

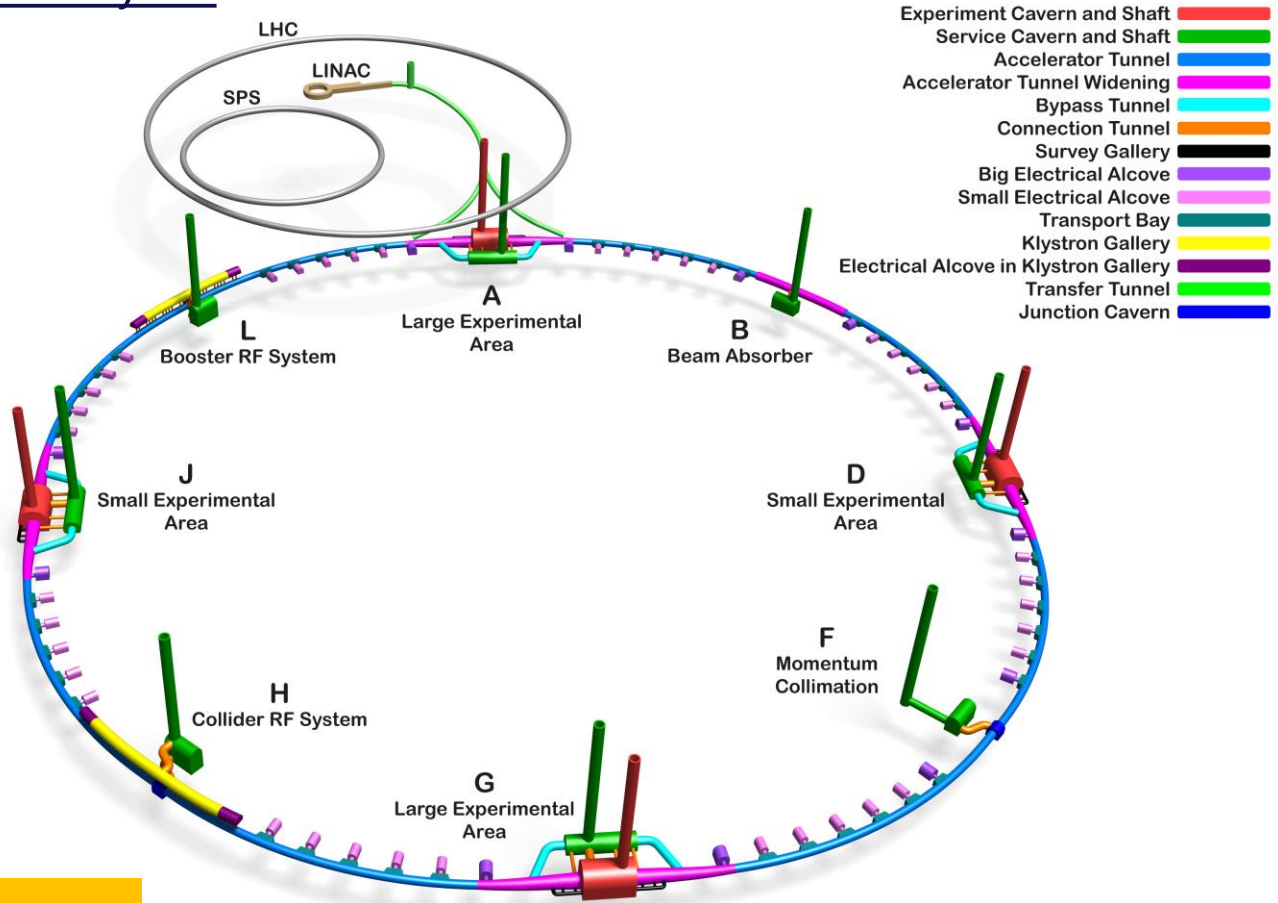
# 3D INTEGRATION MODELS FOR THE EXPERIMENTAL AREAS

FCC-ee Underground Structure Overview

Integration study of Underground structure at point A

Integration study of Underground structure at point D

# FCC-ee Schematic 3D layout

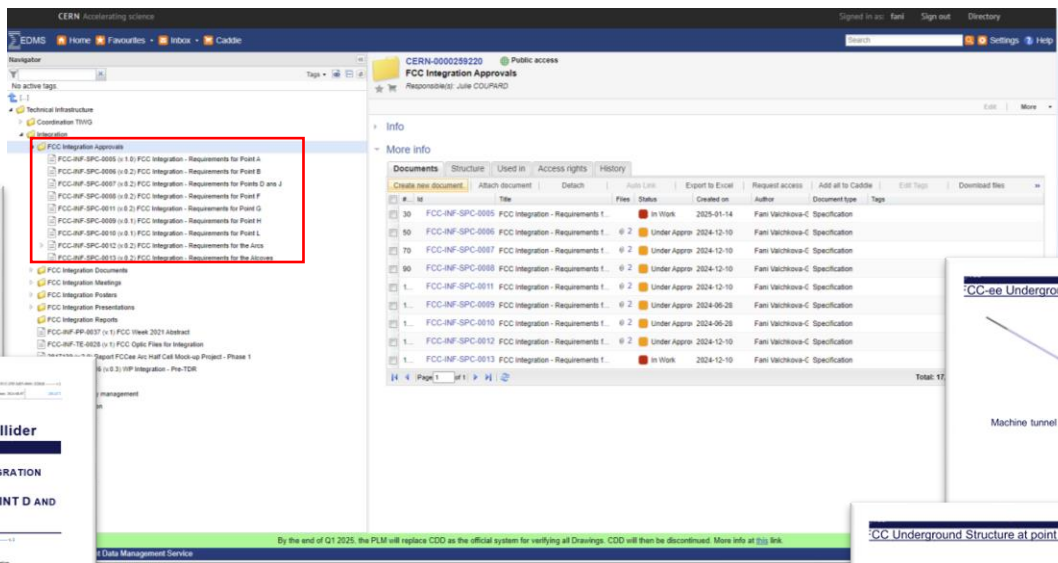
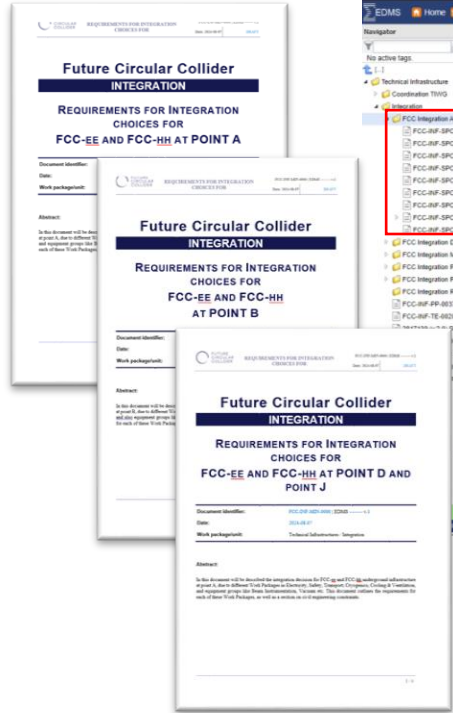


Courtesy A. Navascues Cornago

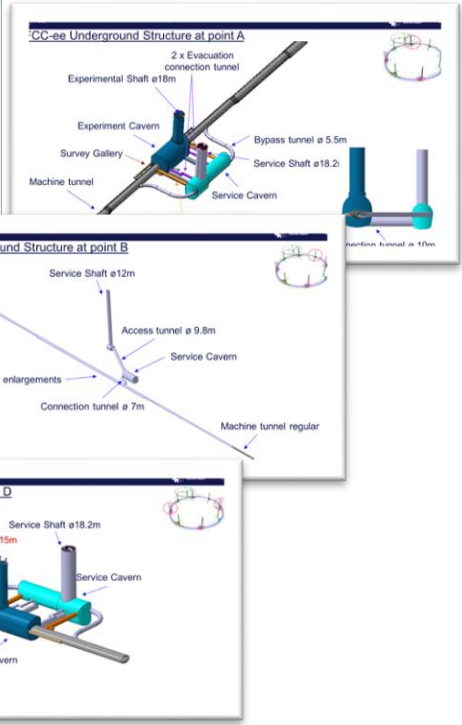
[ Not to scale ]

