Heidelberg
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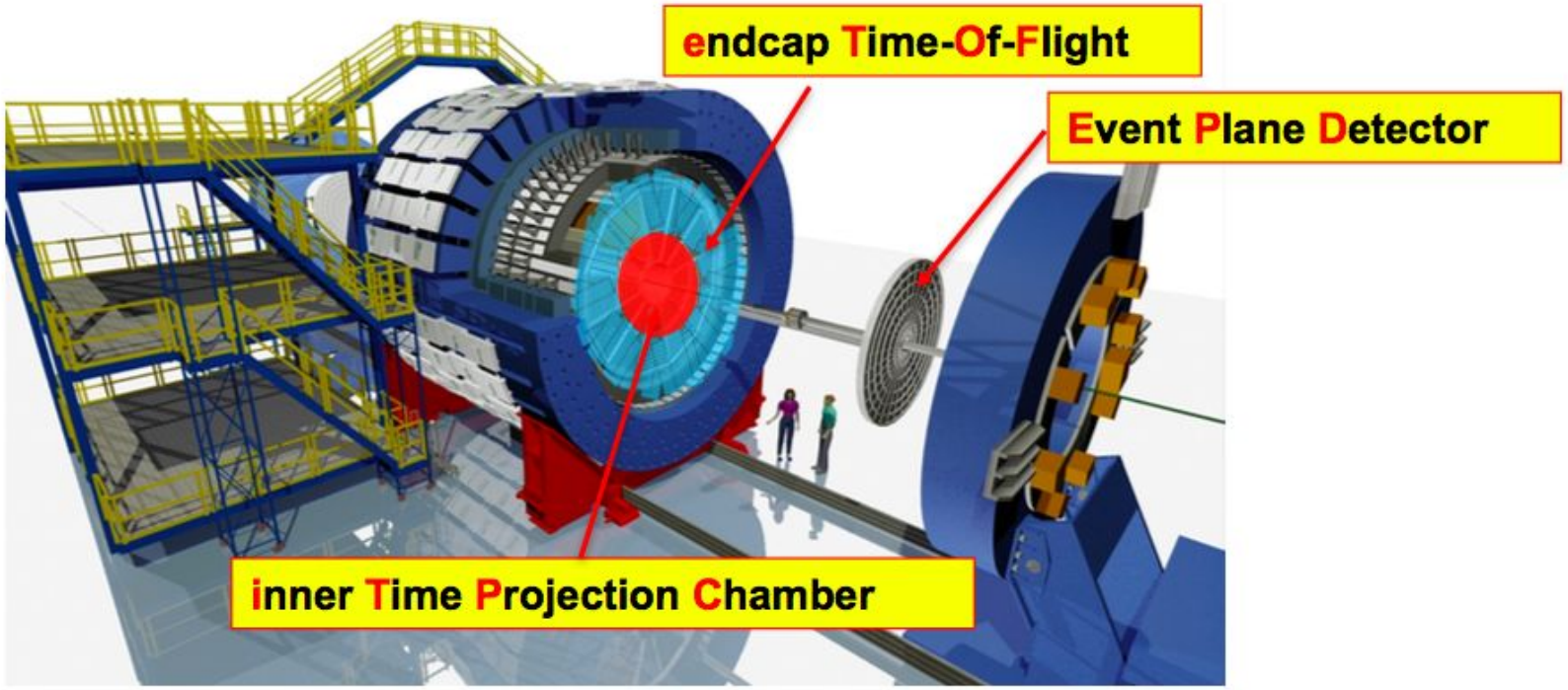
eTOF Status at BNL: Infrastructure

