Daya Bay RPC Gas System: Gas Tubing Distribution

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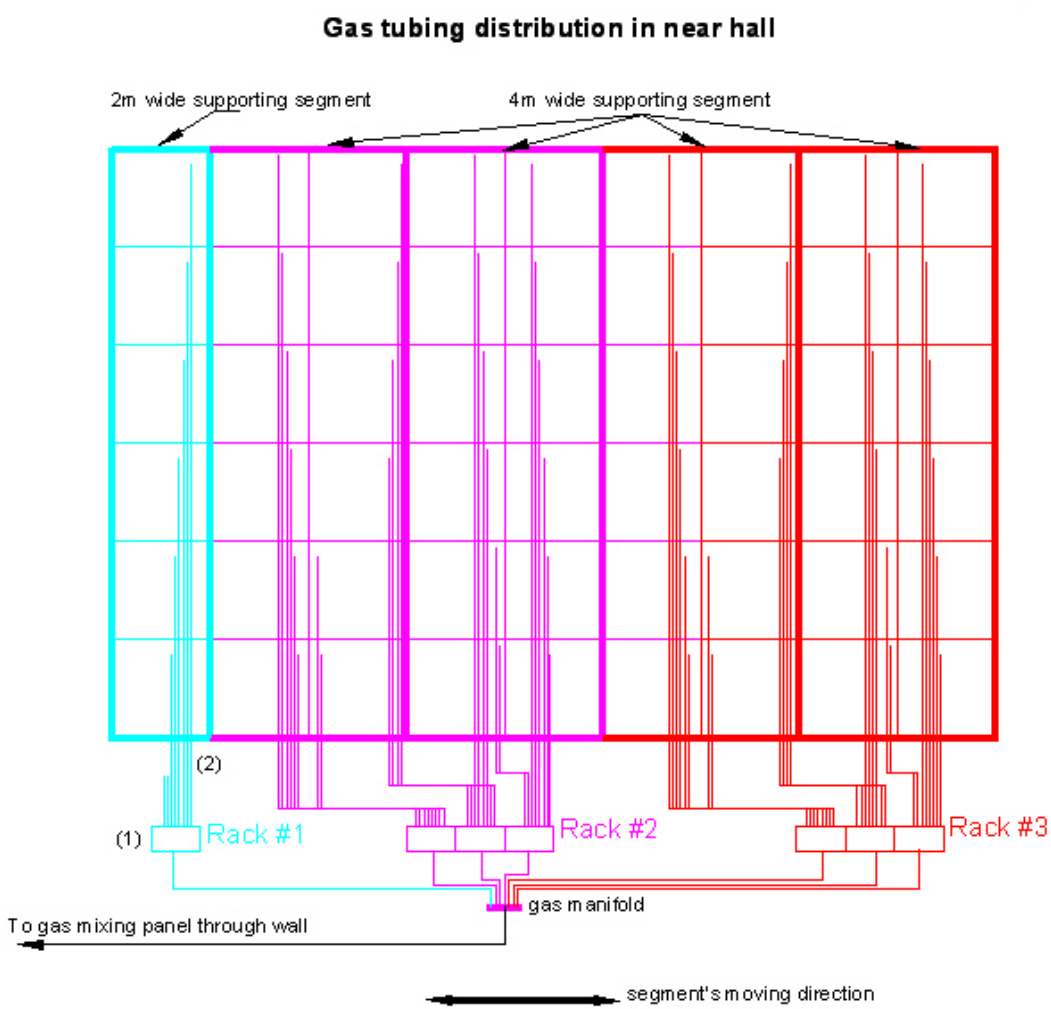
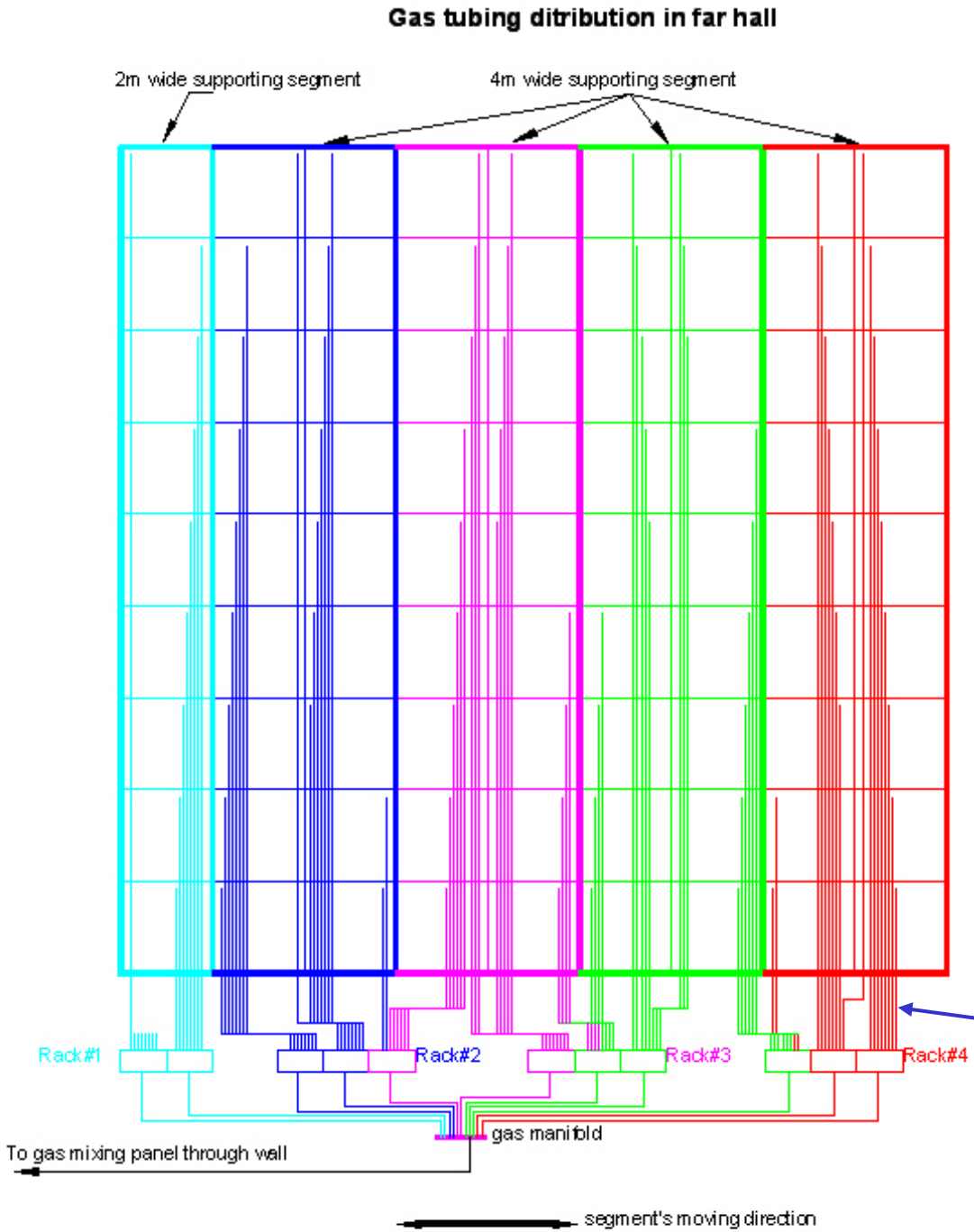
Near Hall



