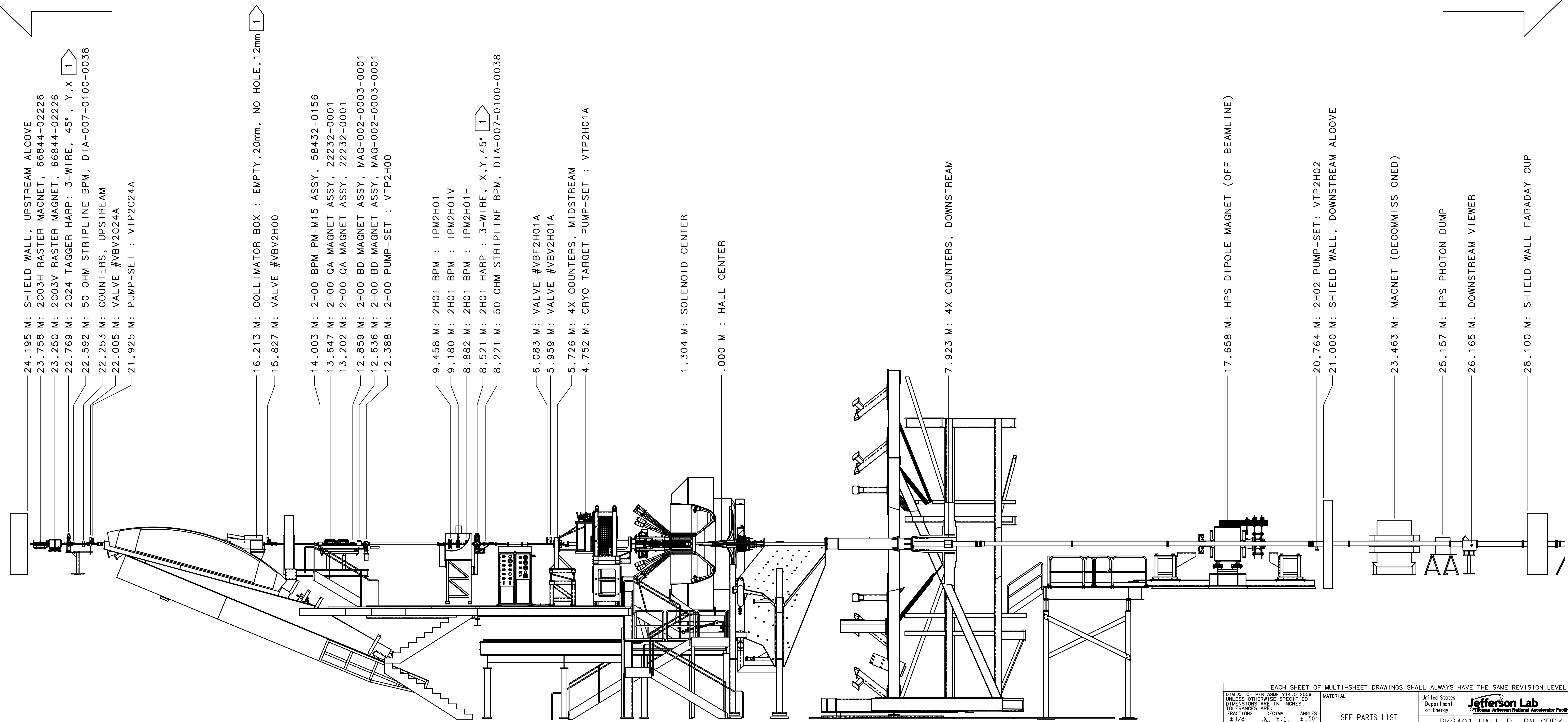
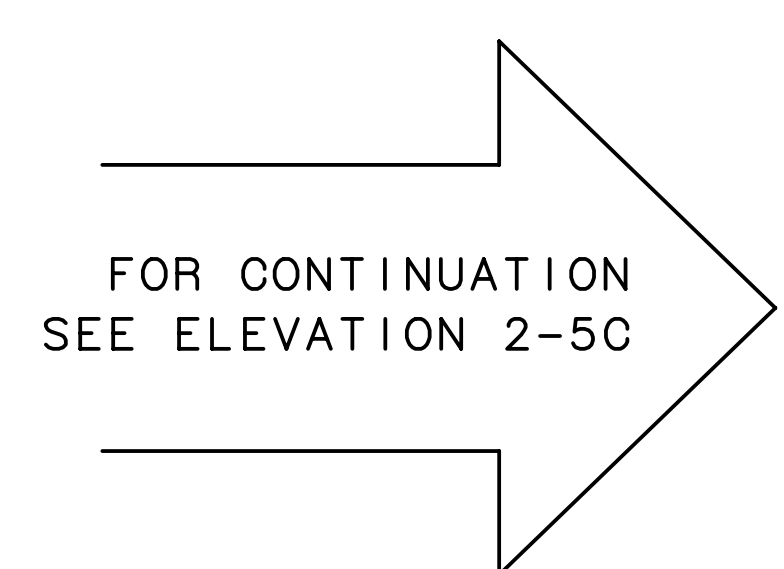
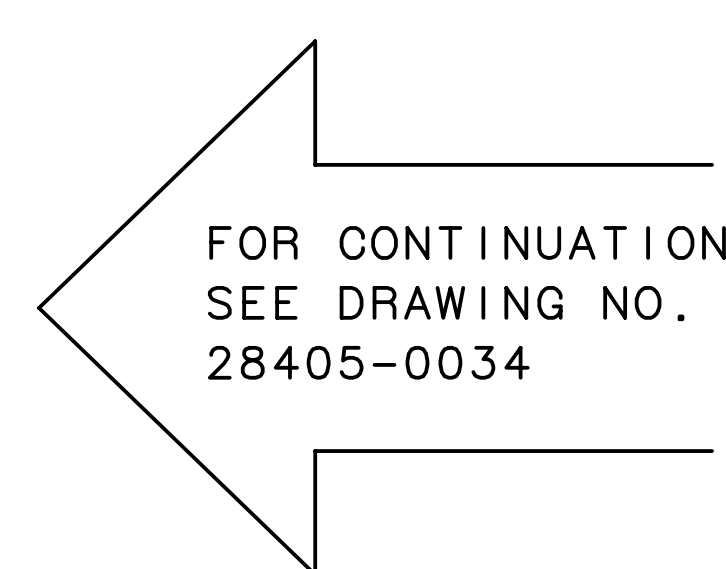