# Integration documents for Feasibility Report

## Word documents:

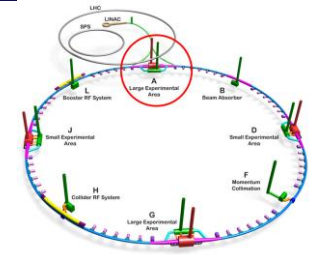
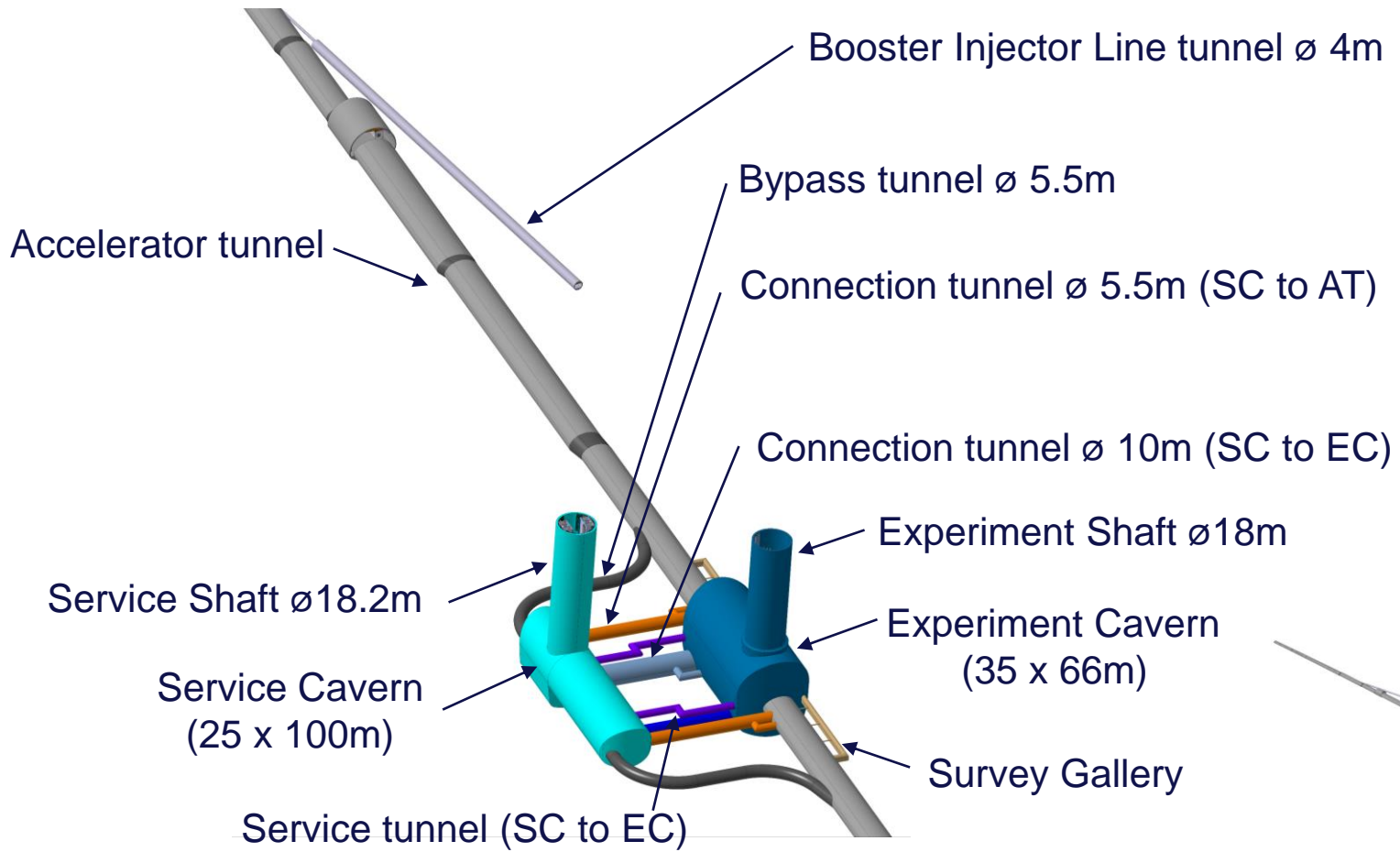


## PowerPoint documents:

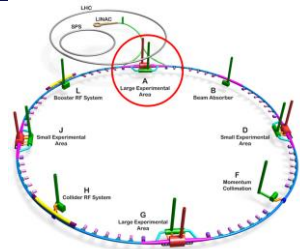


FCC Integration Approvals | Project CERN-0000259220

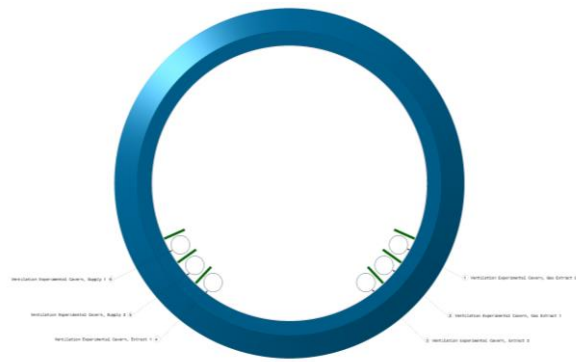
# FCC-ee Underground Structure at point A



# FCC-ee Underground Structure at point A

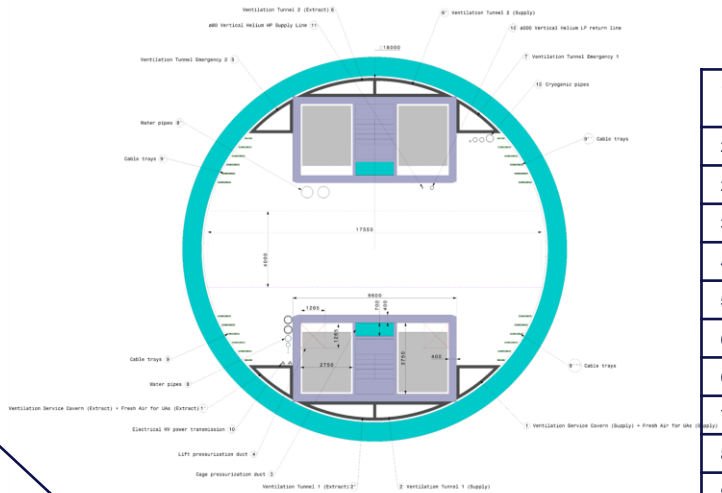


## Experiment Shaft ø18m

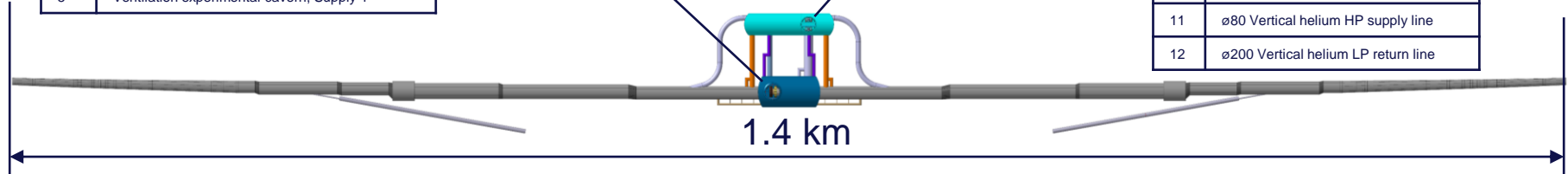


1	Ventilation experimental cavern, Gas extraction 2
2	Ventilation experimental cavern, Gas extraction 1
3	Ventilation experimental cavern, Extraction 2
3	Ventilation experimental cavern, Extraction 1
4	Ventilation experimental cavern, Supply 2
5	Ventilation experimental cavern, Supply 1