- All gas distribution crates should be mounted on the RPC supporting frames, therefore when moving the frames the gas tubing won't be affected;
- The gas manifold should be mounted on the middle segment, thus only two big gas tubes (one for fresh gas mix and the other for exhaust gas mix) need to be long enough to accommodate 18m movement of the RPC system.
- The longest tube is 12+3+2=17m, shortest tube is 2+3+2=7m. 3m reserved for bending and connecting to module, 2m reserved for frame separation. Total length for 2 halls=5184m.



Far Hall

Total 9 segments are divided into 5 divisions. We'll need 4 racks, one rack holds 2 crates, for other 3 racks each will hold 3 crates.

The longest tube is 18+3+2=23m, shortest tube is 2+3+2=7m. Total length=4860m.

Near and far halls total tube length=10044m+15% =11500m.

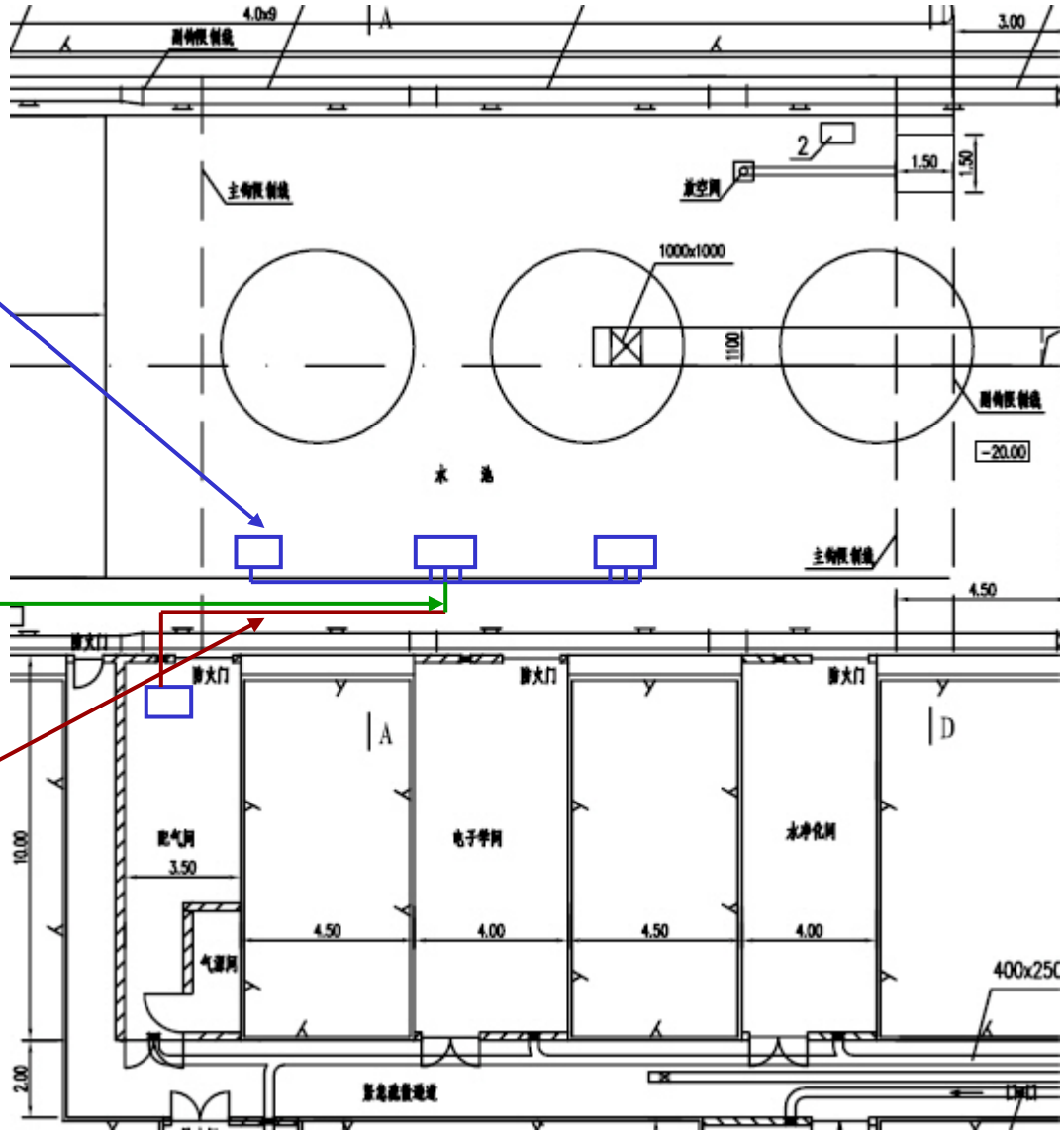
3m reserved for bending and connecting to module/gas crate, 2m reserved for frame separation.