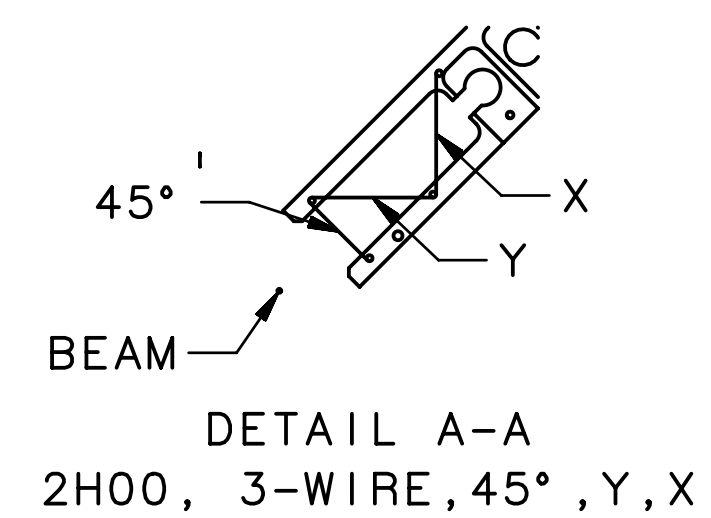
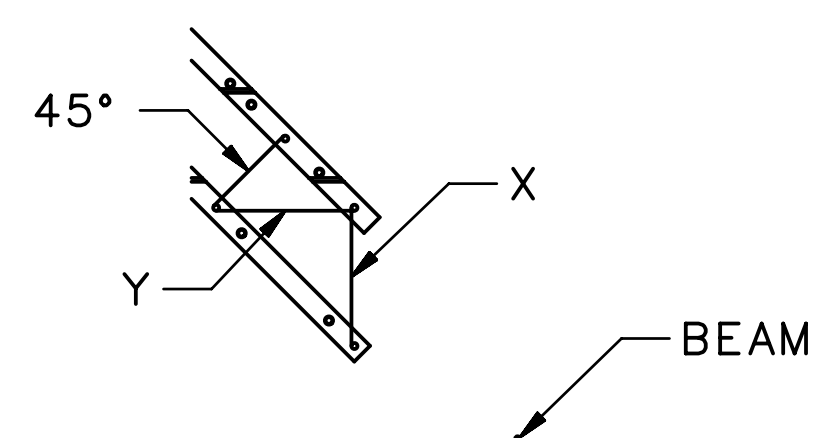