CBM/STAR eTOF Project, FAIR Phase 0

Geary Eppley
Rice University

STAR detector upgrades for BES-II



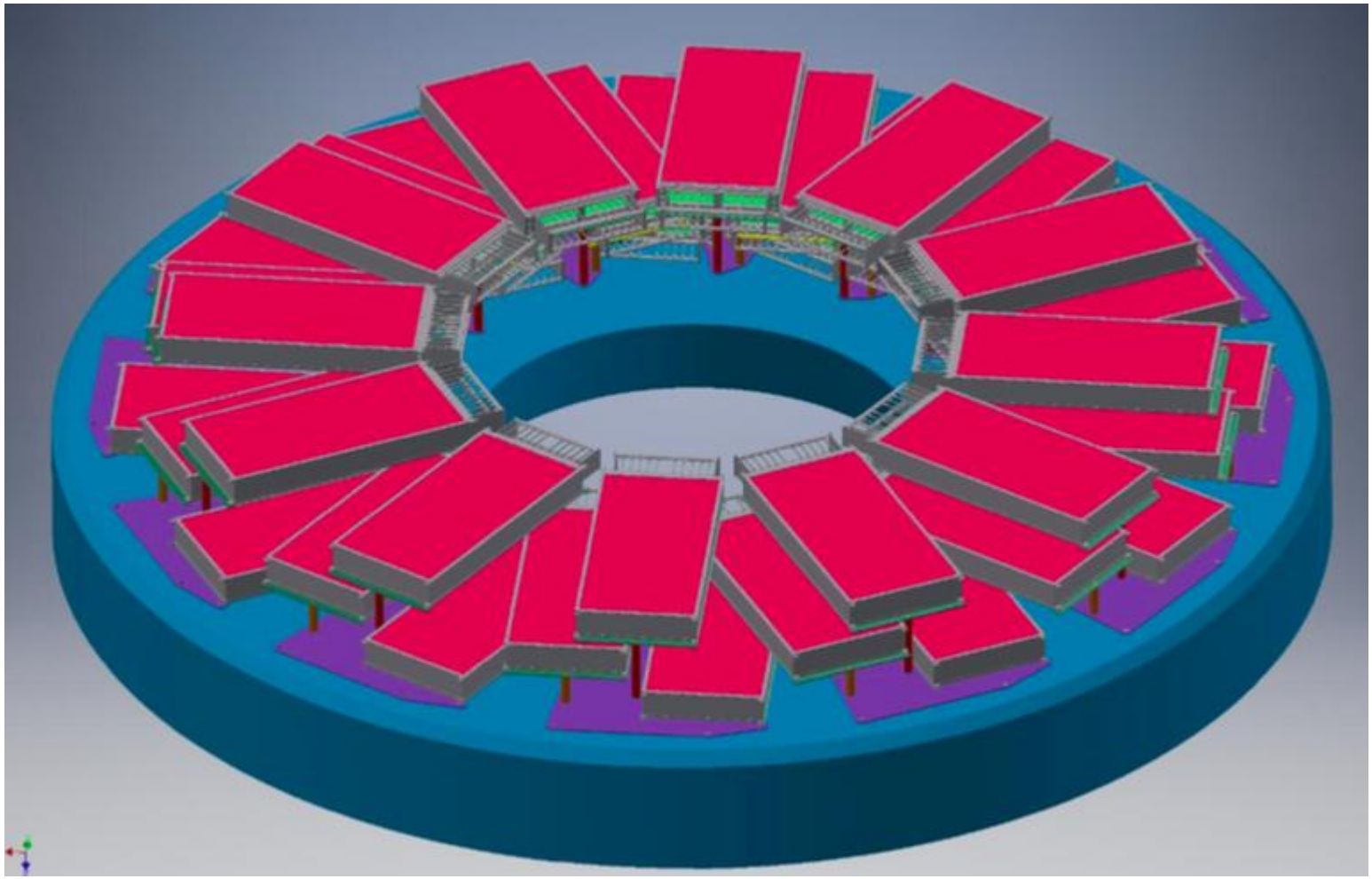
eTOF infrastructure at BNL

- HV: STAR: CAEN supplies (in use 2018). HV cables, 72 short, 12 long. Complete.
- HV: STAR: Build six, 2:6 distribution boxes. Complete.
- LV: CBM: 12v supplies. STAR: 36 LV cables. Complete.
- Optical fiber: STAR: 18 dual OM3 to DAQ room. Short fibers, modules to rack, 72 dual. Complete.
- Gas: STAR: Build 12-sector distribution panel. Install supply and return lines to mixing room. Complete.
- LV slow controls: CBM.
- HV slow controls: STAR: expand existing EPICS 3-channel control GUI to 6 channels. Runs from existing TOF HVIOC.
- Rack and power: STAR: reuse existing HFT PXL rack. NPS switch (in use 2018). CBM: micro-TCA crate (in use 2018.)
- DAQ PC: CBM: Installed.

