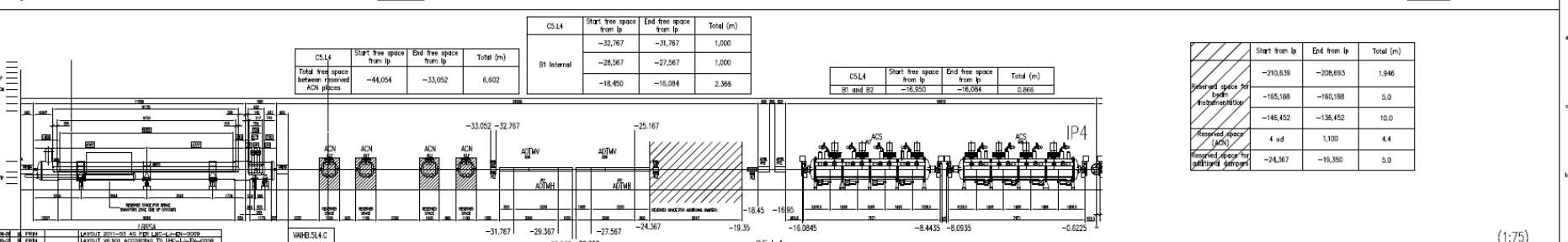
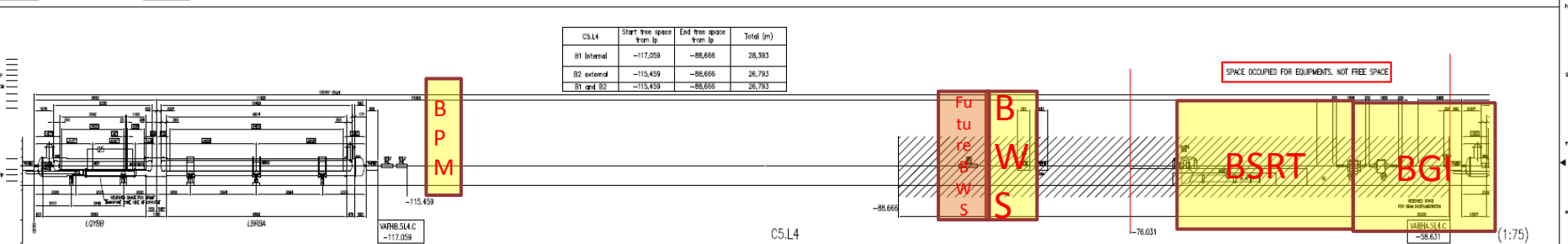
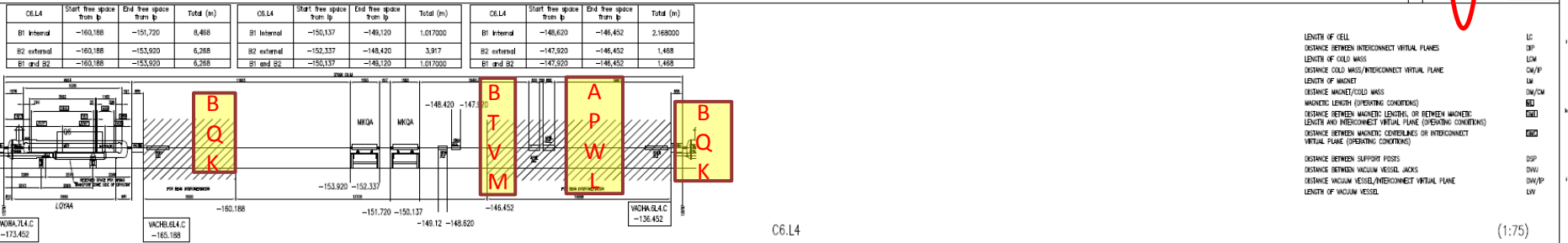
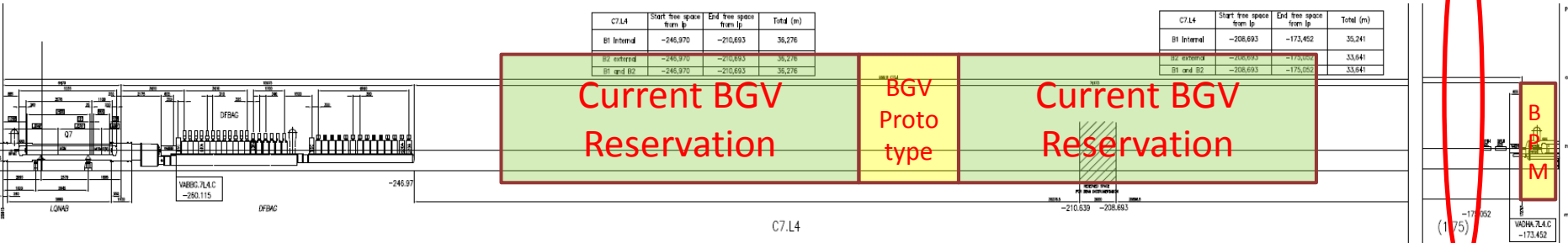


