

NOTES:

1 ELEMENTS CROSS THE ELECTRON BEAM AS READ (FROM LEFT-TO-RIGHT)

2 MACHINE CENTER IS 400.0948 METERS UPSTREAM OF "HALL CENTER"

DETAIL A-A
2H01, 3-WIRE X,Y,45°

DETAIL B-B
2H00, 3-WIRE 45°,Y,X

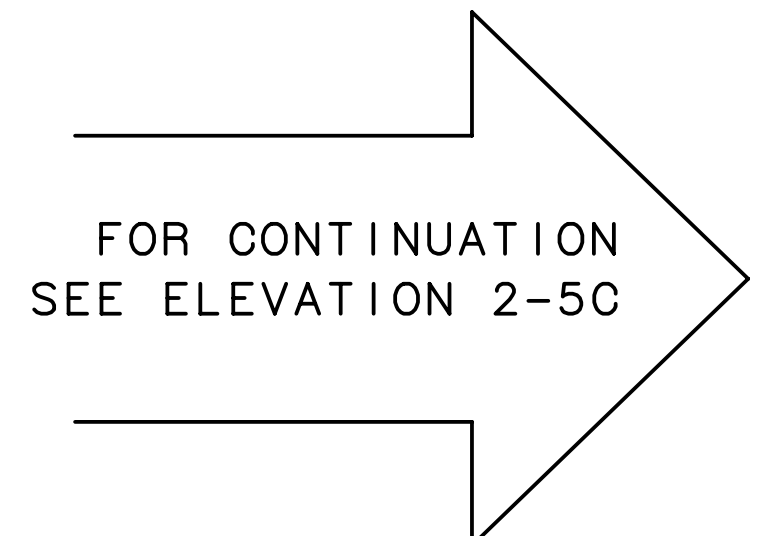
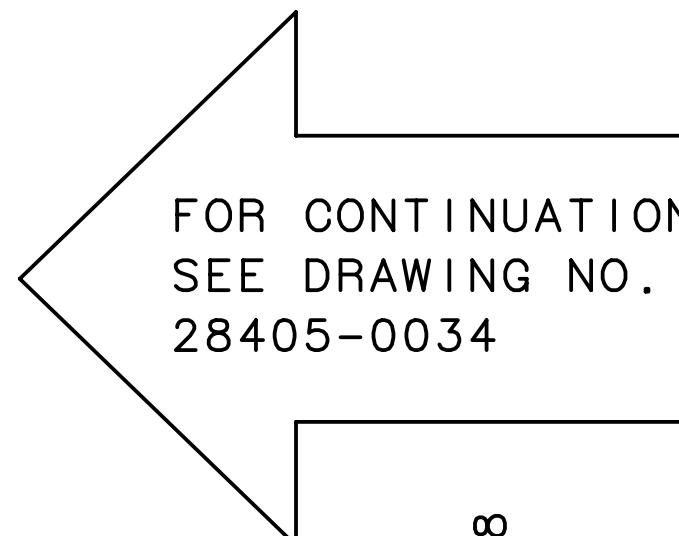
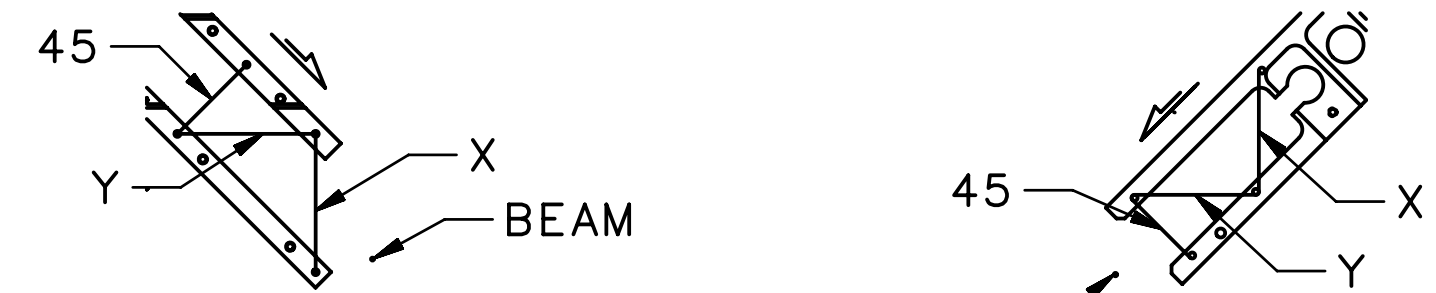
3 CONTENTS:

- PAGE 1: COMPONENT POSITIONING FOR REFERENCE BY COUNTING-ROOM & MCC OPERATORS
- PAGE 2: COMPONENT IDENTIFICATION FOR INSTALLATION BY TECHNICAL STAFF
- PAGE 3: IDENTIFICATION OF MATERIALS IN THE BEAM, & BEAMLINE SHIELDING