eTOF infrastructure at BNL, new items

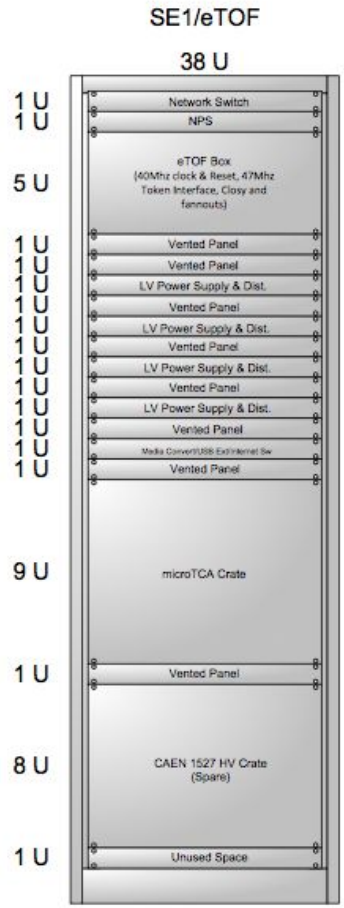
- Slow controls pc with Scientific Linux 7.x, in control room. Installed.
- Chilled air supply behind the east pole tip. To be installed.

eTOF mounting, 36 modules in 12 sectors



Mounting plates installed on east pole tip

eTOF rack layout



Cable status, 1.

From	To	Type	Length	Qty	Status	Notes
Daq Room	eTOF Rack	OM3 Fiber	95m	18	Installed	Still need to connect to patch panel
Caen HV PS's A1534 in 1B2 Rack	6 HV Dist Boxes	Long HV	84'	8	On hand.	6 Positive and 6 negative. Same as TOF and MTD HV cables. Need 16x. 6 = existing in eTOF, need modification. Tim knows of 2 spare. Need to build 8 new.
		Green CAT-6	80'	2	Built and tested	Crossover cable 2x built, need testing. Expected by 5/21/18
PS in eTOF Rack	Modules	LV Cable	55'	36	Install October 9.	Use MPN E3052S.41.86 (AWG. 14, 2 Cond.) cable. The cable could be cut to length and terminated in place. Lugs to fit 3mm post size at Module end. PS connector described on separate tab. 18 cables will be routed clockwise, and 18 routed counter clockwise from the entry point to the cable tray. Electronics Group will install.
eTOF Rack	Modules	Dual OM3 Fiber	55'	72	Install October 9.	12x bundles of 6 dual fibers each. 18" breakout at rack end and 36" breakout at module end. 36 dual fibers will be routed clockwise and 36 counter clockwise from the entry point. Should be same length as LV cables above.

Cable status, 2.