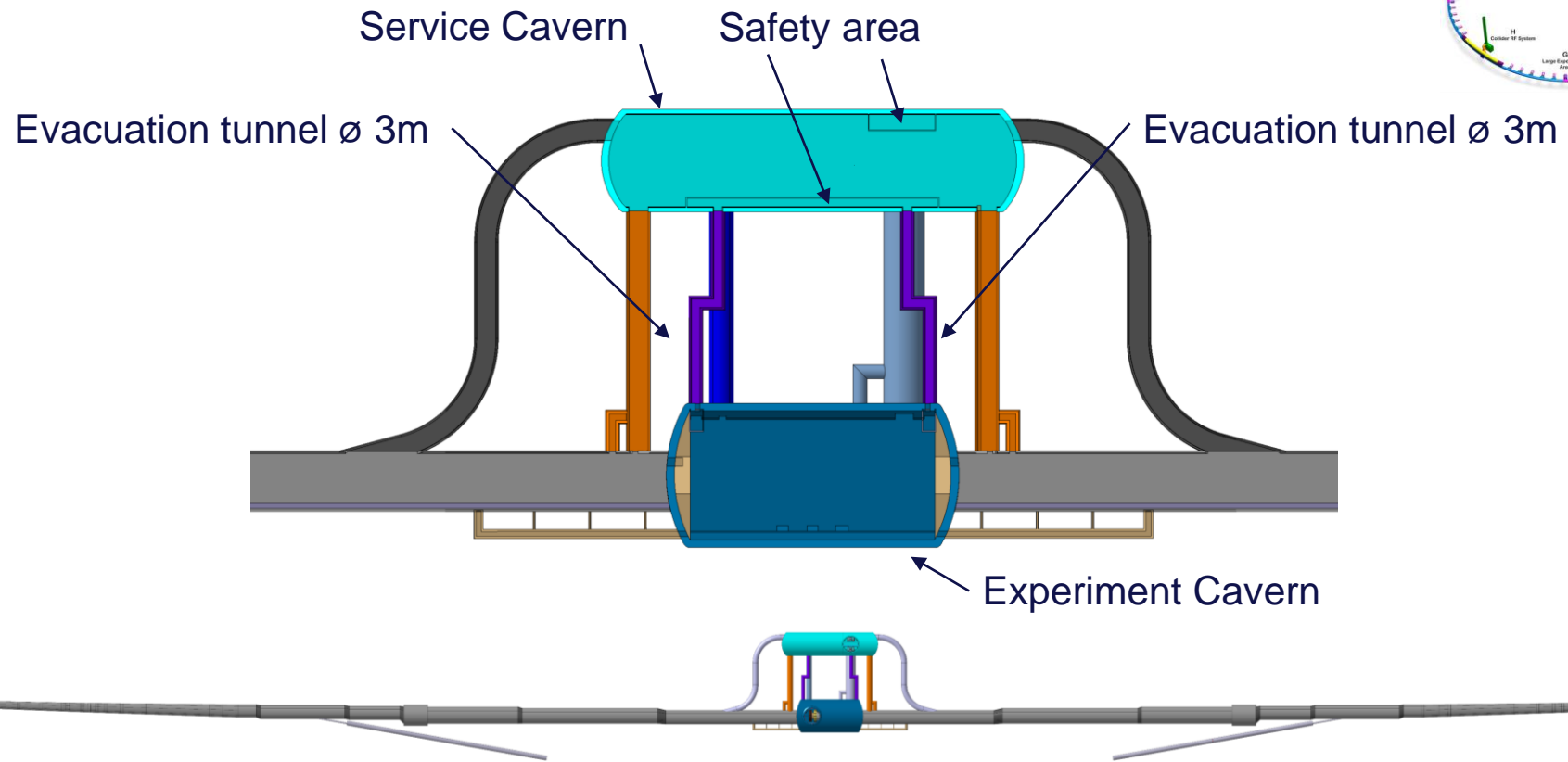
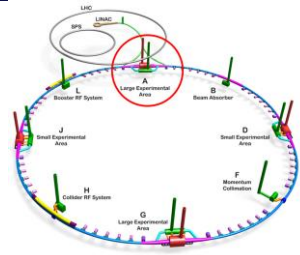
## Service Shaft ø18m



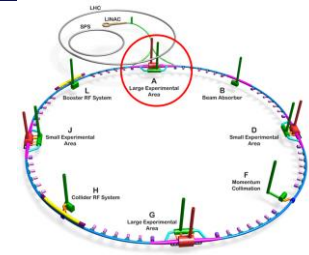
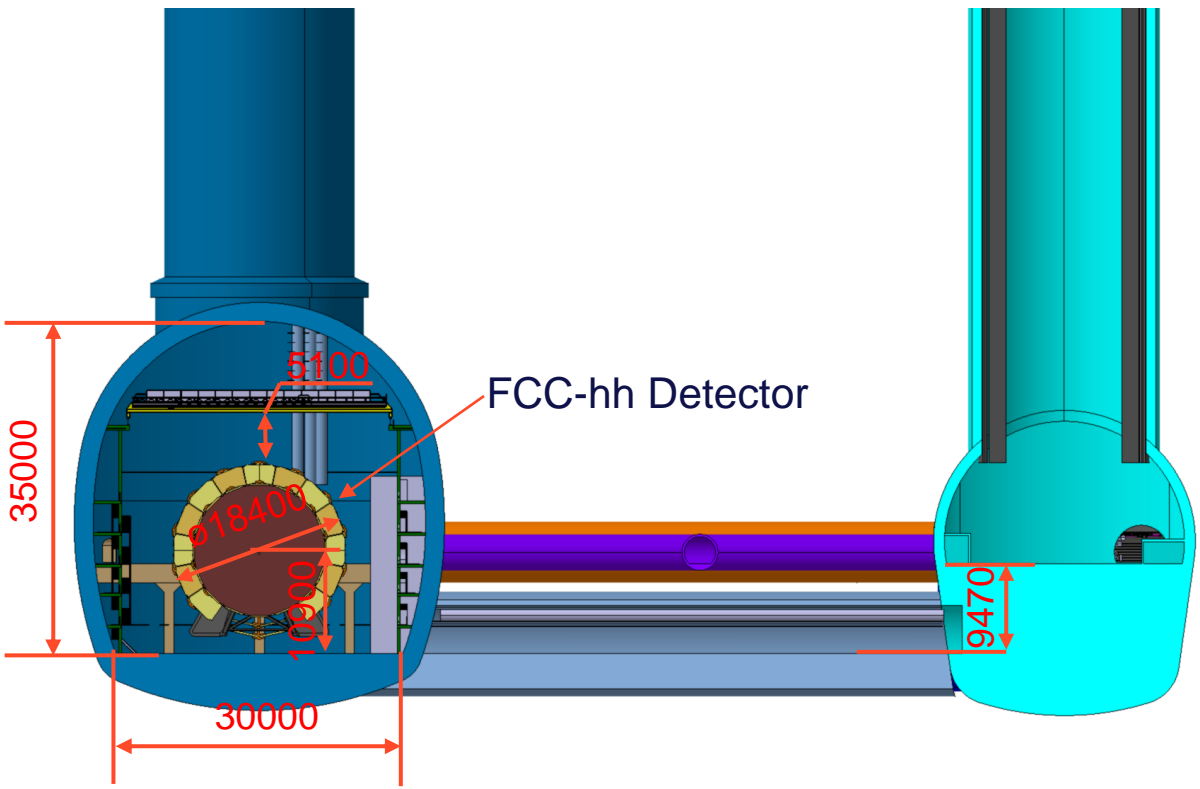
1	Ventilation service cavern (Supply)+Fresh air for UAs (Supply)
2	Ventilation tunnel 1 (Supply)
2'	Ventilation tunnel 1 (Extraction)
3	Cage pressurization duct
4	Lift pressurization duct
5	Ventilation tunnel emergency
6	Ventilation tunnel 2 (Extraction)
6'	Ventilation tunnel 2 (Supply)
7	Ventilation tunnel Emergency 1
8	Water pipes
9	Cable trays
9'	Cable trays
10	Electrical HV power transmission
11	ø80 Vertical helium HP supply line
12	ø200 Vertical helium LP return line



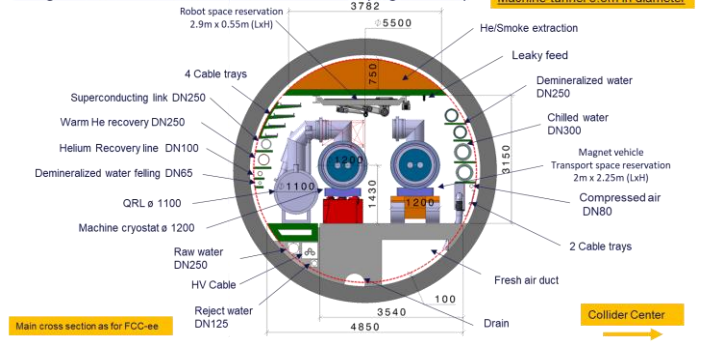
# FCC-ee Underground Structure at point A



