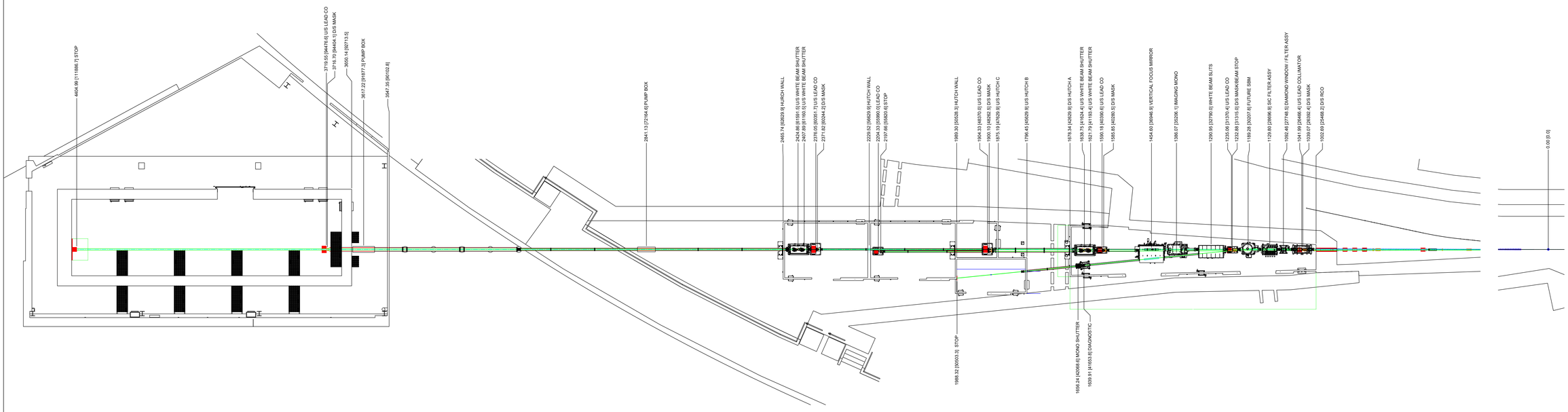
REVISION HISTORY					
REV	DESCRIPTION	DATE	DESIGNER	CHECKED BY	ENGINEER
A	INITIAL RELEASE PER ECO-00	01/2019	J.FABIJANIC	--	M.LUCAS



HEX BEAMLINE, 27-ID
SCALE: 1:100

NOTE:
1. THE CENTER OF STRAIGHT IS THE ORIGIN FOR ALL DIMENSIONS UNLESS OTHERWISE NOTED.
2. BENDING MAGNET FAN NOT SHOWN, LAYOUT TO BE SUPPLIED BY VACUUM GROUP.

SPECIFICATIONS		SPEC REFERENCE
Project	"_____"	NSLSII-27ID-RSI-001
Beam Line Name	High Energy Engineering X-ray Scattering	NSLSII-27ID-RSI-001
Abbreviation	HEX	NSLSII-27ID-RSI-001
Source	Damping Wiggler (SCW)	NSLSII-27ID-RSI-001
Period of insertion device	100	NSLSII-27ID-RSI-001
Long / Short Straight	Low Beta	NSLSII-27ID-RSI-001
Canting Angle	NONE	NSLSII-27ID-RSI-001
Length of Source	2X 3500 mm	NSLSII-27ID-RSI-001
Location of Center of Source 1 (From Center of Straight)	-1890.5	SR-ID-DW-1001
Location of Center of Source 2 (From Center of Straight)	1890.5	SR-ID-DW-1001
Nominal Radiation Fan (Horizontal)	6.47 mrad	NSLSII-27ID-RSI-001
Nominal Radiation Fan (Vertical)	0.87 mrad	NSLSII-27ID-RSI-001
Fixed Aperture Mask, Outboard Downstream, Aperture (Horizontal)	1.1 mrad	NSLSII-27ID-RSI-001
Fixed Aperture Mask, Outboard Downstream, Aperture (Vertical)	0.15 mrad	NSLSII-27ID-RSI-001
Fixed Aperture Mask, Inboard Downstream, Aperture (Horizontal)	N/A	N/A
Fixed Aperture Mask, Inboard Downstream, Aperture (Vertical)	N/A	N/A

