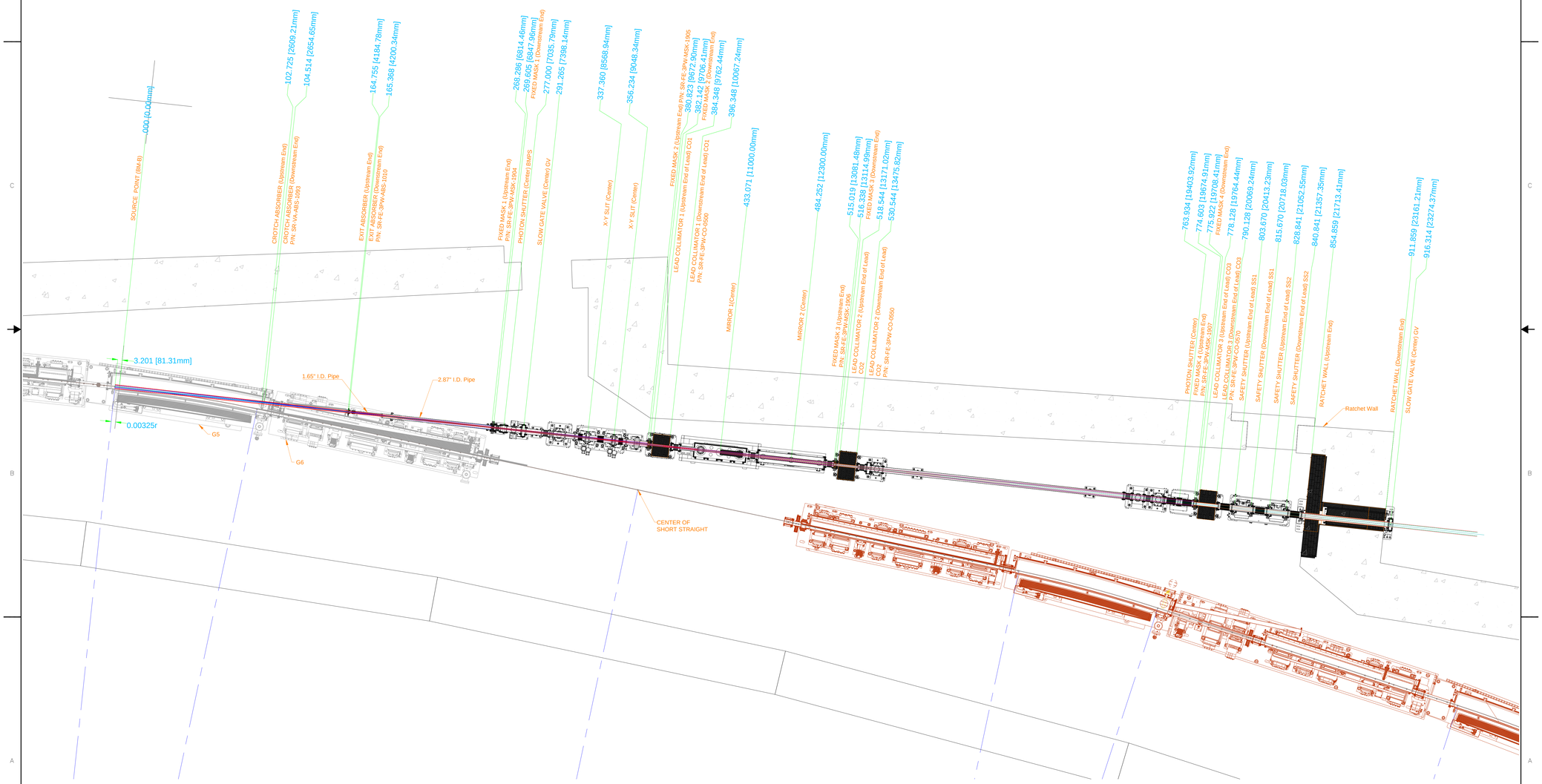
REVISION HISTORY					
REV	DESCRIPTION	DATE	DESIGNER	CHECKED BY	ENGINEER
A	RELEASE PER ECO-002882	1/2015	J.TUOZZOLO	C.AMARITO	A.HUSSAIN
B	REVISED PER ECO-003311	1/2016	M.JOHANSON	J.FABIJANIC	F.DEPAOLA
C	REVISED PER ECO-004120	4/2016	R.GAMBELLA	C.STELMACH	F.DEPAOLA



PLAN VIEW
SCALE: 1:25

TES, CELL 8-BM-B, COMPONENT LAYOUT

HATCH LEGEND
Lead
Concrete or Stainless Steel
Lead (SS)