# FCC-ee Underground Structure at point A

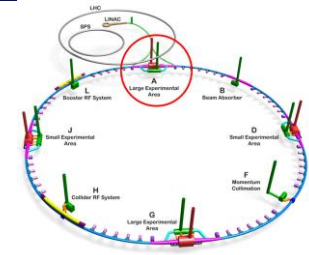
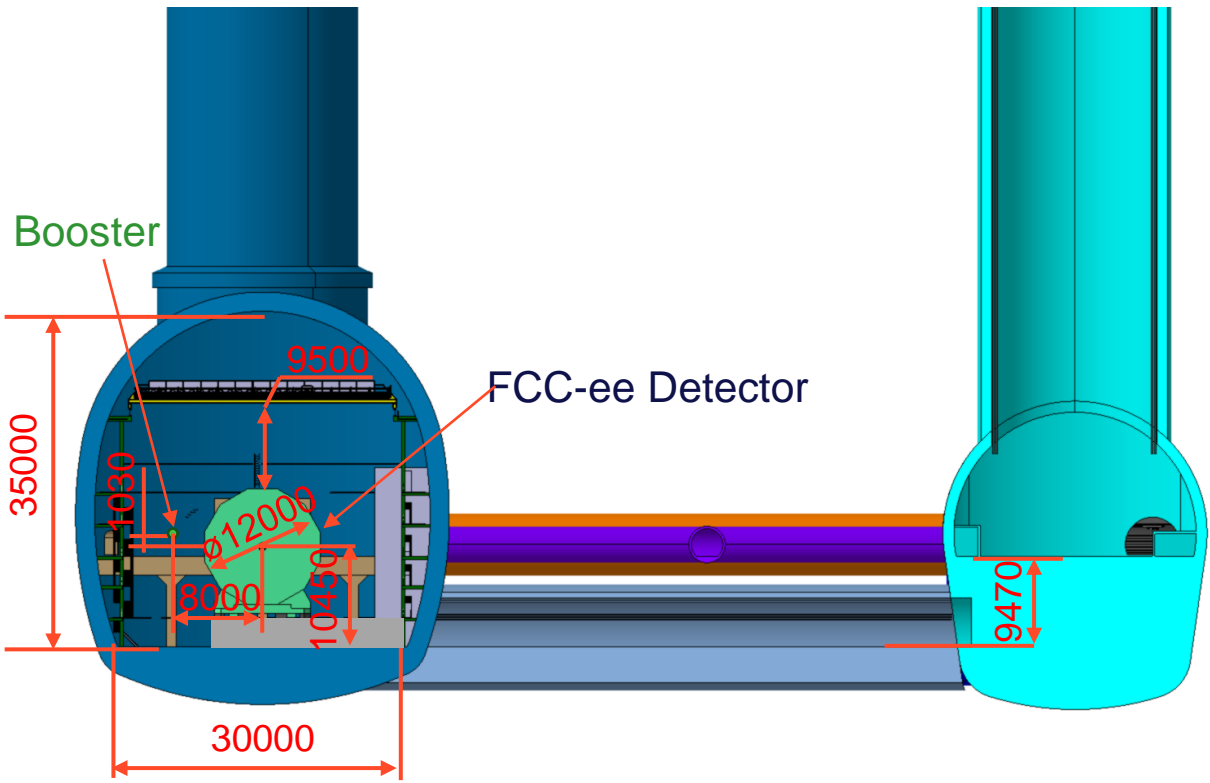


## Integration of FCC-hh machine elements (regular arc)

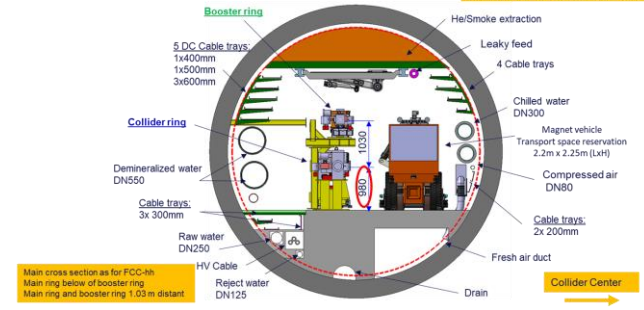




# FCC-ee Underground Structure at point A

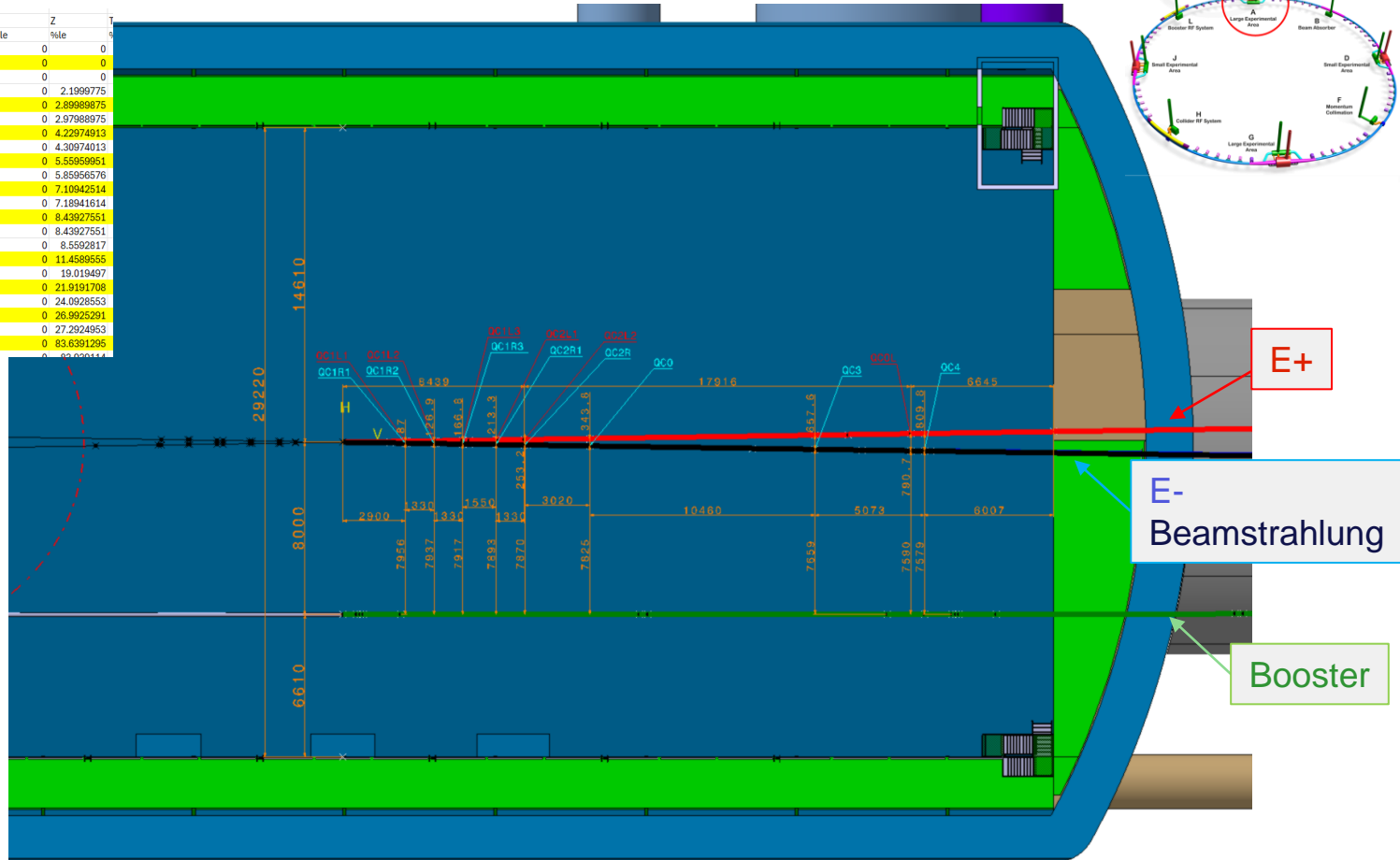


Integration of FCC-ee machine elements (regular arc) Machine tunnel 5.5m in diameter

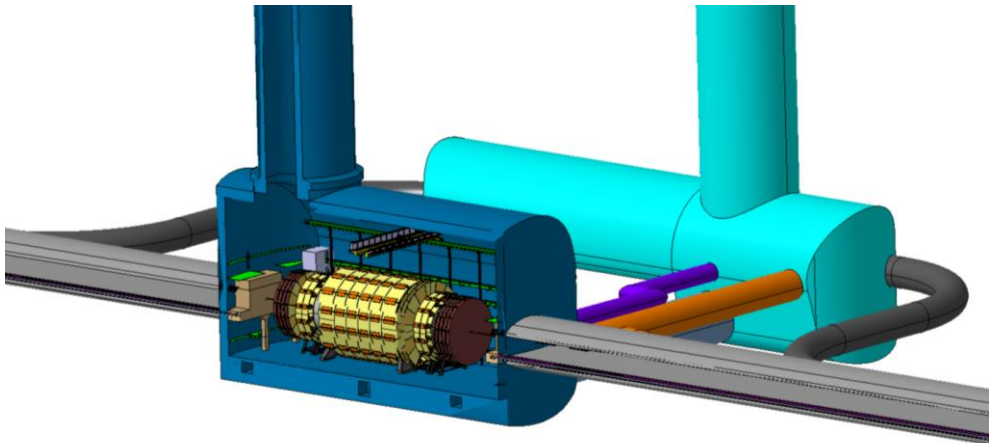
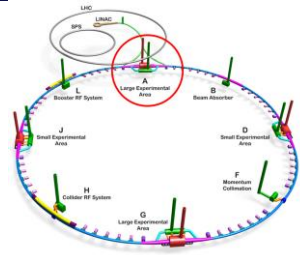