SPECIFICATIONS		SPEC REFERENCE
Ray Tracing Proceedure		PS-C-XFD-PRC-008 (Version 1)
Active Interlock Envelope	AIE-ID-A	PS-C-ASD-PRC-147
Manufacturing & Positional Tolerance	±1.5 mm	PS-C-ASD-PRC-147
Bremsstrahlung Source Dimension (Vertical)	+/- 12.5 mm	NSLS-II Technical Note No. 00020
Bremsstrahlung Source Dimension (Horizontal - Outboard)	+ 38 mm	NSLS-II Technical Note No. 00020
Bremsstrahlung Source Dimension (Horizontal - Inboard)	See Spec Ref	Determined by FE Collimator Apertures
Bremsstrahlung Source Location (Long Straight)	+ 4000 mm	NSLS-II Technical Note No. 00020
Bremsstrahlung Source Location (Short Straight)	+ 2500 mm	NSLS-II Technical Note No. 00020
Fixed Mask (Max Horizontal Beam Incidence Angle)	Angle ≤ 4.0°	FEA - Front End (Oct 15, 2010)
Fixed Mask (Max Vertical Beam Incidence Angle)	Angle ≤ 2.0°	FEA - Front End (Oct 15, 2010)

REFERENCES (NSLS II SHAREPOINT):
1. FRONT END SPECIFICATIONS: NSLS-II GROUP SITES > NSLS-II ACCELERATOR SYSTEMS > MECHANICAL DESIGN AND ENGINEERING > FRONT ENDS > FRONT END REQUIREMENTS
2. NSLS II TECHNICAL NOTE NUMBER 00020 BREMSSTRAHLUNG RAY TRACING GUIDELINES OR NSLS II BEAMLINES AND FRONT ENDS.
3. NSLS II TECHNICAL NOTE NUMBER 014 PRELIMINARY SHIELDING ESTIMATES FOR NSLS II BEAMLINES AND FRONT ENDS.
4. NSLS II CONTROLLED DOCUMENT NO. LT-C-XFD-RSI-1.04.06, (MOST RECENT VERSION AND REVISION) RSI FOR THE FRONT-ENDS FOR THE SIX NSLS-II PROJECT BEAMLINES.
5. ID GROUP INTERFACE CONTROL DRAWING: SR-ID-DW-1001.

ABBREVIATIONS:
ABS - ABSORBER
Be - BERYLLIUM WINDOW
BRC - BREMSSTRAHLUNG COLLIMATOR
DS - DOWNSTREAM
FMK - FIXED MASK
FOE - FRONT OPTICS ENCLOSURE
SBM - SIDE BOUNCE MONOCHROMATOR
US - UPSTREAM
VFM - VERTICAL FOCUSING MIRROR

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 ASME Y14.5-2009 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.