REVISION HISTORY		
ZONE	REV	DESCRIPTION

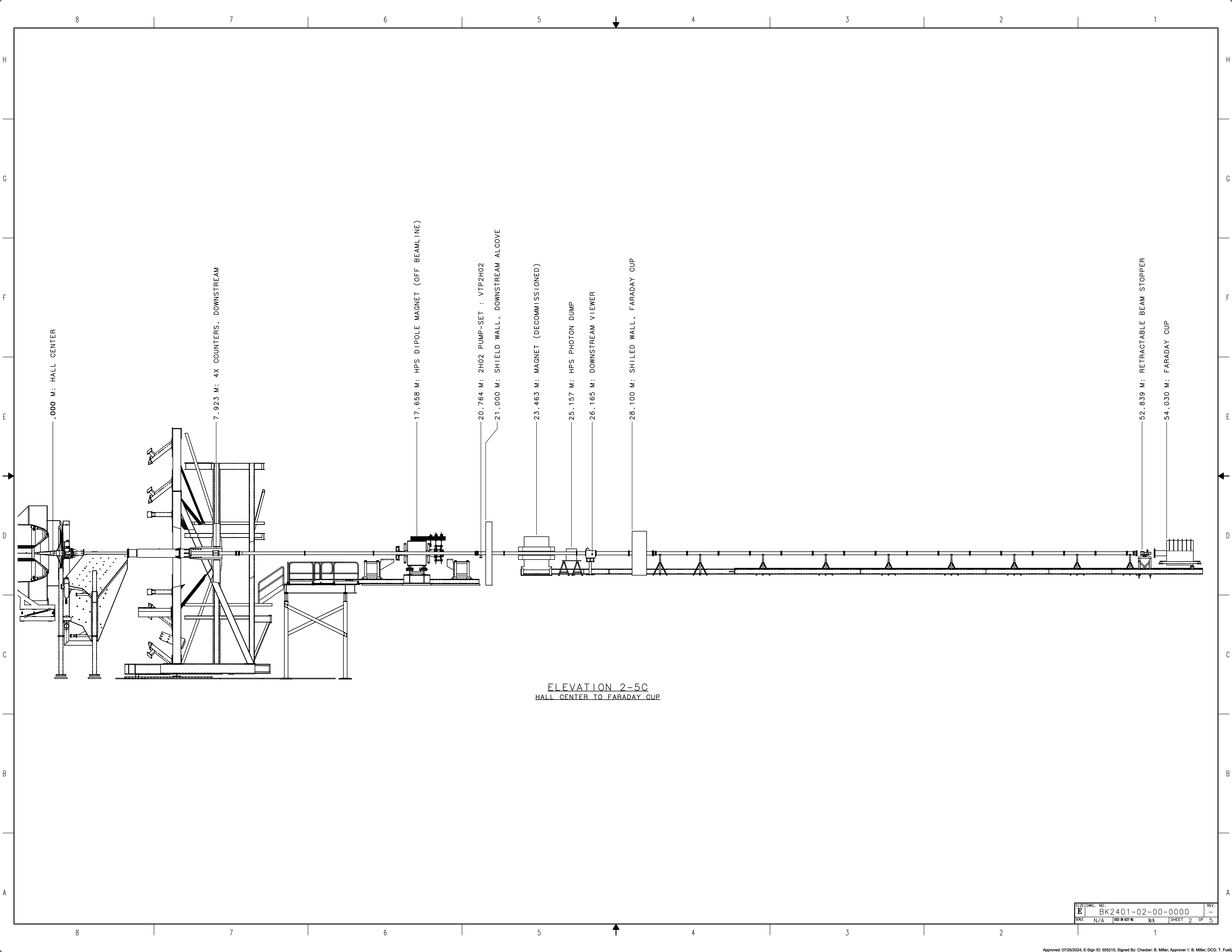
NOTES

- ELEMENTS CROSS THE ELECTRON BEAM AS READ (FROM LEFT-TO-RIGHT)
- MACHINE CENTER IS 400.0948 METERS UPSTREAM OF "HALL CENTER"
- CONTENTS:
PAGE 1: COMPONENT POSITIONING FOR REFERENCE BY COUNTING-ROOM & MCC OPERATORS
PAGE 2: COMPONENT POSITIONING FOR REFERENCE BY COUNTING-ROOM & MCC OPERATORS CONT'D