UNLESS OTHERWISE SPECIFIED
ALL MATERIAL MUST BE IN INCHES
DIMENSIONS IN BRACKETS (IF ARE PRESENT) ARE MILLIMETERS AND ARE FOR REFERENCE ONLY
INTERPRET DRAWING AS PER ANSI Y14.5-1994 OR Y32.3-1975

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
Exploring Life's Mysteries
Protecting its Future

NSLS-II
NATIONAL SYNCHROTRON LIGHT SOURCE II

DRAWN BY	J TUOZZOLO	1/2015
CHECKED BY	C AMARITO	1/2015
VACUUM APPROVAL	C HETZEL	1/2015
ESH&Q APPROVAL	A HUSSAIN	1/2015
SUPERVISOR APPROVAL	S.SHARMA	1/2015
ESH&H APPROVAL	A ACKERMAN	1/2015
QA APPROVAL	J HAWKES	1/2015

STORAGE RING
FRONT END, CELL 8-BM-B, TES
RAY TRACING

NEXT ASSY: N/A
PROJECT: NSLS-II
THIRD ANGLE PROJECTION
SCALE: SEE DWG VIEW
WBS# 6.09.05.01
SHEET SIZE: E
DRAWING/PART NUMBER: SR-FE-3PW-5001
REVISION: C
ESH&Q RISK LEVEL: A-1
SHEET 1 OF 7