# FCC-ee Underground Structure at point A

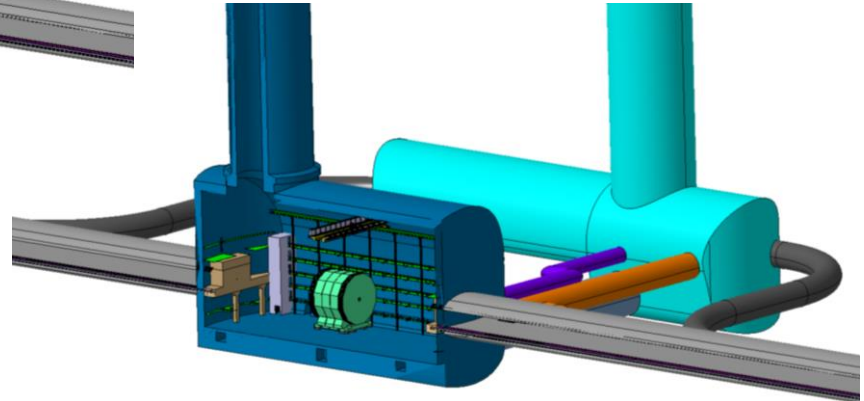
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%s	%s	%le	%le	%le	%le	%le	%le
FCCEE_P_RINC	MARKER	0	0	0	0	0	0
IP.1	MARKER	0	0	0	0	0	0
IPA	MARKER	0	0	0	0	0	0
DRIFT_0	DRIFT	2.20022502	2.20022502	0	0.03300214	0	2.1999775
QC1R1.1	QUADRUPOLE	2.99022502	0.7	0	0.84350174	0	2.89898975
DRIFT_1	DRIFT	2.99022502	0.08	0	0.04470117	0	2.97888975
QC1R2.1	QUADRUPOLE	4.23022502	1.25	0	0.063451	0	4.22974913
DRIFT_2	DRIFT	4.31022502	0.08	0	0.06465095	0	4.30974013
QC1R3.1	QUADRUPOLE	5.56022502	1.25	0	0.08340025	0	5.55895951
DRIFT_3	DRIFT	5.86022502	0.3	0	0.08790008	0	5.85965676
QC2R1.1	QUADRUPOLE	7.11022502	1.25	0	0.10664938	0	7.10942514
DRIFT_4	DRIFT	7.19022502	0.08	0	0.10784933	0	7.18941614
QC2R2.1	QUADRUPOLE	8.44022502	1.25	0	0.12659863	0	8.43927551
PQC2R.1	MARKER	8.44022502	0	0	0.12659863	0	8.43927551
DRIFT_5	DRIFT	8.56024471	0.12001969	0	0.12839886	0	8.5592817
QC0.1	QUADRUPOLE	11.4602447	2.9	0	0.17189722	0	11.4589555
DRIFT_6	DRIFT	19.0216369	7.56139222	0	0.28531385	0	19.019497
QC3.1	QUADRUPOLE	21.9216369	2.9	0	0.32881222	0	21.9191708
DRIFT_7	DRIFT	24.095566	2.17392908	0	0.36141994	0	24.0928553
QC4.1	QUADRUPOLE	26.995566	2.9	0	0.40491831	0	26.9925291
DRIFT_8	DRIFT	27.295566	0.3	0	0.40941814	0	27.2924953
BC1.1	RBEND	83.6467184	98.3511524	0.00482702	1.11886191	0	83.6391295



# FCC-ee Underground Structure at point A

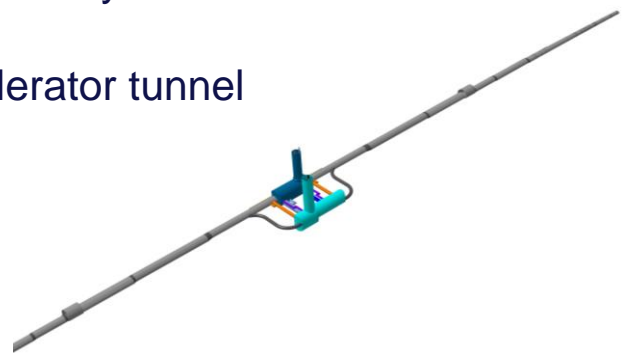
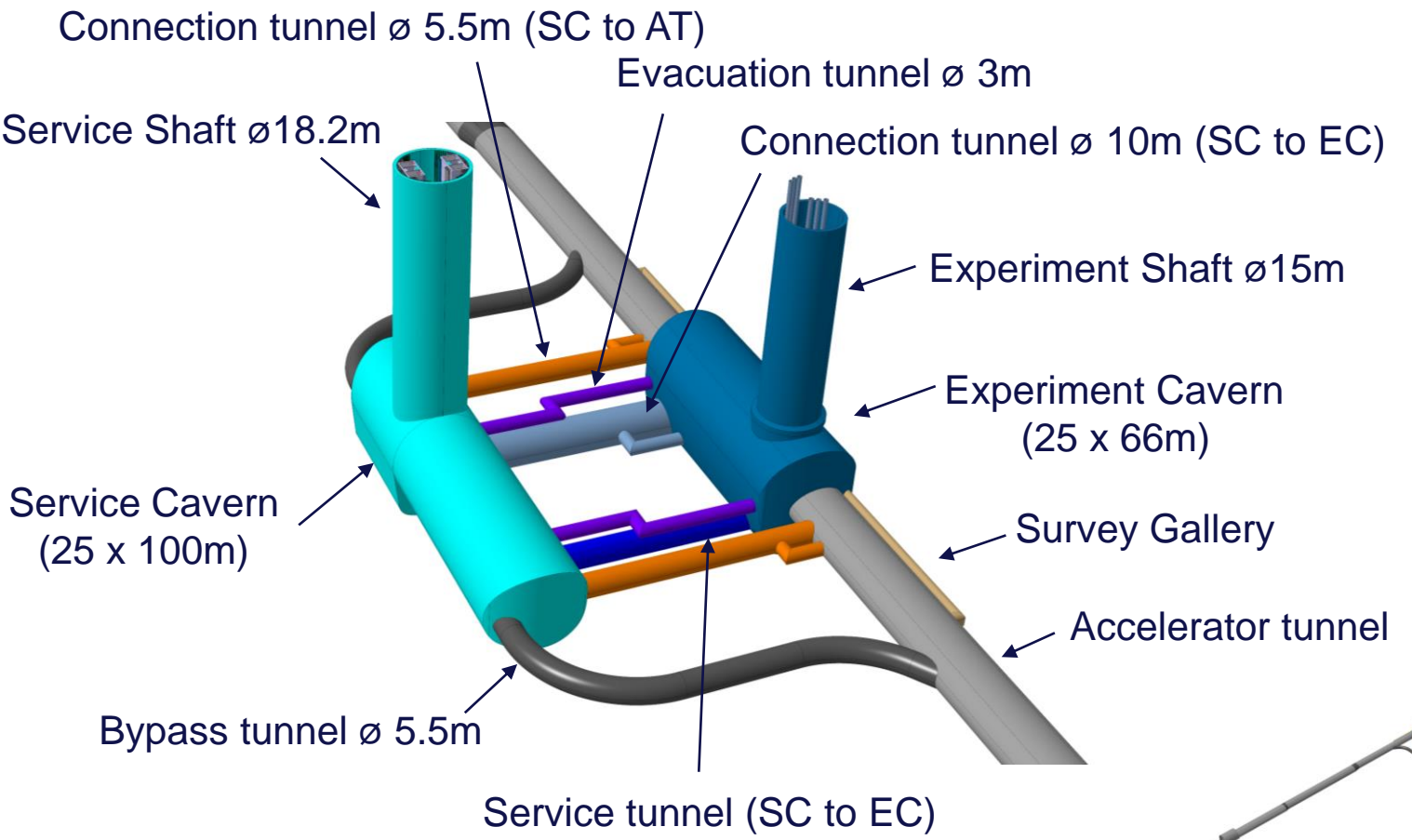
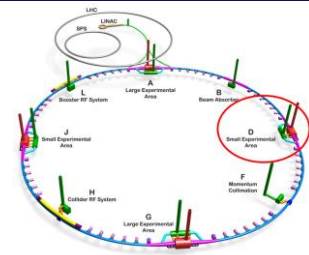