PAGE 3: COMPONENT IDENTIFICATION FOR INSTALLATION BY TECHNICAL STAFF
PAGE 4: BEAMLINE SHIELDING
PAGE 5: IDENTIFICATION OF MATERIALS IN THE BEAM
- 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
- DRAWING DEPICTS IDEAL INSTALLATION LOCATIONS FOR EQUIPMENT, REFER TO SURVEY TRANSMITTALS FOR FINAL LOCATION.



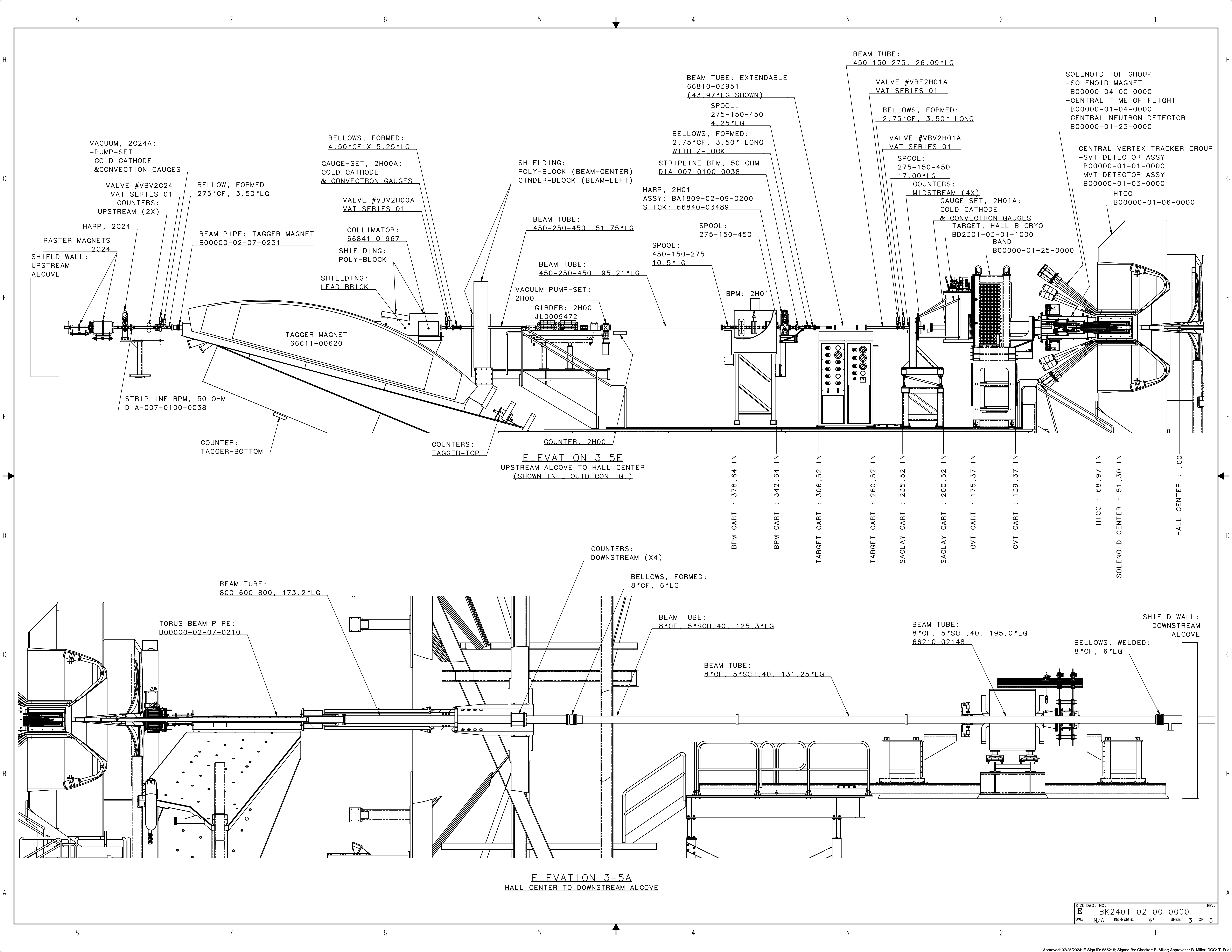
ELEVATION 1-5A
UPSTREAM ALCOVE TO DOWNSTREAM ALCOVE
(LIQUID TARGET CONFIG. ONLY)