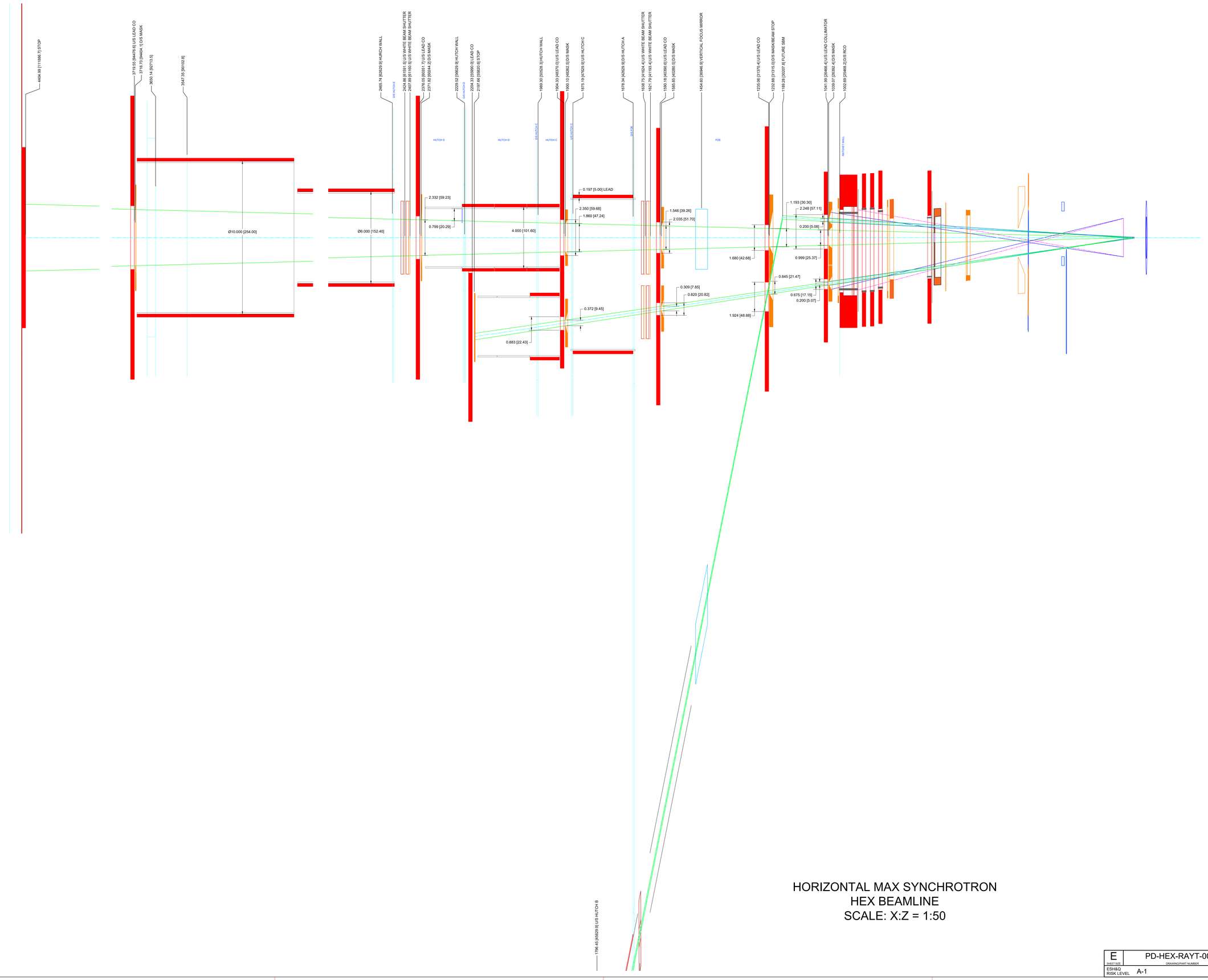
BROOKHAVEN NATIONAL LABORATORY
BROOKHAVEN SCIENCE ASSOCIATES
UPTON, NEW YORK 11973
Exploring Life's Mysteries
Creating Materials of Tomorrow, Shaping the Future

DRAWN BY	J.FABIJANIC	10/2018
CHECKED BY	J. FABIJANIC	
SECTION HEAD APPROVAL		
PROJECT ENGR APPROVAL		
PHOTON MODERNIZATION APPROVAL		
ESH&Q APPROVAL		
QA APPROVAL		
RADIATION SAFETY	N/A	N/A