FCC-hh



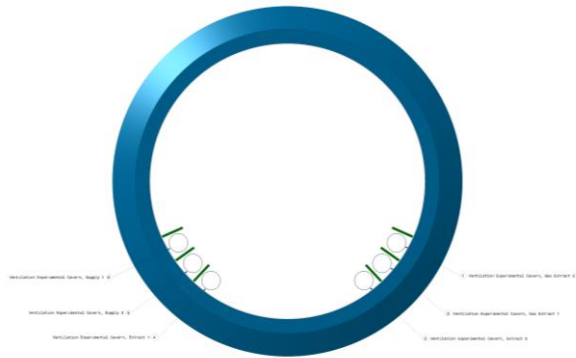
FCC-ee

# FCC Underground Structure at point D



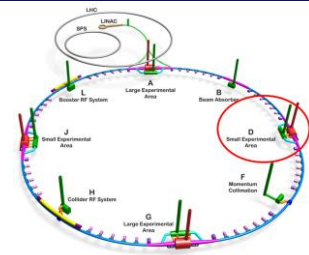
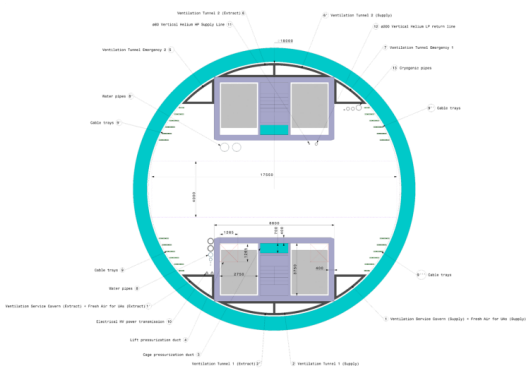
# FCC Underground Structure at D

## Experimental Shaft ø15m

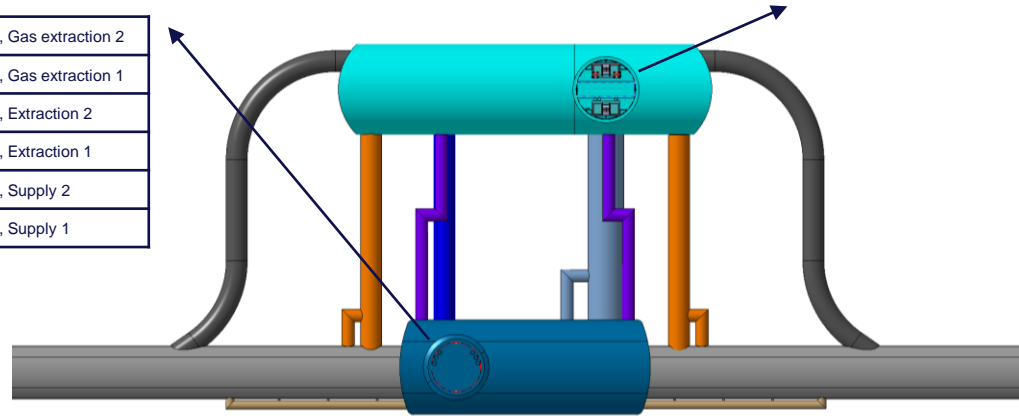


1	Ventilation experimental cavern, Gas extraction 2
2	Ventilation experimental cavern, Gas extraction 1
3	Ventilation experimental cavern, Extraction 2
3	Ventilation experimental cavern, Extraction 1
4	Ventilation experimental cavern, Supply 2
5	Ventilation experimental cavern, Supply 1

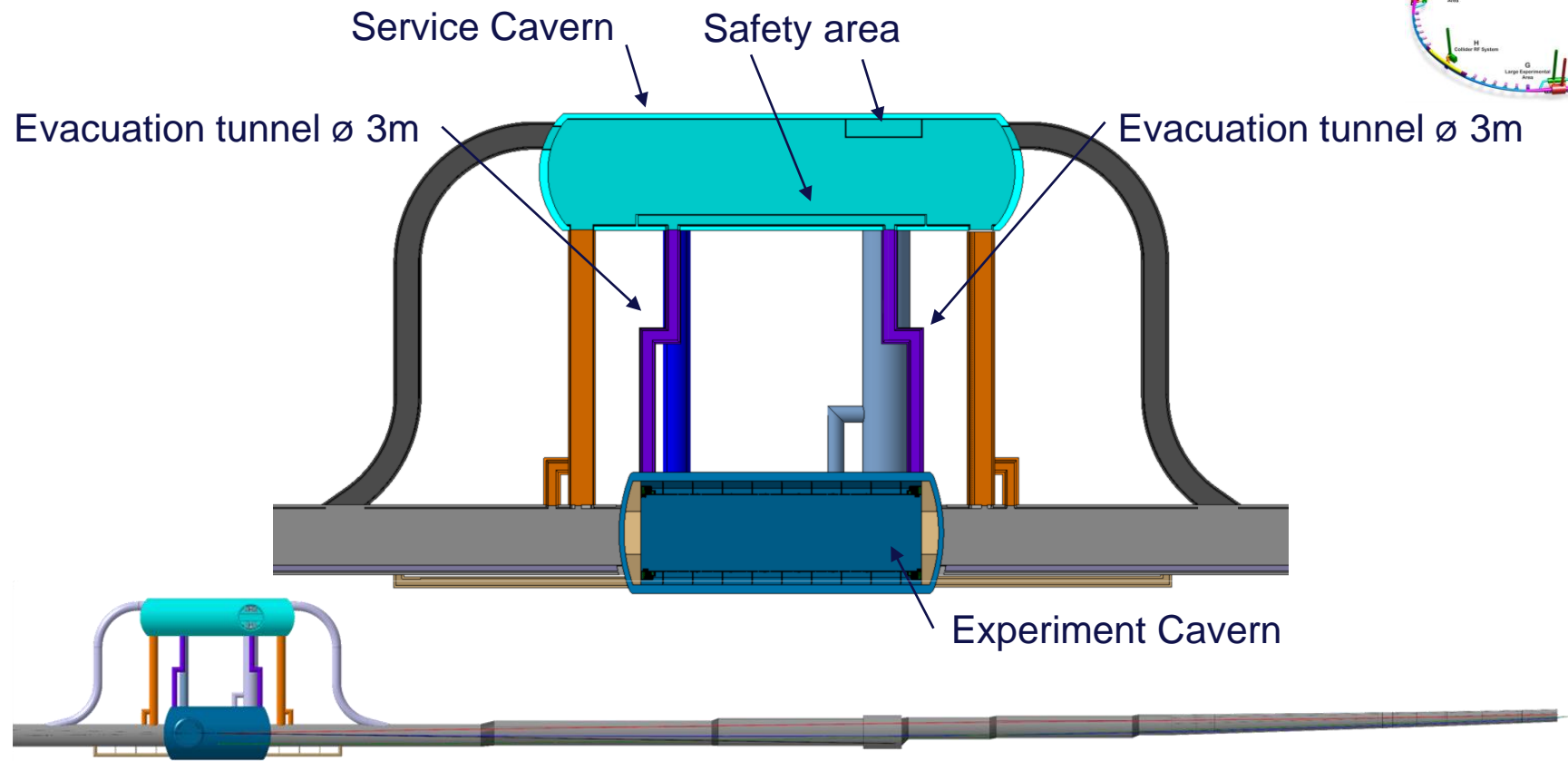
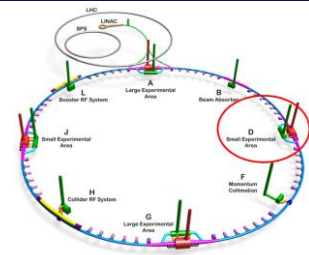
## Service Shaft ø18m