EACH SHEET OF MULTI-SHEET DRAWINGS SHALL ALWAYS HAVE THE SAME REVISION LEVEL.		United States Department of Energy	
DIM & TOL PER ASME Y14.5 2009. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE:		Jefferson Lab Newport News Virginia	
FRACTIONS ± 1/32	DECIMAL ± 0.01	ANGLES ± 30'	SEE PARTS LIST
XX ± 0.01	XXX ± 0.05		
THIRD ANGLE PROJECTION		BK2401 HALL B, RN GRPK, 2024 02 BEAM LINE 00 INSTALLATION TEMPLATE 0000 BEAMLINE ASSEMBLY	
FINISH MACHINED SURFACES DEBUR & BREAK ALL SHARP EDGES	125 UNLESS OTHERWISE NOTED	SIZE DWG. NO. E	REV. -
DO NOT SCALE DRAWING	DATE 02/02/2024	BK2401-02-00-0000	
DRAWN CHRIS QUIRIE	SCALE N/A	REV ON ASSY NO. N/A	SHEET 1 OF 5



ELEVATION 2-5C
 HALL CENTER TO FARADAY CUP

SIZE	DWG. NO.	REV.
E	BK2401-02-00-0000	-
SCALE	ISS. OR ASSY NO.	SHEET
N/A	N/A	2 OF 5



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

BELLOWS, FORMED:
4.50*CF X 5.25*LG

BEAM TUBE: EXTENDABLE
66810-03951
(43.97*LG SHOWN)

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

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

RASTER MAGNETS
2C24

BELLOW, FORMED
275*CF, 3.50*LG

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

VALVE #VBF2H01A
VAT SERIES 01

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

SHIELD WALL:
UPSTREAM
ALCOVE

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

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

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

VALVE #VBV2H01A
VAT SERIES 01

HTCC
B00000-01-06-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

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

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

SPOOL:
275-150-450
17.00*LG

COUNTERS:
MIDSTREAM (4X)