4 BEAM-TUBE IDENTIFICATION:

- FORMAT: A - B - C, L
- A = UPSTREAM FLANGE SIZE
- B = TUBE OD
- C = DOWNSTREAM FLANGE SIZE
- L = LENGTH
- CONFLAT FLANGES UNLESS SPECIFIED

5. DRAWING DEPICTS IDEAL INSTALLATION LOCATIONS FOR EQUIPMENT, REFER TO SURVEY TRANSMITTALS FOR FINAL LOCATION



- 24.195 M : SHIELD WALL, UPSTREAM ALCOVE
- 23.758 M : 2C03H RASTER MAGNET, 66844-02226
- 23.250 M : 2C03V RASTER MAGNET, 66844-02226
- 22.769 M : 2C24 TAGGER HARP: 3-WIRE, 45°, Y, X
- 22.592 M : 50 OHM STRIPLINE BPM, DIA-007-0100-0038
- 22.253 M : 2X COUNTERS, UPSTREAM
- 22.005 M : VALVE #VBV2C24A
- 21.925 M : PUMP-SET : VTP2C24A

- 16.213 M : COLL IMATOR BOX : EMPTY, 20mm, NO HOLE, 12mm
- 15.827 M : VALVE #VBV2H00

- 14.003 M : 2H00 BPM PM-M15 ASSY, 58432-0156
- 13.645 M : 2H00 QA MAGNET ASSY, 22232-0001
- 13.201 M : 2H00 QA MAGNET ASSY, 22232-0001
- 12.859 M : 2H00 BD MAGNET ASSY, MAG-002-0003-0001
- 12.636 M : 2H00 BD MAGNET ASSY, MAG-002-0003-0001
- 12.388 M : 2H00 PUMP-SET : VTP2H00

- 9.458 M : 2H01 BPM : IPM2H01
- 9.180 M : 2H01 BPM : IPM2H01V
- 8.882 M : 2H01 BPM : IPM2H01H

- 8.521 M : 2H01 HARP : 3-WIRE, X, Y, 45°
- 8.221 M : 50 OHM STRIPLINE BPM, DIA-007-0100-0038

- 6.102 M : VALVE #VBF2H01A
- 5.978 M : VALVE #VBV2H01A
- 5.868 M : 4X COUNTERS, MIDSTREAM
- 4.771 M : SACLAY PUMP-SET : VTP2H01A

- 1.303 M : SOLENOID CENTER
- .000 M : HALL CENTER

- 7.923 M : 4X COUNTERS, DOWNSTREAM

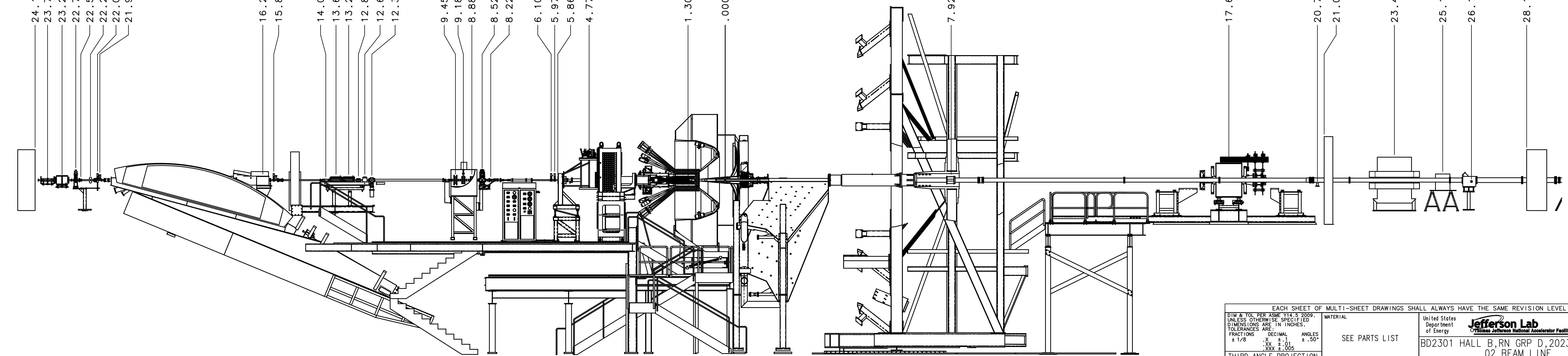
- 17.658 M : HPS DIPOLE MAGNET (OFF BEAMLINE)

- 20.764 M : 2H02 PUMP-SET : VTP2H02
- 21.000 M : SHIELD WALL, DOWNSTREAM ALCOVE

- 23.463 M : MAGNET (DECOMMISSIONED)