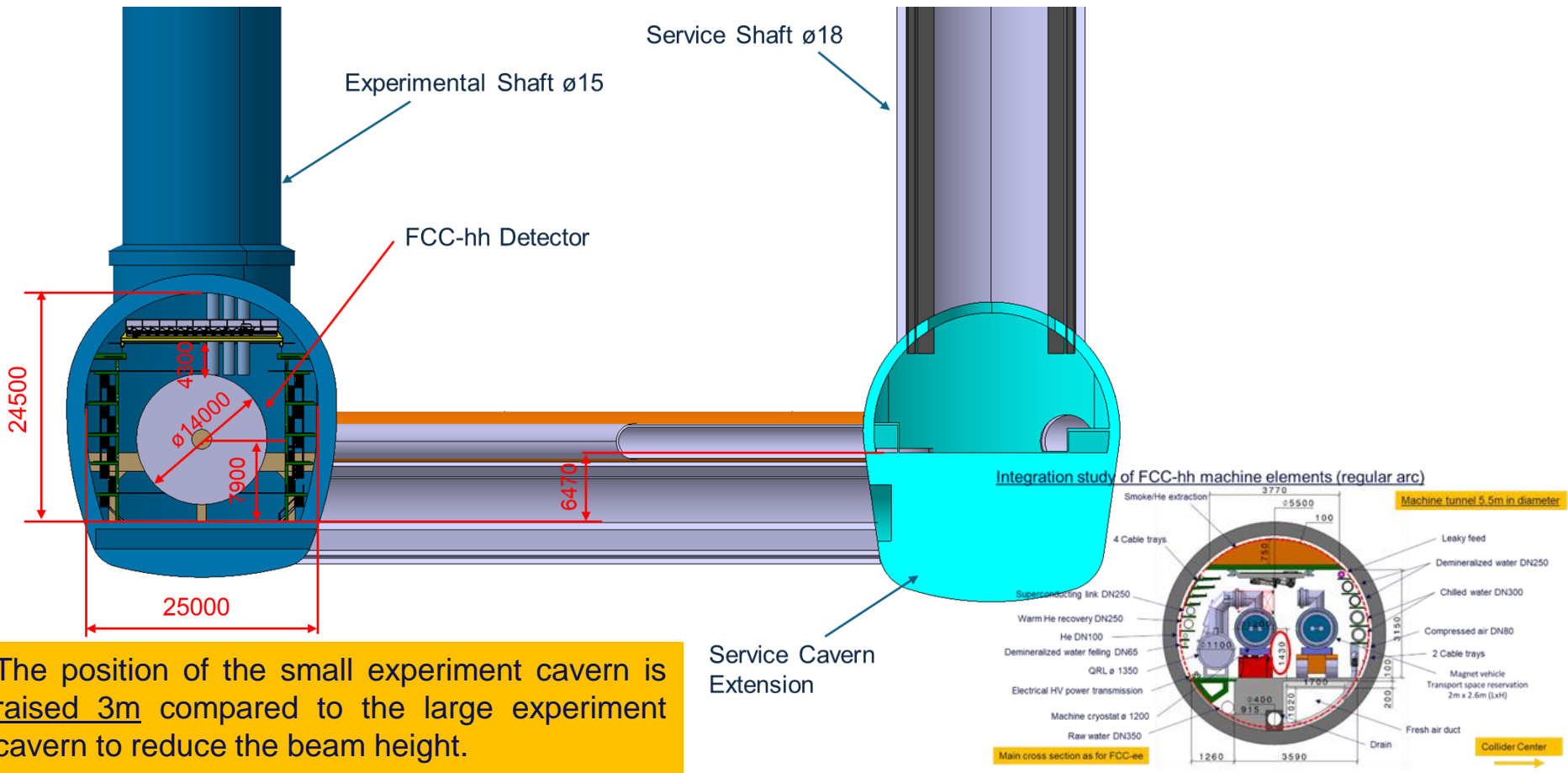
1	Ventilation service cavern (Supply)+Fresh air for UAs (Supply)
2	Ventilation tunnel 1 (Supply)
2'	Ventilation tunnel 1 (Extraction)
3	Cage pressurization duct
4	Lift pressurization duct
5	Ventilation tunnel emergency
6	Ventilation tunnel 2 (Extraction)
6'	Ventilation tunnel 2 (Supply)
7	Ventilation tunnel Emergency 1
8	Water pipes
9	Cable trays
9'	Cable trays
10	Electrical HV power transmission
11	ø80 Vertical helium HP supply line
12	ø120 Vertical helium LP return line



# FCC-ee Underground Structure at D and point J

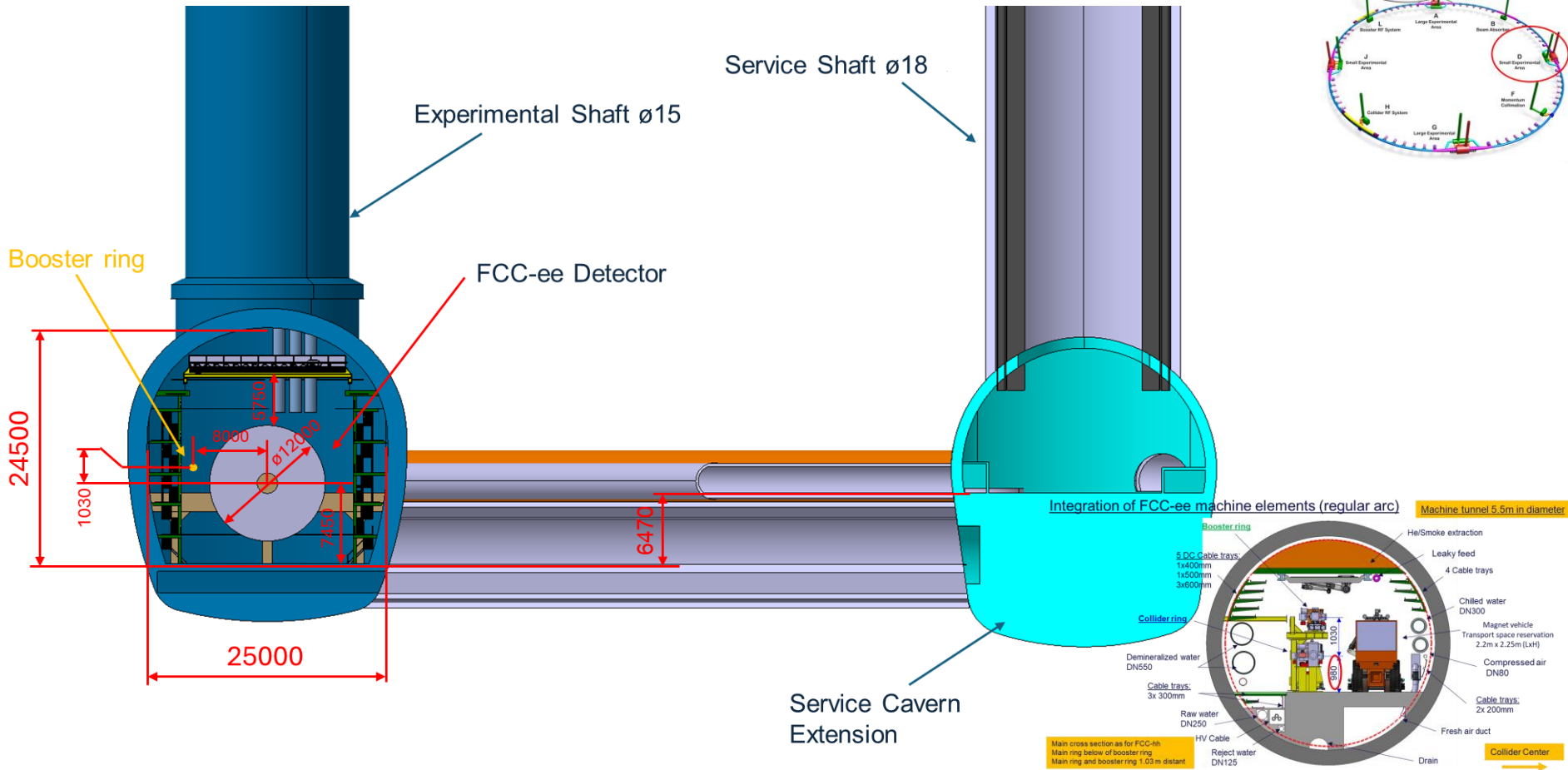


# FCC-hh Underground Structure at D and point J



The position of the small experiment cavern is raised 3m compared to the large experiment cavern to reduce the beam height.