SHIELD WALL:
UPSTREAM
ALCOVE

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

COLLIMATOR:
66841-01967

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

SPOOL:
275-150-450

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

HARP, 2C24

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

SHIELDING:
POLY-BLOCK

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

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK

VACUUM PUMP-SET:
2H00

BPM: 2H01

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

HARP, 2C24

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

VALVE #VBV2H00A
VAT SERIES 01

GIRDER: 2H00
JL0009472

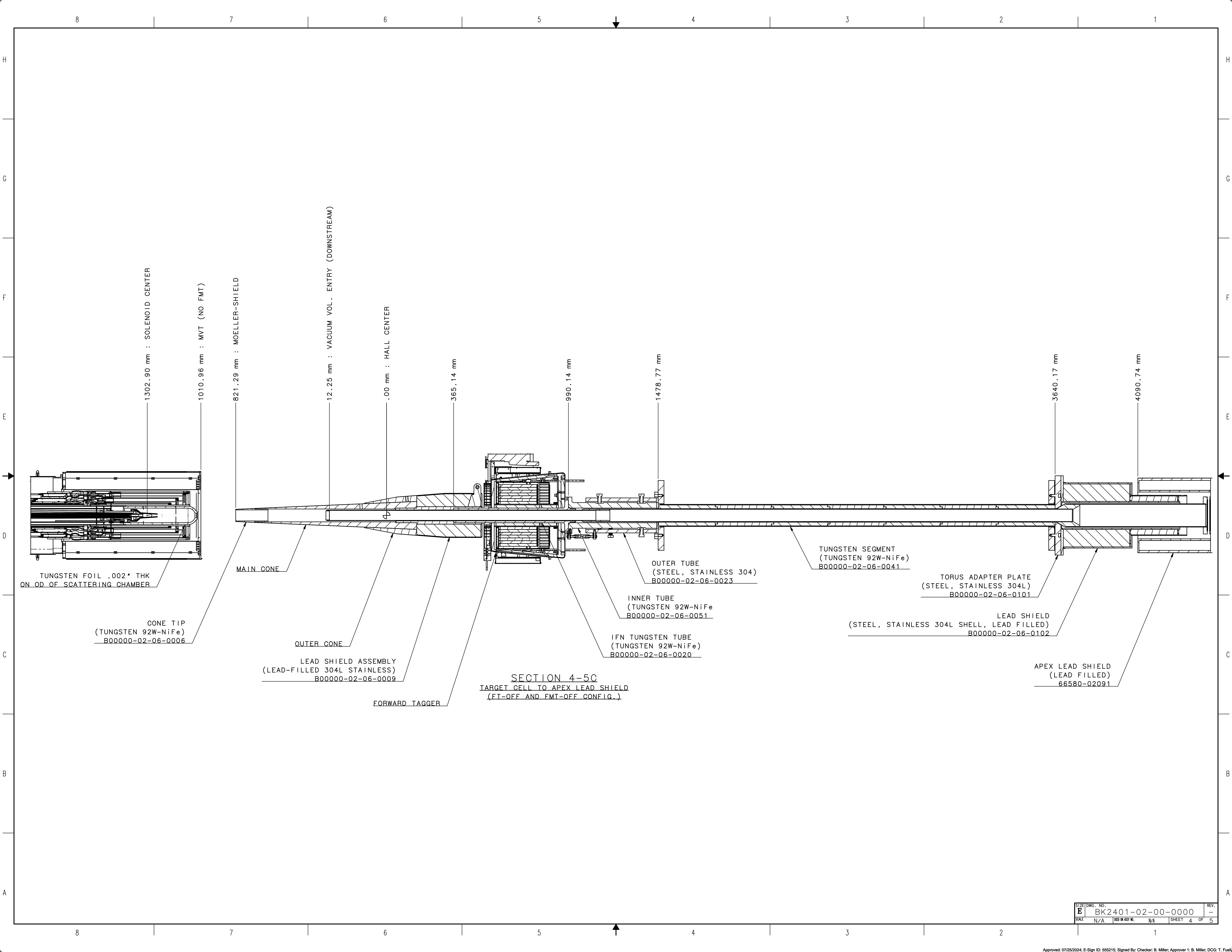
SPOOL:
450-150-275
10.5*LG