RELEASED – EFFECTIVE

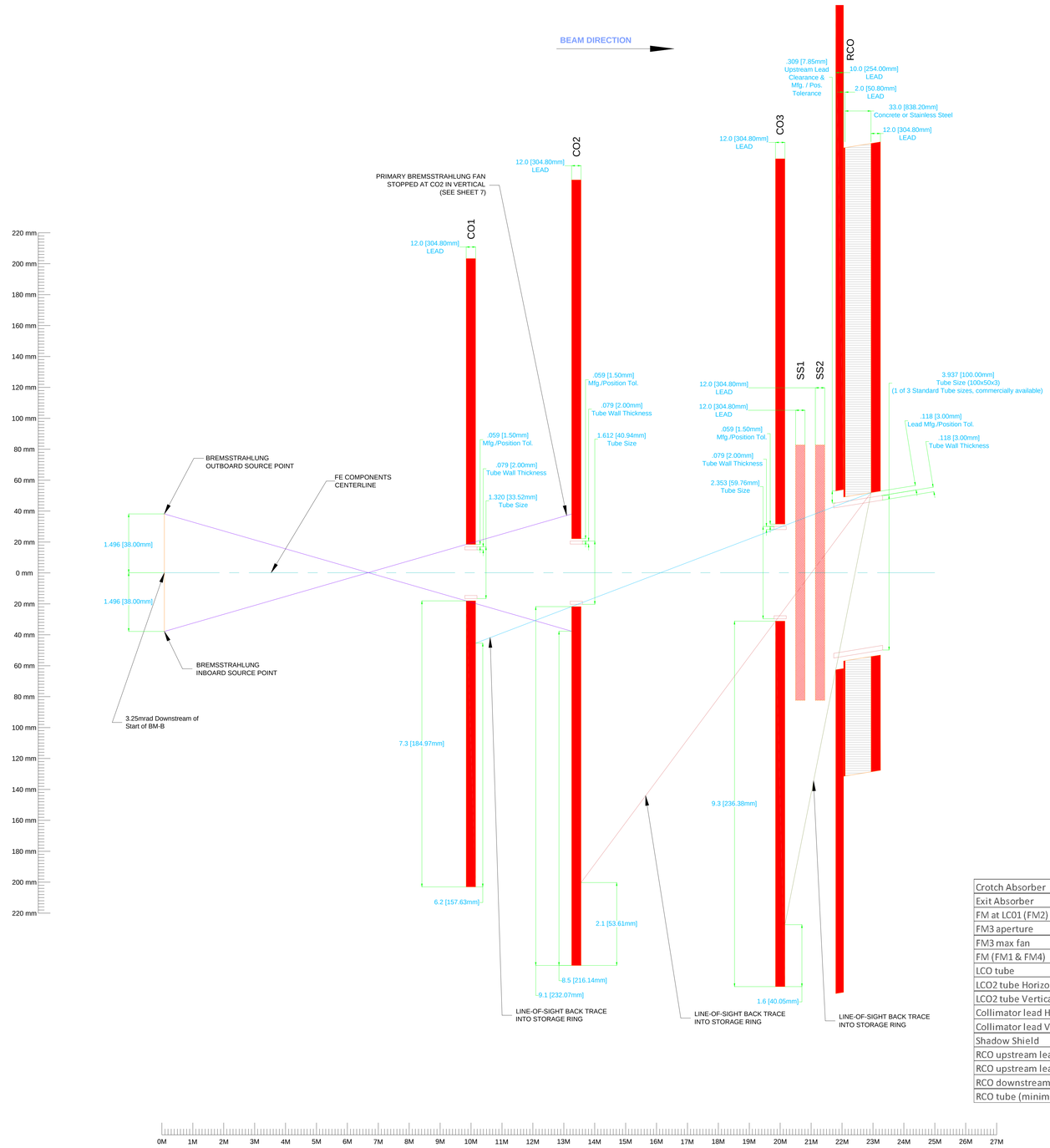


TABLE 1 - TES FRONT END RAYTRACE TOLERANCES

	STANDARD TOLERANCE				
	mm		inches		Comments
	+	-	+	-	
Crotch Absorber	2.00	2.00	0.079	0.079	Manufacturing & Position
Exit Absorber	2.00	2.00	0.079	0.079	Manufacturing & Position
FM at LC01 (FM2)	0.05	0.05	0.002	0.002	Manufacturing Only (Beam Defining)
FM3 aperture	0.05	0.05	0.002	0.002	Manufacturing Only
FM3 max fan	3.00	0.00	0.118	0.000	Manufacturing & Position
FM (FM1 & FM4)	1.50	1.50	0.059	0.059	Manufacturing & Position
LCO tube	0.50	0.50	0.020	0.020	Manufacturing & Position
LCO2 tube Horizontal	1.50	1.50	0.059	0.059	Manufacturing & Position (Sized off of Tol. Nominal fan)
LCO2 tube Vertical	0.50	0.50	0.020	0.020	Manufacturing & Position (Sized off of Tol. Nominal fan)
Collimator lead Horizontal	1.50	0.00	0.059	0.000	Manufacturing & Assembly
Collimator lead Vertical	2.50	0.00	0.098	0.000	Manufacturing, Assembly, Heater tape & Heater Tape Clearance
Shadow Shield	3.00	3.00	0.118	0.118	Manufacturing & Position
RCO upstream lead horiz.	7.85	0.00	0.309	0.000	Clearance, Mfg. & Position
RCO upstream lead vert.	8.85	0.00	0.348	0.000	Clearance, Mfg. & Position
RCO downstream lead	3.00	0.00	0.118	0.000	Manufacturing & Position
RCO tube (minimum)	4.00	-	0.157	-	Manufacturing & Position

NOTES:

1. BREMSSTRAHLUNG SOURCE POINT (ORIGIN) IS 3.25 mrad DOWNSTREAM OF START OF BM-B.
2. ALL APERTURES & TOLERANCES ARE ASSUMED TO BE SYMMETRIC ABOUT THE COMPONENT CENTERLINE UNLESS OTHERWISE SHOWN.