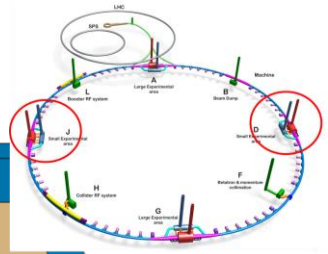
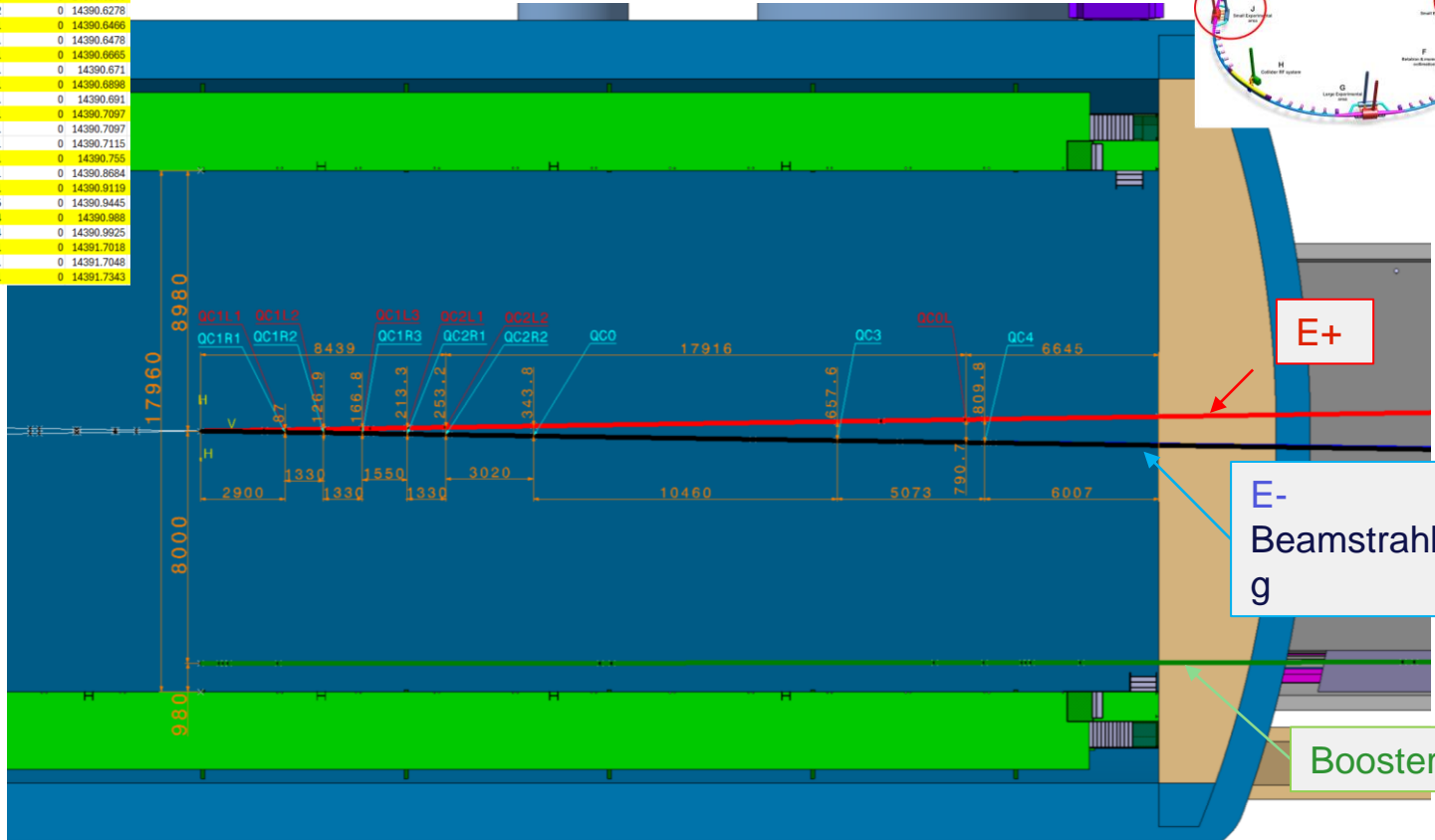
# FCC-ee Underground Structure at point D and point J



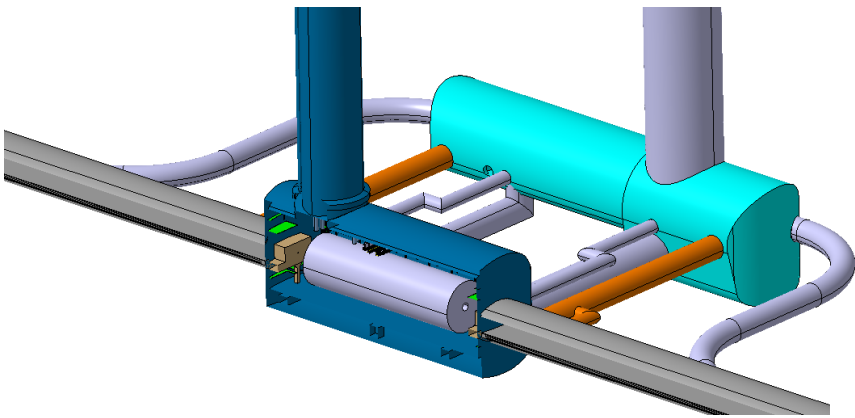
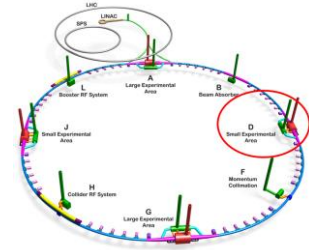


# FCC Underground Structure at point D

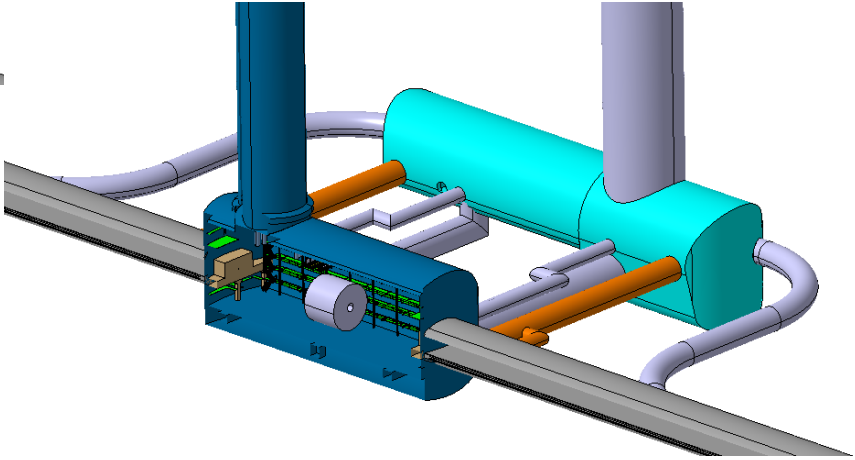
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IP.3	MARKER	22664.6863	0	0	-14390.582	0	14390.5831
IPD	MARKER	22664.6863	0	0	-14390.582	0	14390.5831
DRIFT_1395	DRIFT	22666.8866	2.20022502	0	-14392.782	0	14390.6161
QC1R1.2	QUADRUPOLE	22667.5866	0.7	0	-14393.482	0	14390.6266
DRIFT_1396	DRIFT	22667.6666	0.08	0	-14393.562	0	14390.6278
QC1R2.2	QUADRUPOLE	22668.9166	1.25	0	-14394.811	0	14390.6466
DRIFT_1397	DRIFT	22668.9966	0.08	0	-14394.891	0	14390.6478
QC1R3.2	QUADRUPOLE	22670.2466	1.25	0	-14396.141	0	14390.6666
DRIFT_1398	DRIFT	22670.5466	0.3	0	-14396.441	0	14390.671
QC2R1.2	QUADRUPOLE	22671.7966	1.25	0	-14397.691	0	14390.6898
DRIFT_1399	DRIFT	22671.8766	0.08	0	-14397.771	0	14390.691
QC2R2.2	QUADRUPOLE	22673.1266	1.25	0	-14399.021	0	14390.7097
PQC2RE.2	MARKER	22673.1266	0	0	-14399.021	0	14390.7097
DRIFT_1400	DRIFT	22673.2466	0.12001969	0	-14399.141	0	14390.7115
QC0.2	QUADRUPOLE	22676.1466	2.9	0	-14402.041	0	14390.755
DRIFT_1401	DRIFT	22683.708	7.56138222	0	-14409.601	0	14390.8684
QC3.2	QUADRUPOLE	22686.908	2.8	0	-14412.591	0	14390.9119
DRIFT_1402	DRIFT	22688.7819	2.17392908	0	-14414.675	0	14390.9445
QC4.2	QUADRUPOLE	22691.6819	2.8	0	-14417.574	0	14390.988
DRIFT_1403	DRIFT	22691.9819	0.3	0	-14417.874	0	14390.9925
BC1.2	RBEND	22748.333	56.3511524	0.00482702	-14474.221	0	14391.7018
DRIFT_1404	DRIFT	22748.633	0.3	0	-14474.521	0	14391.7048
QC5.2	QUADRUPOLE	22751.833	2.9	0	-14477.421	0	14391.7343



# FCC Underground Structure at D and point J



FCC-hh



FCC-ee



Thank you  
for your attention.