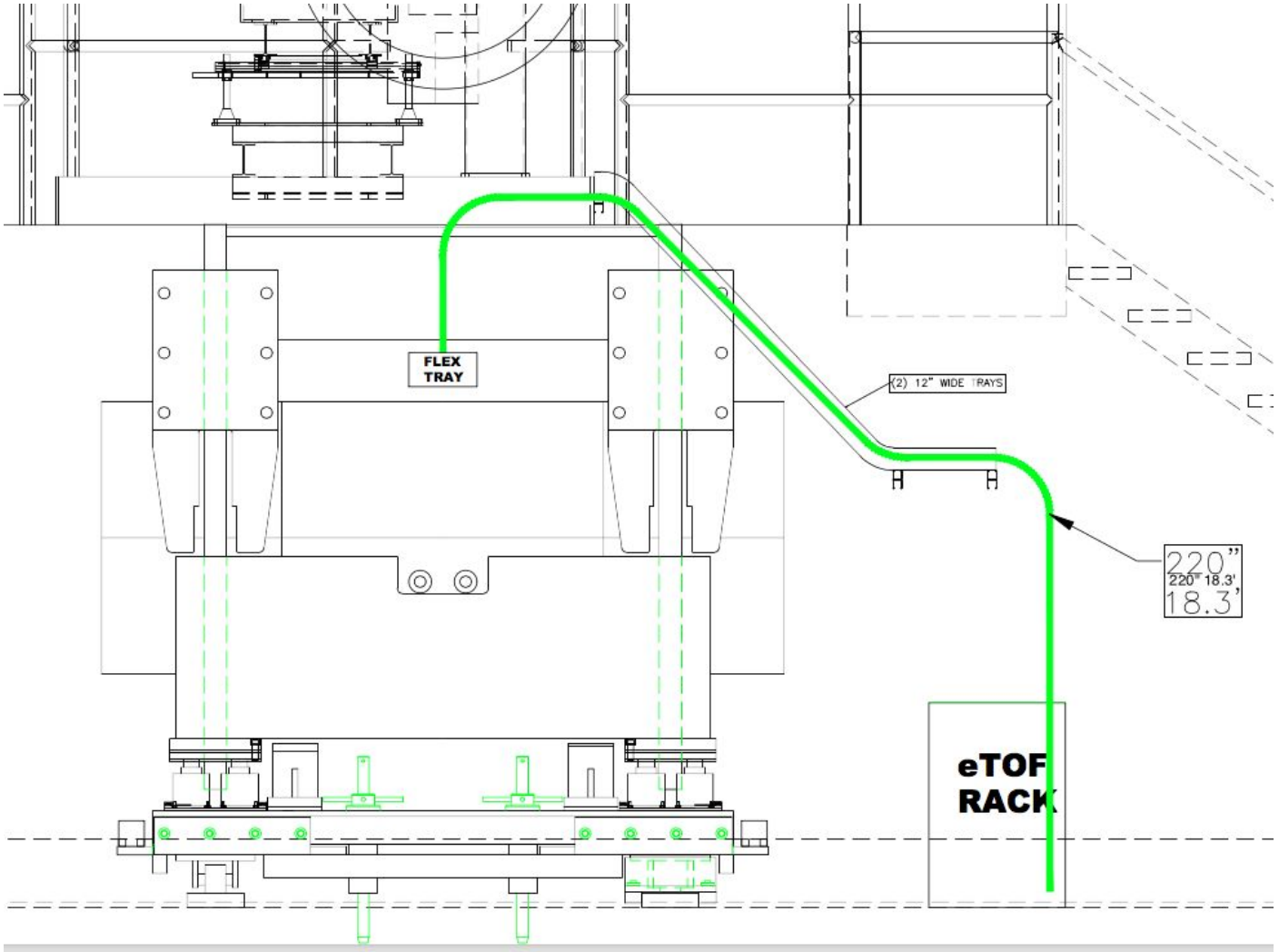
HV Box	Modules	Short HV	2 Lengths: 185" 145"	82	Install by November 3.	72 needed plus 5 spares of each length = 82 total. Kings 1065-1 at HV box end. 23.100.052-045 cpe 537-f1 FEMALE CONNECTOR at module end. KC will build. 14 extra CPE connectors and 14x Kings 1065-1 connectors should be ordeered for spares if we don't already have them on hand.
eTOF Rack	Modules	RJ45 Cat-7	55'	12	Install October 9.	6 will be routed clockwise and 6 counter clockwise from the entry point.