NSLSII NATIONAL SYNCHROTRON LIGHT SOURCE II

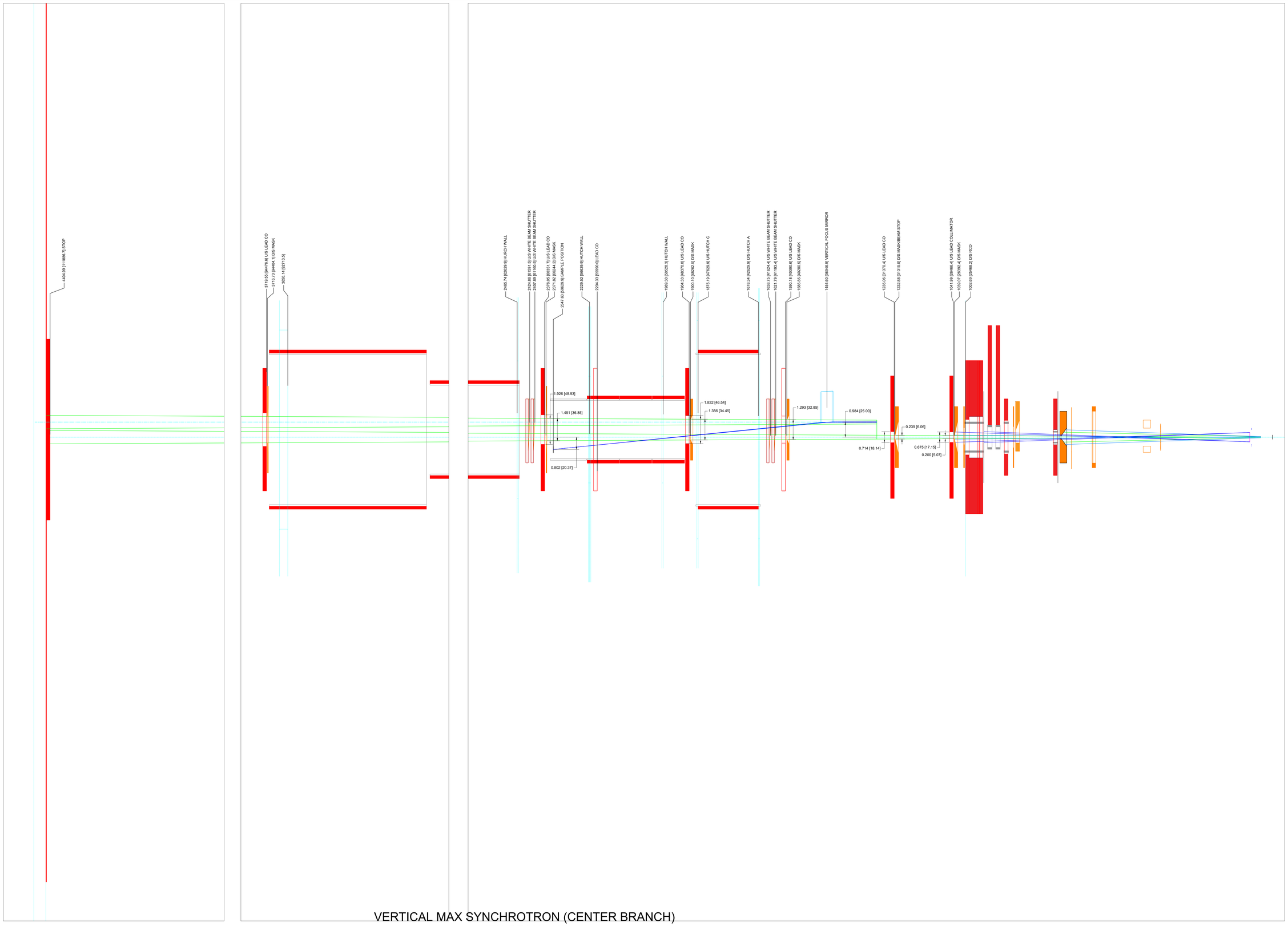
PHOTON DIVISION
27ID, HEX BEAMLINE
RAYTRACE LAYOUT

NEXT ASSY:
PROJECT:
THIRD ANGLE PROJECTION
SCALE: AS NOTED
WBS#
SHEET SIZE: E
DRAWING/PART NUMBER: PD-HEX-RAYT-0001
REVISION: A
ESH&Q RISK LEVEL: A-1
SHEET 1 OF