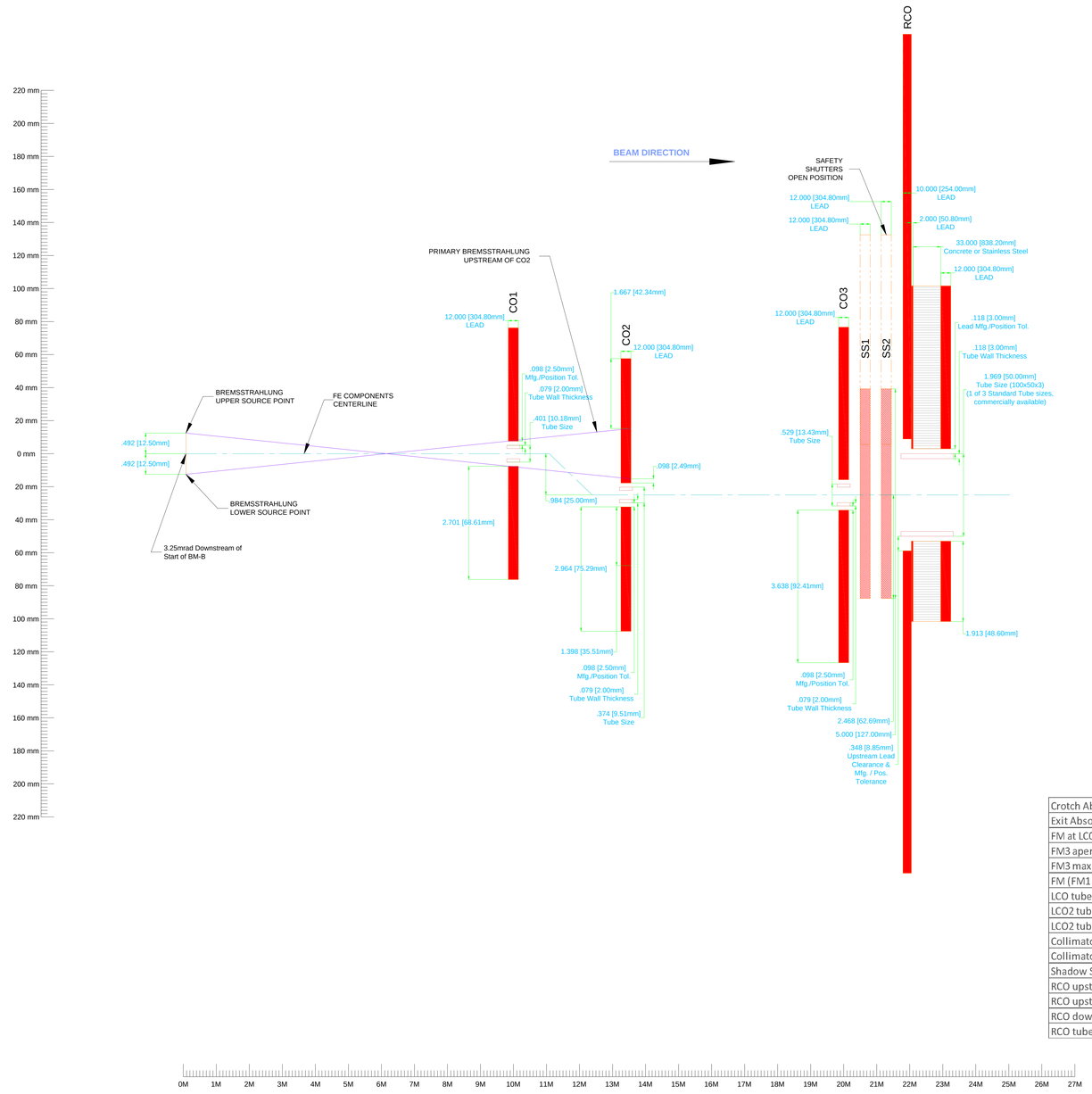
HORIZONTAL
SCALE: X:Z = 1:50

TES, CELL 8-BM-B, BREMSSTRAHLUNG RAY TRACING HORIZONTAL

SHEET SIZE	DRAWING/PART NUMBER	REVISION
E	SR-FE-3PW-5001	C

ES H&Q RISK LEVEL A-1 SHEET 6 OF 7

RELEASED – EFFECTIVE



VERTICAL
SCALE: X:Z = 1:50

TABLE 1 - TES FRONT END RAYTRACE TOLERANCES

	STANDARD TOLERANCE				
	mm		inches		Comments
	+	-	+	-	
Crotch Absorber	2.00	2.00	0.079	0.079	Manufacturing & Position
Exit Absorber	2.00	2.00	0.079	0.079	Manufacturing & Position
FM at LC01 (FM2)	0.05	0.05	0.002	0.002	Manufacturing Only (Beam Defining)
FM3 aperture	0.05	0.05	0.002	0.002	Manufacturing Only
FM3 max fan	3.00	0.00	0.118	0.000	Manufacturing & Position
FM (FM1 & FM4)	1.50	1.50	0.059	0.059	Manufacturing & Position
LCO tube	0.50	0.50	0.020	0.020	Manufacturing & Position
LCO2 tube Horizontal	1.50	1.50	0.059	0.059	Manufacturing & Position (Sized off of Tol. Nominal fan)
LCO2 tube Vertical	0.50	0.50	0.020	0.020	Manufacturing & Position (Sized off of Tol. Nominal fan)
Collimator lead Horizontal	1.50	0.00	0.059	0.000	Manufacturing & Assembly
Collimator lead Vertical	2.50	0.00	0.098	0.000	Manufacturing, Assembly, Heater tape & Heater Tape Clearance
Shadow Shield	3.00	3.00	0.118	0.118	Manufacturing & Position
RCO upstream lead horiz.	7.85	0.00	0.309	0.000	Clearance, Mfg. & Position
RCO upstream lead vert.	8.85	0.00	0.348	0.000	Clearance, Mfg. & Position
RCO downstream lead	3.00	0.00	0.118	0.000	Manufacturing & Position
RCO tube (minimum)	4.00	-	0.157	-	Manufacturing & Position

NOTES:

1. BREMSSTRAHLUNG SOURCE POINT (ORIGIN) IS 3.25 mrad DOWNSTREAM OF START OF BM-B.
2. ALL APERTURES & TOLERANCES ARE ASSUMED TO BE SYMMETRIC ABOUT THE COMPONENT CENTERLINE UNLESS OTHERWISE SHOWN.

TES, CELL 8-BM-B, BREMSSTRAHLUNG RAY TRACING VERTICAL

E (SHEET SIZE)	SR-FE-3PW-5001 (DRAWING/PART NUMBER)	C (REVISION)
ESH&Q RISK LEVEL A-1	SHEET 7 OF 7	

RELEASED – EFFECTIVE