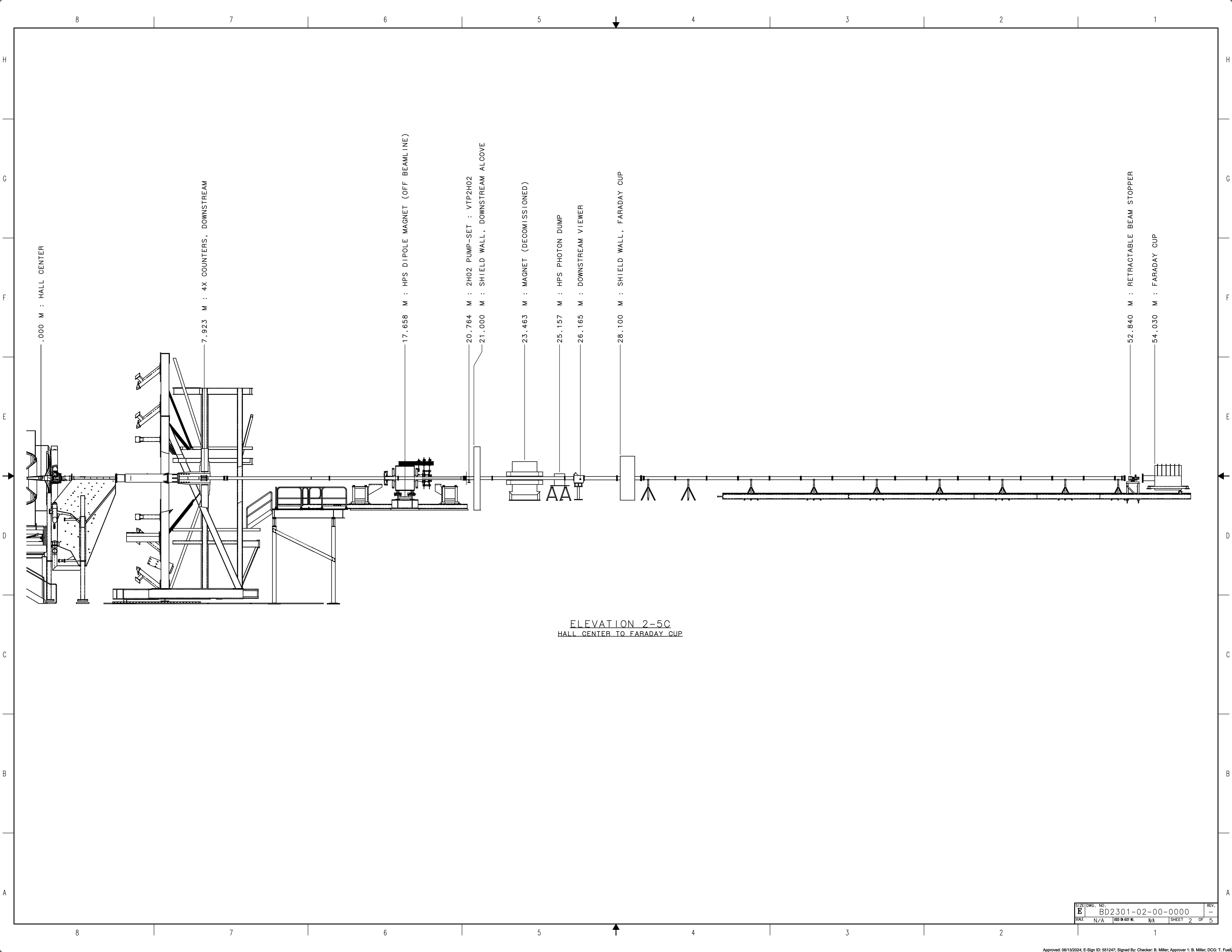
- 25.157 M : HPS PHOTON DUMP
- 26.165 M : DOWNSTREAM VIEWER

- 28.100 M : SHIELD WALL FARADAY CUP



ELEVATION 1-5A
UPSTREAM ALCOVE TO DOWNSTREAM ALCOVE
(SHOWN IN LIQUID TARGET CONFIG.)