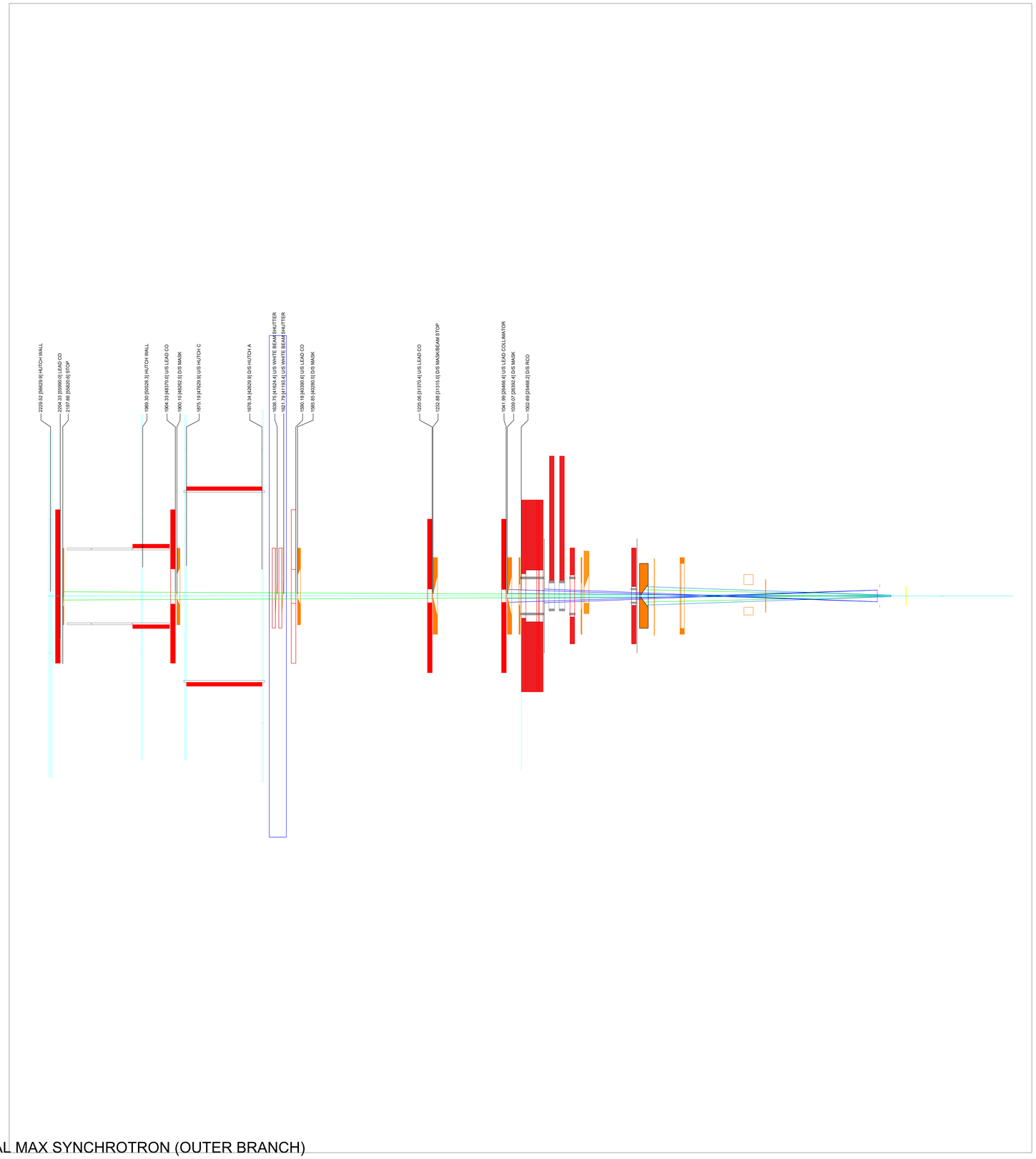
HORIZONTAL MAX SYNCHROTRON
HEX BEAMLINE
SCALE: X:Z = 1:50

E	PD-HEX-RAYT-0001	A
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL	A-1	SHEET OF