TARGET, HALL B CRYO
BD2301-03-01-1000
BAND
B00000-01-25-0000

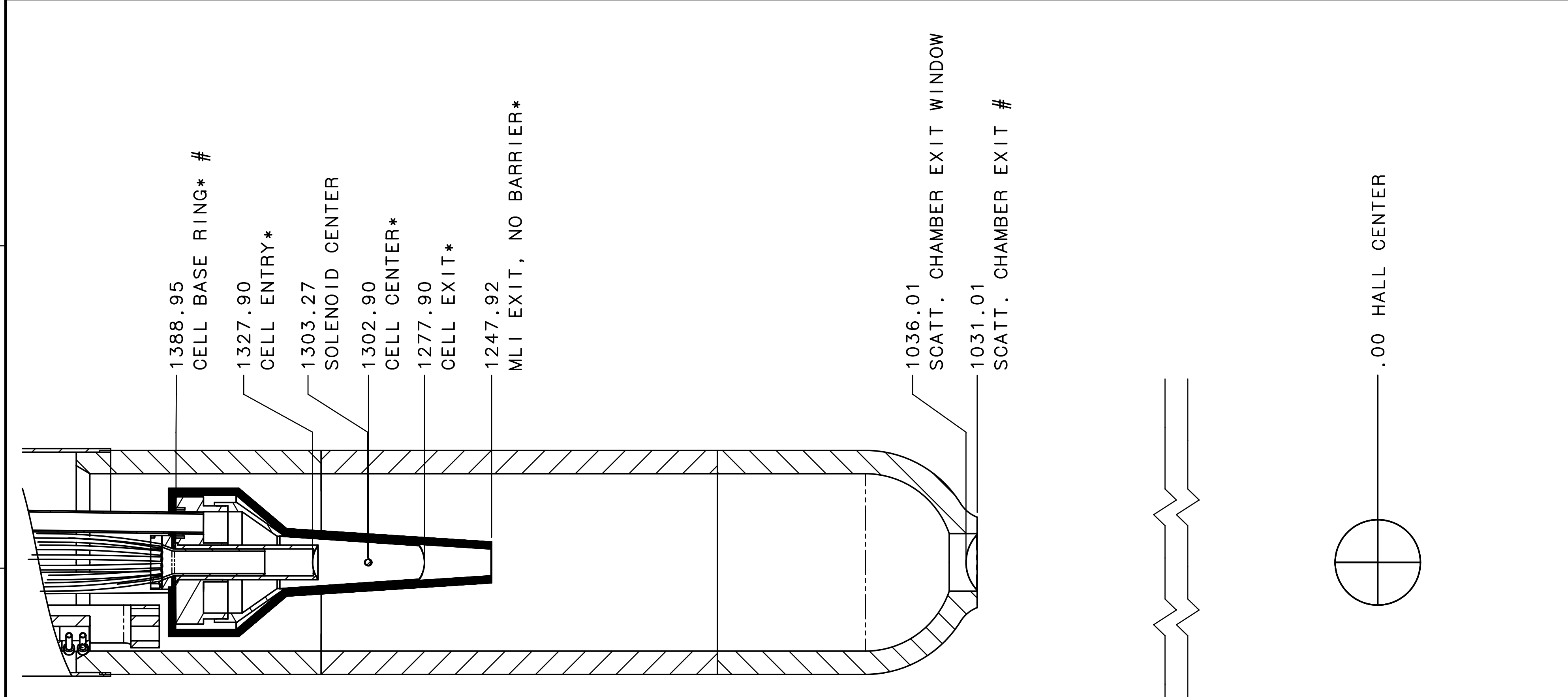
SHIELD WALL:
UPSTREAM
ALCOVE

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

SHIELDING:
LEAD BRICK



8 7 6 5 4 3 2 1



SECTION 5-7E
TARGET CELL TO HALL CENTER
(LIQUID TARGET ONLY)

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
SCATTERING CHAMBER EXIT	B00000-03-01-0300	ALUMINUM	50um
VACUUM VOL. ENTRY (DOWNSTREAM)	B00000-02-07-0210	ALUMINUM	75um

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

LOCATIONS DESIGNATED WITH "3" WERE DETERMINED IAW SURVEY TRANSMITTAL B2094.



A B C D E F G H

8 7 6 5 4 3 2 1

SIZE	DWG. NO.	REV.
E	BK2401-02-00-0000	-
SCALE	ISS. OR ASSY NO.	SHEET
N/A	N/A	5 OF 5