EACH SHEET OF MULTI-SHEET DRAWINGS SHALL ALWAYS HAVE THE SAME REVISION LEVEL.		United States Department of Energy	
UNIT & TOL PER ASME Y14.5 2009. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE FRACTIONS DECIMAL ANGLES ± 1/16 ± .01 ± .50		Jefferson Lab Newport News Virginia	
THIRD ANGLE PROJECTION		SEE PARTS LIST	
FINISH MACHINED SURFACES DEBUR & BREAK ALL SHARP EDGES		BD2301 HALL B, RN GRP D, 2023 CNFG 01 02 BEAM LINE 0000 BEAMLINE ASSEMBLY	
DO NOT SCALE DRAWING		SIZE DWG. NO. BD2301-02-00-0000	
DRAWN: CHRIS QUIRIE		DATE: 02/02/2024	
SCALE: N/A		SHEET 1 OF 5	



.000 M : HALL CENTER

7.923 M : 4X COUNTERS, DOWNSTREAM

17.658 M : HPS DIPOLE MAGNET (OFF BEAMLINE)

20.764 M : 2H02 PUMP-SET : VTP2H02

21.000 M : SHIELD WALL, DOWNSTREAM ALCOVE

23.463 M : MAGNET (DECOMMISSIONED)

25.157 M : HPS PHOTON DUMP

26.165 M : DOWNSTREAM VIEWER

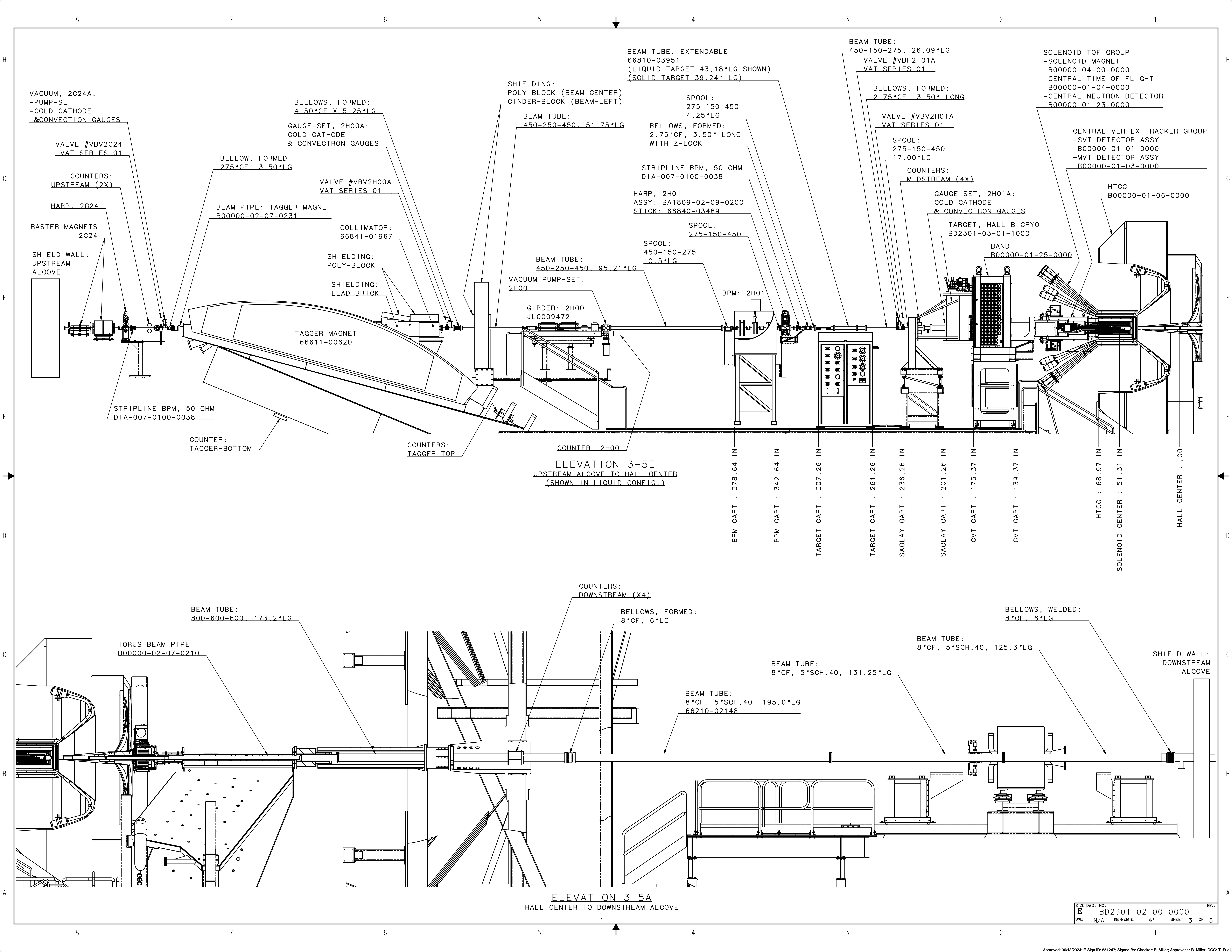
28.100 M : SHIELD WALL, FARADAY CUP

52.840 M : RETRACTABLE BEAM STOPPER

54.030 M : FARADAY CUP

ELEVATION 2-5C
HALL CENTER TO FARADAY CUP

SIZE	DWG. NO.	REV.
E	BD2301-02-00-0000	-
SCALE	ISS. OR ASSY NO.	SHEET
N/A	N/A	2 OF 5



VACUUM, 2C24A:
-PUMP-SET
-COLD CATHODE
& CONVECTION GAUGES

VALVE #VBV2C24
VAT SERIES 01

COUNTERS:
UPSTREAM (2X)