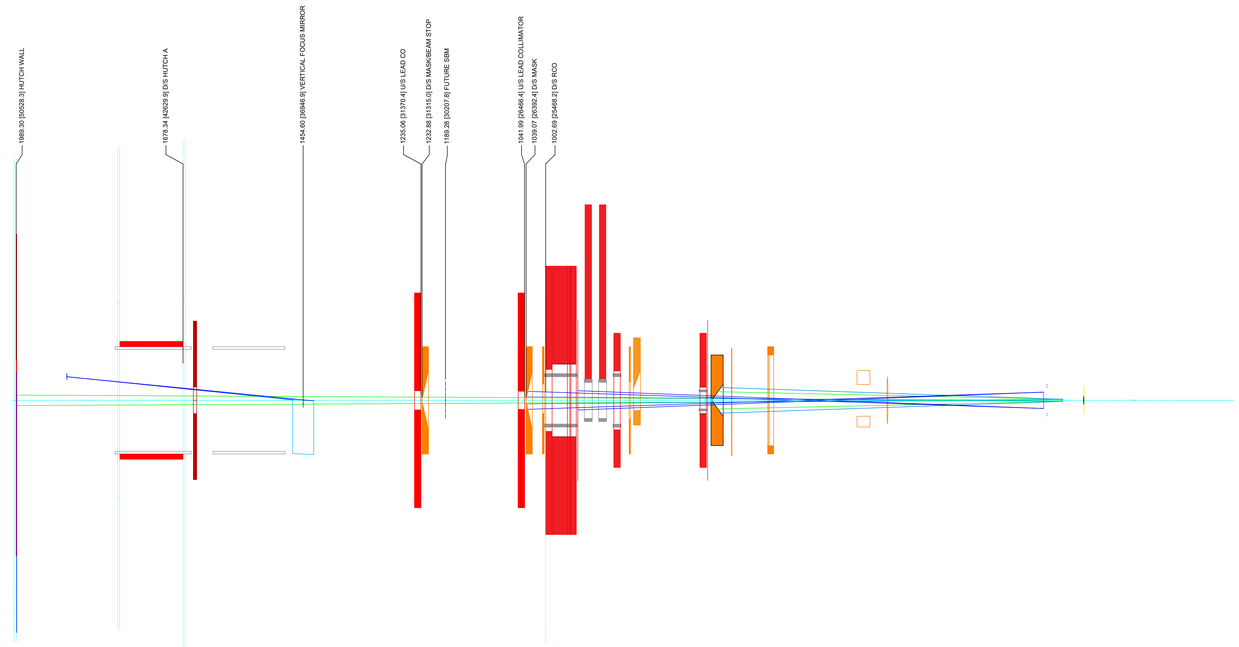
VERTICAL MAX SYNCHROTRON (CENTER BRANCH)
HEX BEAMLINE
SCALE: X:Z = 1:50

E	PD-HEX-RAYT-0001	A
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL	A-1	SHEET OF