LSS4 BI Summary:

- 1) Currently the BI "zone" basically starts after D3 towards the arc on both sides, with only BI & VSC & ABT (kickers for tune/aperture measurement) equipment in the warm regions.
 - The RF "zone" extends from D3L to D3R, with only RF & VSC equipment in these regions apart from BPMs
- 2) Between D3 and D4 L & R:
 - BGI – H & V units with compensation magnets either side and a new pick-up that's currently being added. This needs to stay for HL-LHC.
 - BSRT – this also remains in place for HL-LHC
 - Wire scanners (these are in "to be recuperated" in your drawing) but also need to stay along with their sectorisation valves. There will be more of these in the future as we're developing a "fast wire scanner" to complement the current "slow wire scanners". I've added this in orange as a future request.
 - 2 BPL (L) or BQS (R) next the D4 which also remain
- 3) Between Q5 and Q6 L:
 - BQK – small 1m kicker. Space could possibly be re-used for stochastic cooling PU.
 - APWL – 2 wall current monitors. Could be moved elsewhere (no constraints on beta functions).
 - BTVM – matching monitors. Remain for HL-LHC
 - MKQA – Tune/aperture kickers. Remain for HL-LHC
 - BQK – small 1m kicker. Space could possibly be re-used for stochastic cooling PU.
- 4) Between Q5 and Q6 R:
 - BPM# - different types of BPM for special measurements.
 - BQS – schottky monitor
 - BPLX – BPM for tune
 - BCTs – beam current transformers for intensity measurements
 - BPM#
 - BQS
- 5) Between Q6 and Q7 L:
 - 44m space reservation for final HL-LHC BGV
 - 4m for the BGV prototype (Beam 2 only)
- 6) Between Q6 and Q7 R:
 - BQS & BPM
 - 44m space reservation for final HL-LHC BGV

IR 4 L

Note the cut in the layout!



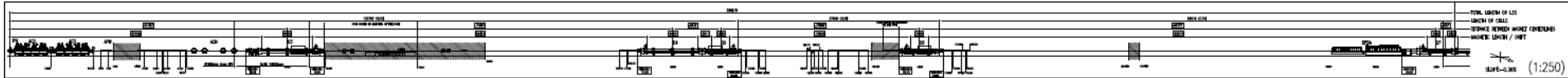
	Start from Ip	End from Ip	Total (m)
Reserved space for equipment	-210,639	-208,693	1,946
Reserved space for equipment	-165,188	-160,188	5.0
Reserved space for equipment	-146,452	-136,452	10.0
Reserved space for equipment	4 and	1,100	4.4
Reserved space for equipment	-24,367	-19,350	5.0

ALL DIMENSIONS ARE AT 20K, EXCEPT THE MAGNETIC LENGTHS AND DISTANCES BETWEEN THEM, WHICH ARE AT OPERATING CONDITIONS.