HARP, 2C24

RASTER MAGNETS
2C24

SHIELD WALL:
UPSTREAM
ALCOVE

STRIPLINE BPM, 50 OHM
DIA-007-0100-0038

BELLOWS, FORMED:
4.50*CF X 5.25*LG

GAUGE-SET, 2H00A:
COLD CATHODE
& CONVECTRON GAUGES

BELLOW, FORMED
275*CF, 3.50*LG

BEAM PIPE: TAGGER MAGNET
B00000-02-07-0231

TAGGER MAGNET
66611-00620

COUNTER:
TAGGER-BOTTOM

VALVE #VBV2H00A
VAT SERIES 01

COLLIMATOR:
66841-01967

SHIELDING:
POLY-BLOCK

SHIELDING:
LEAD BRICK

SHIELDING:
POLY-BLOCK (BEAM-CENTER)
CINDER-BLOCK (BEAM-LEFT)

BEAM TUBE:
450-250-450, 51.75*LG

BEAM TUBE:
450-250-450, 95.21*LG

VACUUM PUMP-SET:
2H00

GIRDER: 2H00
JL0009472

COUNTER, 2H00

BEAM TUBE: EXTENDABLE
66810-03951
(LIQUID TARGET 43.18*LG SHOWN)
(SOLID TARGET 39.24* LG)

SPOOL:
275-150-450
4.25*LG

BELLOWS, FORMED:
2.75*CF, 3.50* LONG
WITH Z-LOCK

STRIPLINE BPM, 50 OHM
DIA-007-0100-0038

HARP, 2H01
ASSY: BA1809-02-09-0200
STICK: 66840-03489

SPOOL:
275-150-450

SPOOL:
450-150-275
10.5*LG

BPM: 2H01

BEAM TUBE:
450-150-275, 26.09*LG

VALVE #VBF2H01A
VAT SERIES 01

BELLOWS, FORMED:
2.75*CF, 3.50* LONG

VALVE #VBV2H01A
VAT SERIES 01

SPOOL:
275-150-450
17.00*LG

COUNTERS:
MIDSTREAM (4X)

GAUGE-SET, 2H01A:
COLD CATHODE
& CONVECTRON GAUGES

TARGET, HALL B CRYO
BD2301-03-01-1000

BAND
B00000-01-25-0000

SOLENOID TOF GROUP
-SOLENOID MAGNET
B00000-04-00-0000
-CENTRAL TIME OF FLIGHT
B00000-01-04-0000
-CENTRAL NEUTRON DETECTOR
B00000-01-23-0000

CENTRAL VERTEX TRACKER GROUP
-SVT DETECTOR ASSY
B00000-01-01-0000
-MVT DETECTOR ASSY
B00000-01-03-0000

HTCC
B00000-01-06-0000

ELEVATION 3-5E
UPSTREAM ALCOVE TO HALL CENTER
(SHOWN IN LIQUID CONFIG.)

BPM CART : 378.64 IN
BPM CART : 342.64 IN
TARGET CART : 307.26 IN
TARGET CART : 261.26 IN
SACLAY CART : 236.26 IN
SACLAY CART : 201.26 IN
CVT CART : 175.37 IN
CVT CART : 139.37 IN
HTCC : 68.97 IN
SOLENOID CENTER : 51.31 IN
HALL CENTER : .00

BEAM TUBE:
800-600-800, 173.2*LG

TORUS BEAM PIPE
B00000-02-07-0210

COUNTERS:
DOWNSTREAM (X4)