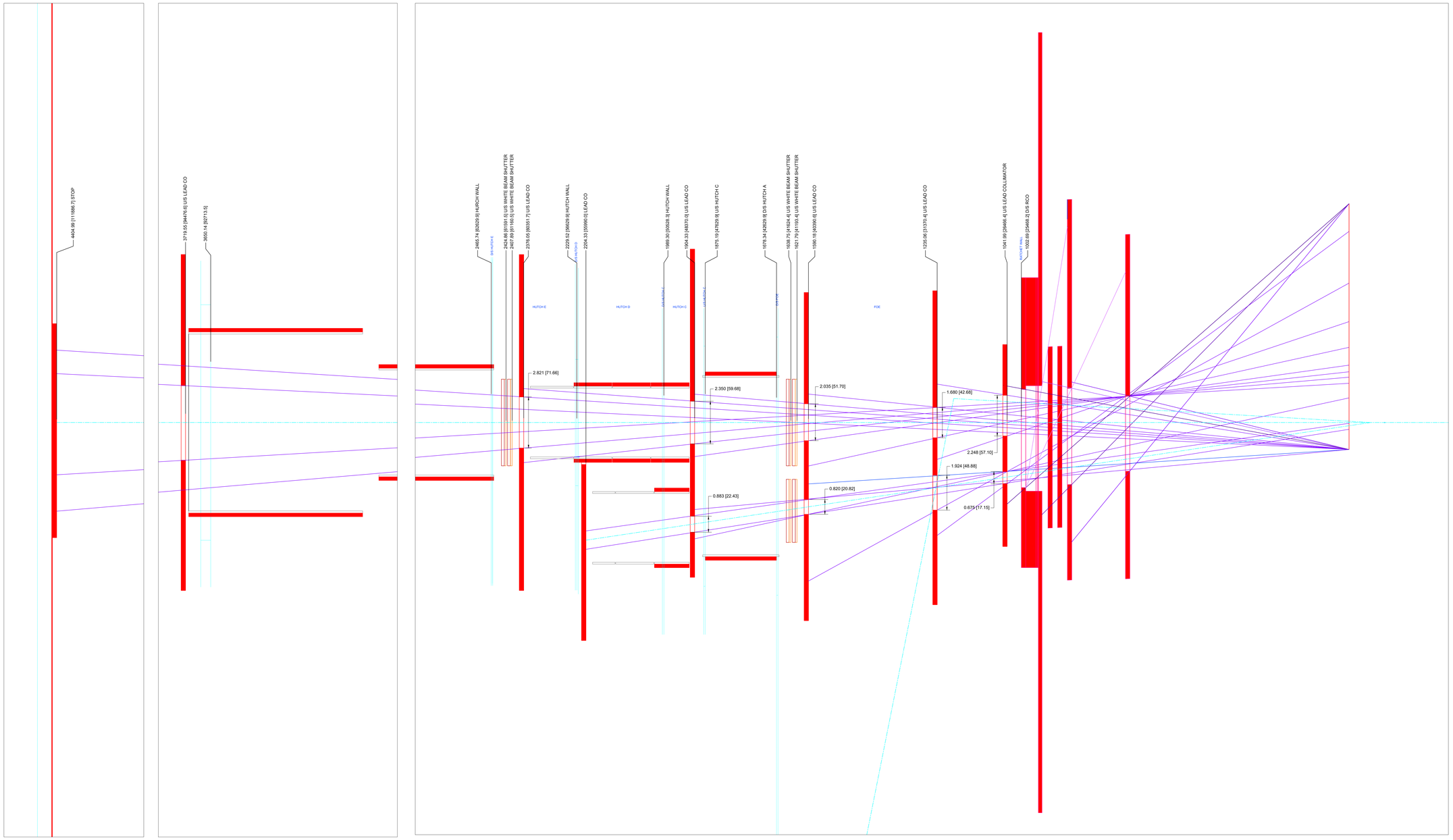
VERTICAL MAX SYNCHROTRON (OUTER BRANCH)
HEX BEAMLINE
SCALE: X:Z = 1:50

E (SHEET SIZE)	PD-HEX-RAYT-0001 (DRAWING/PART NUMBER)	A (REVISION)
ESH&Q RISK LEVEL A-1	SHEET OF	



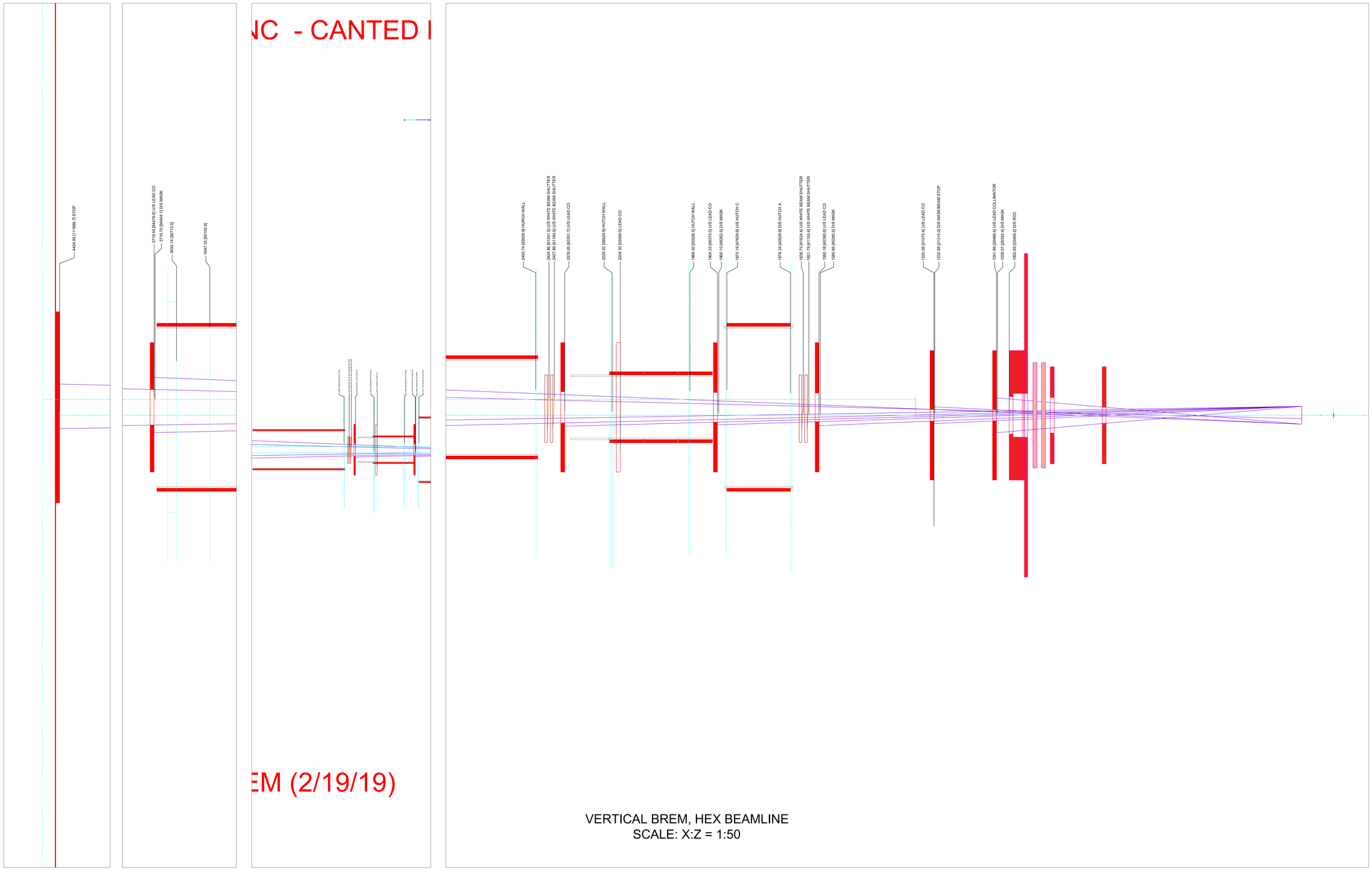
VERTICAL MAX SYNCHROTRON (OUTER BRANCH)
HEX BEAMLINE
SCALE: X:Z = 1:50

E SHEET SIZE	PD-HEX-RAYT-0001 DRAWING/PART NUMBER	A REVISION
ESH&Q RISK LEVEL A-1	SHEET OF	



HORIZONTAL BREM, HEX BEAMLINE
SCALE: X:Z = 1:50

E	PD-HEX-RAYT-0001	A
SHEET SIZE	DRAWING/PART NUMBER	REVISION
ESH&Q RISK LEVEL	A-1	SHEET OF



VERTICAL BREM, HEX BEAMLINE
SCALE: X:Z = 1:50

E (SHEET SIZE)	PD-HEX-RAYT-0001 (DRAWING/PART NUMBER)	A (REVISION)
ESH&Q RISK LEVEL	A-1	SHEET OF