Other Items

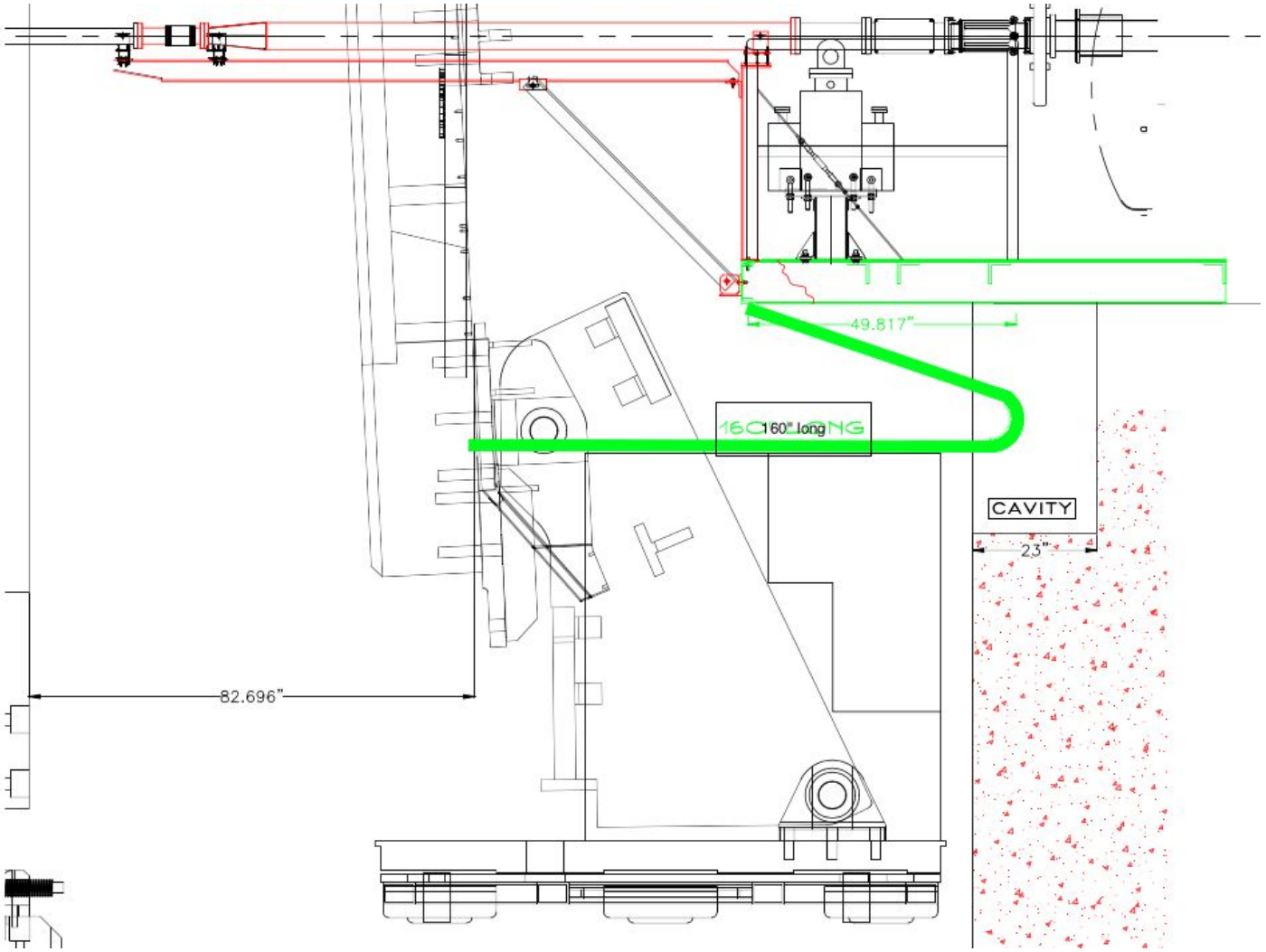
Description	Status	Notes
HV Box	HV Distribution boxes complteted.	Mounting scheduled for 11/3/18
Rack	eTOF rack is ready.	

Notes:
1. eTOF group will install all cables except LV cable and HV cables at PS which will be installed by Electronics Group.
2. Rahul estimates eTOF to rack cable length is 50ft + 5ft (extra).
3. eTOF cable installation per shutdown schedule => 11/1/18 to 11/15/18.