BELLOWS, FORMED:
8*CF, 6*LG

BELLOWS, WELDED:
8*CF, 6*LG

BEAM TUBE:
8*CF, 5*SCH.40, 131.25*LG

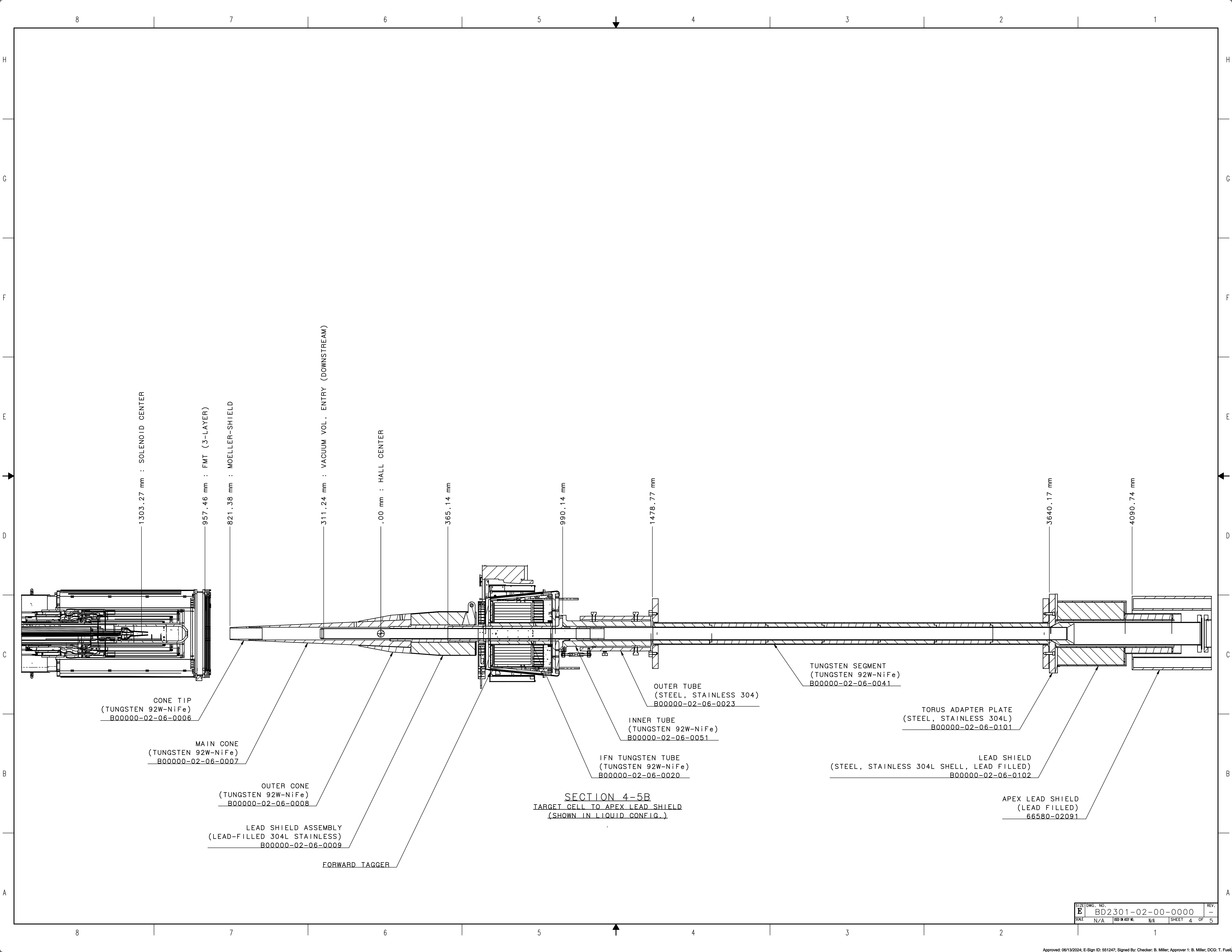
BEAM TUBE:
8*CF, 5*SCH.40, 195.0*LG
66210-02148