IR 4 LEFT CELLS C5.L4 TO C7.L4 LAYOUT OF LSS

IR 4 LONG STRAIGHT SECTION MECHANICAL LAYOUT

IR 4 R

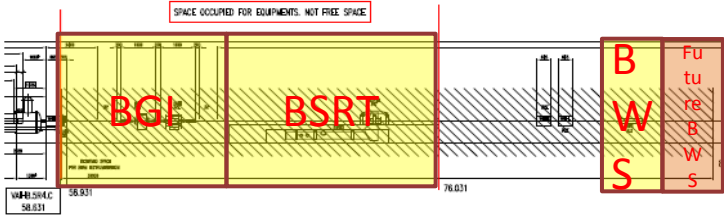
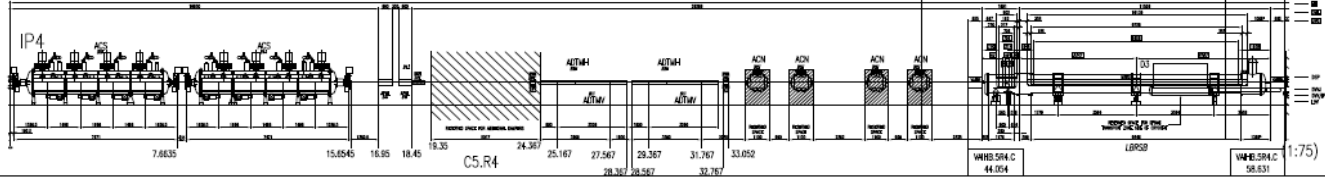


	Start from Ip	End from Ip	Total (m)
Reserved space for IP4	58,631	86,666	28,04
Reserved space for IP4 (ACV)	160,788	165,788	5,00
Reserved space (ACV)	208,743	210,743	2,00
Reserved space for IP4 (ACV)	4	1,100	4,40
Reserved space for IP4 (ACV)	19,300	24,367	5,02

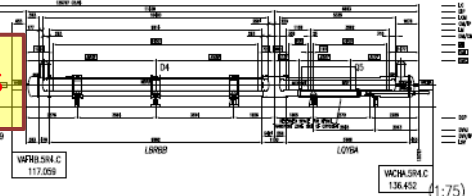
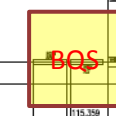
CS.R4	Start free space from Ip	End free space from Ip	Total (m)
B1 internal	15,854	16,950	1,096
B2 external	18,450	19,350	0,900
B1 and B2	15,854	16,950	1,096

CS.R4	Start free space from Ip	End free space from Ip	Total (m)
B1 internal	24,367	25,167	0,800
B2 external	28,367	29,367	1,000
B1 and B2	27,587	28,567	0,980

CS.R4	Start free space from Ip	End free space from Ip	Total (m)
Total free space between reserved ACN planes	33,052	44,054	6,002



CS.R4	Start free space from Ip	End free space from Ip	Total (m)
B1 internal	88,666	115,359	26,693
B2 external	88,666	113,659	24,993
B1 and B2	88,666	113,659	24,993