Gas distribution racks in near hall

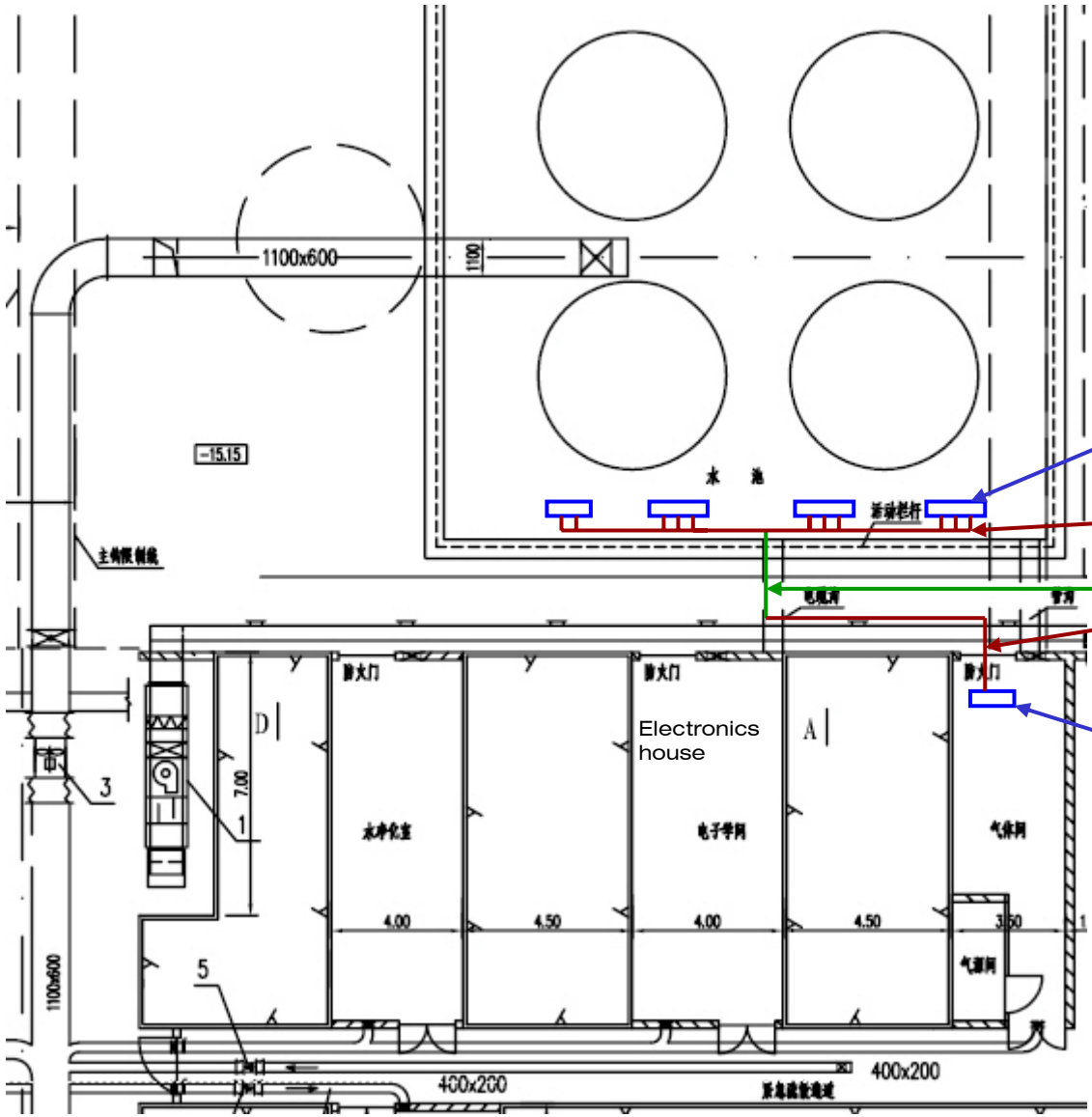
Gas dist. racks

Flexible gas hose to accommodate 18m rolling of the RPC system.

S.S. gas pipe, mounted on the wall



Gas distribution racks in far hall



Flexible gas hose to accommodate 18m rolling of the RPC system.

Gas dist. racks

Polyflo gas tubing.

S.S. gas pipe, mounted on the wall.

Gas mixing rack

Comments

- Since the gas distribution crates need to be located on the supporting structure, the frame should have at least 1.0~1.5m extra length beyond the RPC modules;
- During the installation first connect a pair of inlet and outlet tubes together, check the gas bubbling rate to make sure tube itself is OK, then connect them onto module, check the bubbling rate. Record these information for the future reference.
- The gas pressure drop through the tube (1 volume/day):

L(m)	I.D.(mm)	F.R.(l/h)	dP(cm W.C.)	comment
22	4.3	0.67	0.081	Longest tube to module
22	9.5	216	1.08	main flexible tube
20	9.5	216	0.982	S.S. pipe on wall