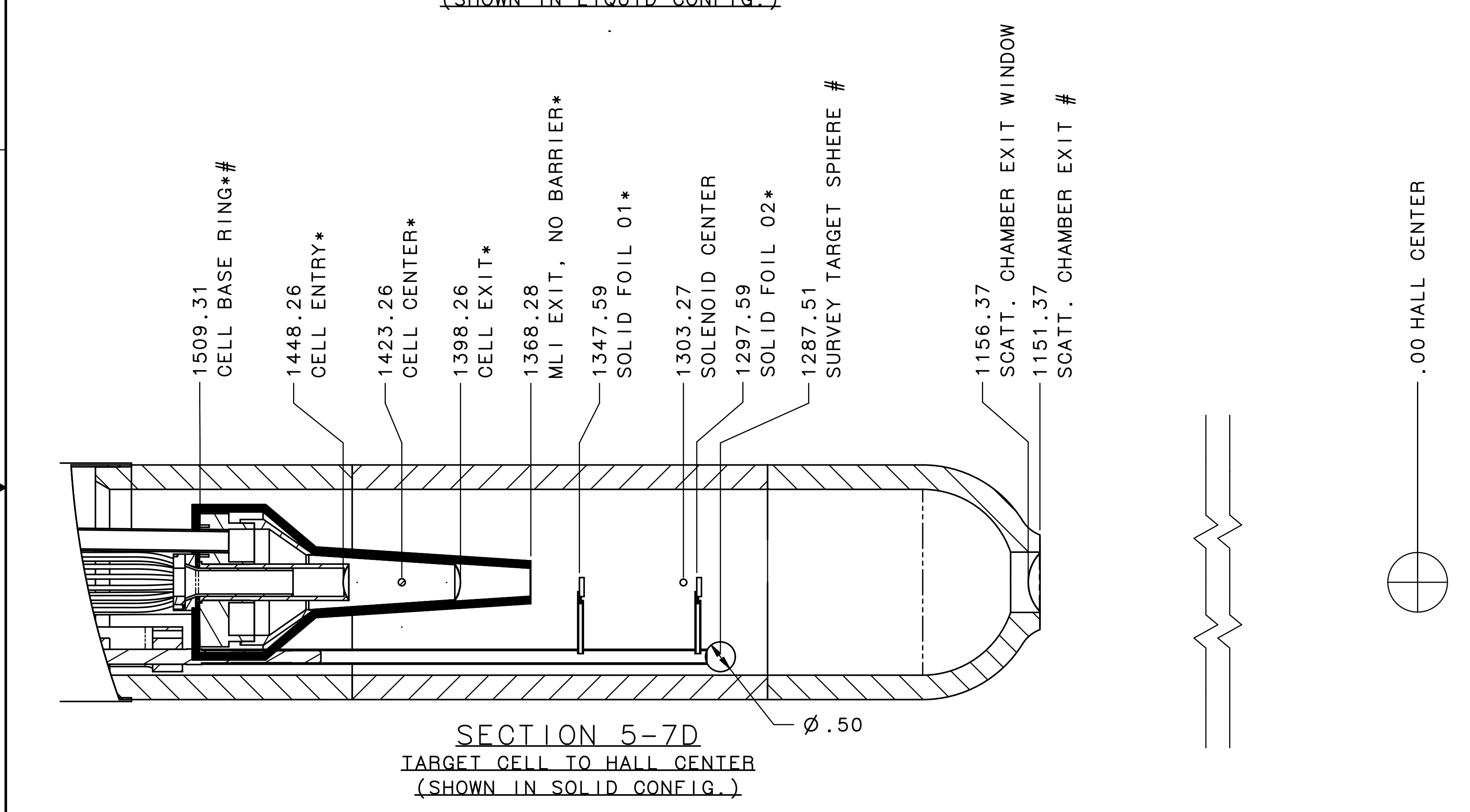
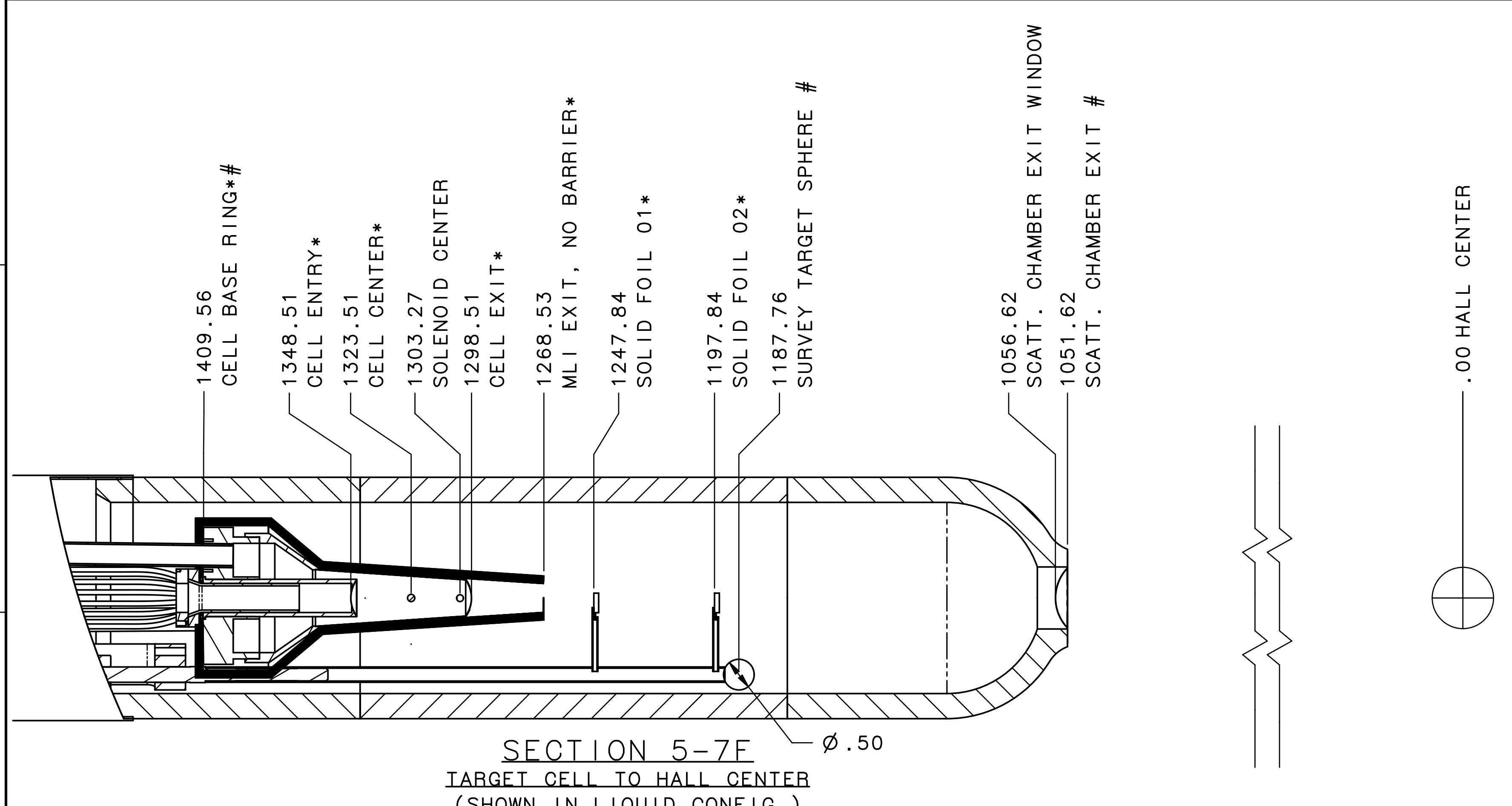
BEAM TUBE:
8*CF, 5*SCH.40, 125.3*LG