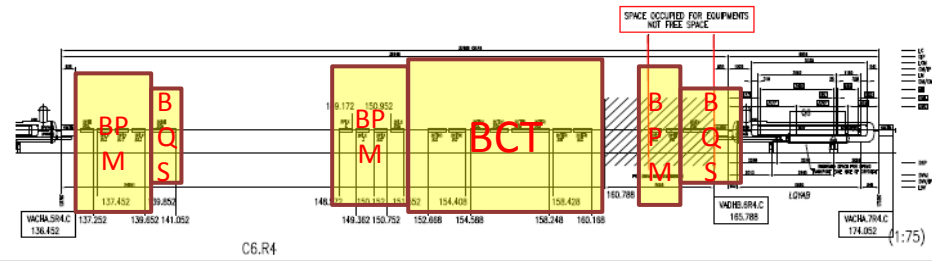


- LENGTH OF CELL
- DISTANCE BETWEEN INTERCONNECT VERTICAL PLANES
- LENGTH OF COLD MASS
- DISTANCE COLD MASS/INTERCONNECT VERTICAL PLANE
- LENGTH OF WAREHOUSE
- LENGTH OF WAREHOUSE
- WAREHOUSE LENGTH (OPERATING CONDITIONS)
- DISTANCE BETWEEN WAREHOUSE LENGTHS, OR BETWEEN WAREHOUSE LENGTH AND INTERCONNECT VERTICAL PLANE (OPERATING CONDITIONS)
- DISTANCE BETWEEN WAREHOUSE CENTERLINES OR INTERCONNECT VERTICAL PLANE (OPERATING CONDITIONS)
- DISTANCE BETWEEN SUPPORT POSTS
- DISTANCE BETWEEN VACUUM VESSEL AXES
- DISTANCE BETWEEN INTERCONNECT VERTICAL PLANE
- LENGTH OF VACUUM VESSEL

CR.R4	Start free space from Ip	End free space from Ip	Total (m)
B1 internal	138,452	137,452	1,000
B2 external	150,752	152,668	1,916
B1 and B2	154,408	158,428	4,020

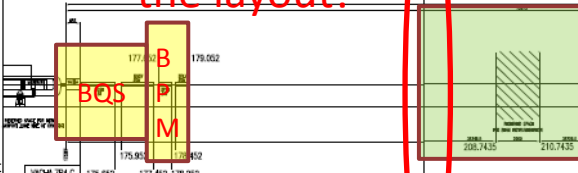
CR.R4	Start free space from Ip	End free space from Ip	Total (m)
B1 and B2	141,052	148,572	7,520
B1 and B2	151,552	152,668	1,116
B1 and B2	160,168	165,788	5,620

CR.R4	Start free space from Ip	End free space from Ip	Total (m)
B2 External	115,159	117,059	1,900
B2 External	137,252	138,852	2,600
B2 External	141,052	148,572	7,520
B2 External	150,752	150,252	1,500
B2 External	154,052	154,508	1,506
B2 External	158,408	160,788	2,380



Note the cut in the layout!

Current BGV Reservation



CR.R4	Start free space from Ip	End free space from Ip	Total (m)
B1 internal	178,652	177,652	2,000
B2 external	178,252	208,743	30,492
B1 and B2	177,452	178,452	1,000
B1 and B2	178,052	208,743	29,691
B1 and B2	178,052	208,743	29,691

CR.R4	Start free space from Ip	End free space from Ip	Total (m)
B1 internal	210,743	246,470	35,727
B2 external	210,743	246,470	35,727
B1 and B2	210,743	246,470	35,727

NO	DESCRIPTION	DATE	BY	CHECKED
1	ISSUED FOR PERMIT	2024-08-01	...	...
2	ISSUED FOR PERMIT	2024-08-01	...	...
3	ISSUED FOR PERMIT	2024-08-01	...	...
4	ISSUED FOR PERMIT	2024-08-01	...	...
5	ISSUED FOR PERMIT	2024-08-01	...	...
6	ISSUED FOR PERMIT	2024-08-01	...	...
7	ISSUED FOR PERMIT	2024-08-01	...	...
8	ISSUED FOR PERMIT	2024-08-01	...	...
9	ISSUED FOR PERMIT	2024-08-01	...	...
10	ISSUED FOR PERMIT	2024-08-01	...	...

ALL DIMENSIONS ARE AT 25°C, EXCEPT THE WAREHOUSE LENGTH AND DISTANCE BETWEEN THEM, WHICH ARE AT OPERATING CONDITIONS.
 * DIMENSIONS TO BE DEFINED
 HCLX 00081