SHIELD WALL:
DOWNSTREAM
ALCOVE

ELEVATION 3-5A
HALL CENTER TO DOWNSTREAM ALCOVE

SIZE	DWG. NO.	REV.
E	BD2301-02-00-0000	-
SCALE	REV. ON ASSY NO.	SHEET
N/A	N/A	3 OF 5





LIQUID CELL (50mm LONG)

TABLE -A-
MATERIALS IN THE BEAM LINE

ITEM	DRAWING NO.	MATERIAL	THICKNESS
TARGET CELL ENTRY		ALUMINUM	30um
TARGET CELL EXIT	BD2301-03-01-0100	ALUMINUM	30um
SOLID FOIL 01 RIGHT	-	COPPER	93um
SOLID FOIL 02 RIGHT	-	TIN	171um
SOLID FOIL 01 LEFT	-	CARBON	2000um
SOLID FOIL 02 LEFT	-	CARBON	2000um
SCATTERING CHAMBER EXIT	B00000-03-01-0300	ALUMINUM	75um
VACUUM VOL. ENTRY (DOWNSTREAM)	B00000-02-07-0210	ALUMINUM	75um

NOTES: WHEN AT OPERATING TEMPERATURE, CELL AND FOIL LOCATIONS DESIGNATED WITH ** MOVE UPSTREAM APPROXIMATELY 5mm DUE TO THERMAL CONTRACTION.

LOCATIONS DESIGNATED WITH *** WERE DETERMINED IAW SURVEY TRANSMITTAL B2094.

TABLE -C-
STEPPER MOTOR POSITIONS

LOCATION	DEGREES
RIGHT FOIL LIMIT	0
RIGHT FOIL BEAM	2.5
CENTER	30.0
LEFT FOIL BEAM	57.5
LEFT FOIL LIMIT	60.0

SOLID FOILS

TABLE -B-
MATERIALS IN THE BEAM LINE

ITEM	DRAWING NO.	MATERIAL	THICKNESS
TARGET CELL ENTRY		ALUMINUM	30um
TARGET CELL EXIT	BD2301-03-01-0100	ALUMINUM	30um
SOLID FOIL 01 RIGHT	-	COPPER	93um
SOLID FOIL 02 RIGHT	-	TIN	171um
SOLID FOIL 01 LEFT	-	CARBON	2000um
SOLID FOIL 02 LEFT	-	CARBON	2000um
SCATTERING CHAMBER EXIT	B00000-03-01-0300	ALUMINUM	75um
VACUUM VOL. ENTRY (DOWNSTREAM)	B00000-02-07-0210	ALUMINUM	75um

NOTES: WHEN AT OPERATING TEMPERATURE, CELL AND FOIL LOCATIONS DESIGNATED WITH ** MOVE UPSTREAM APPROXIMATELY 5mm DUE TO THERMAL CONTRACTION.

LOCATIONS DESIGNATED WITH *** WERE DETERMINED IAW SURVEY TRANSMITTAL B2094.

TABLE -D-
STEPPER MOTOR POSITIONS

LOCATION	DEGREES
RIGHT FOIL LIMIT	0
RIGHT FOIL BEAM	2.5
CENTER	30.0
LEFT FOIL BEAM	57.5
LEFT FOIL LIMIT	60.0