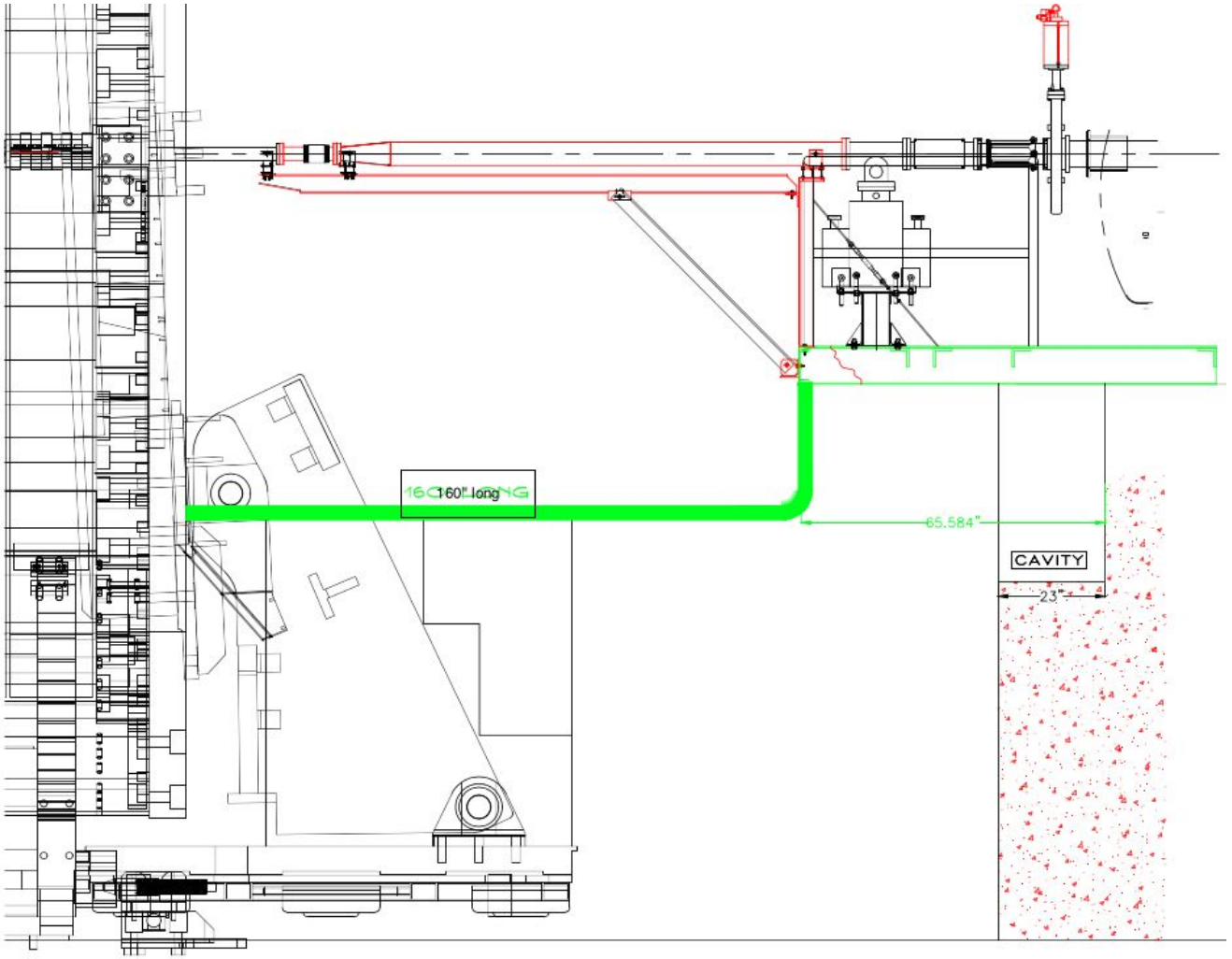
Cable path



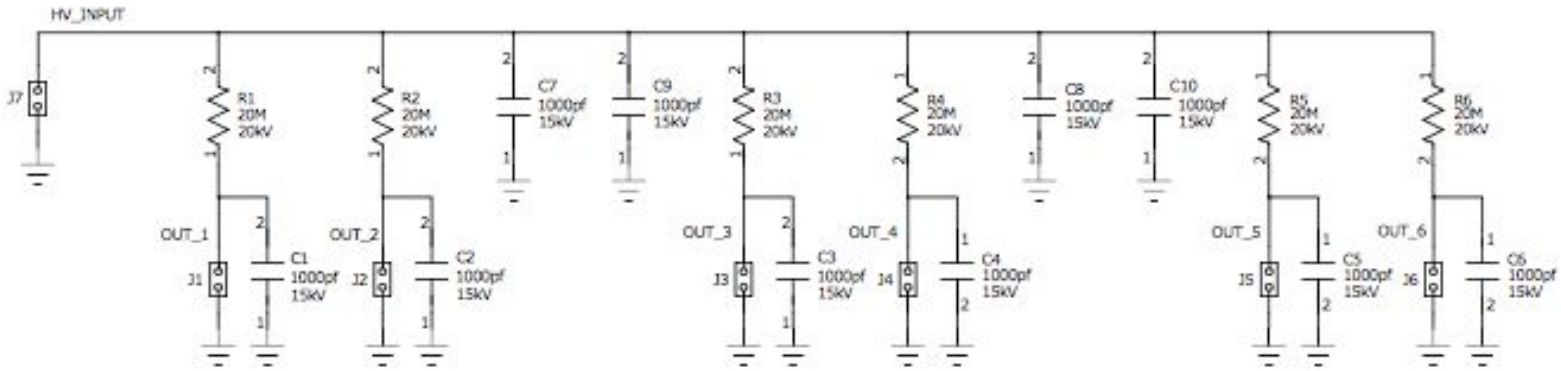
Flex tray open



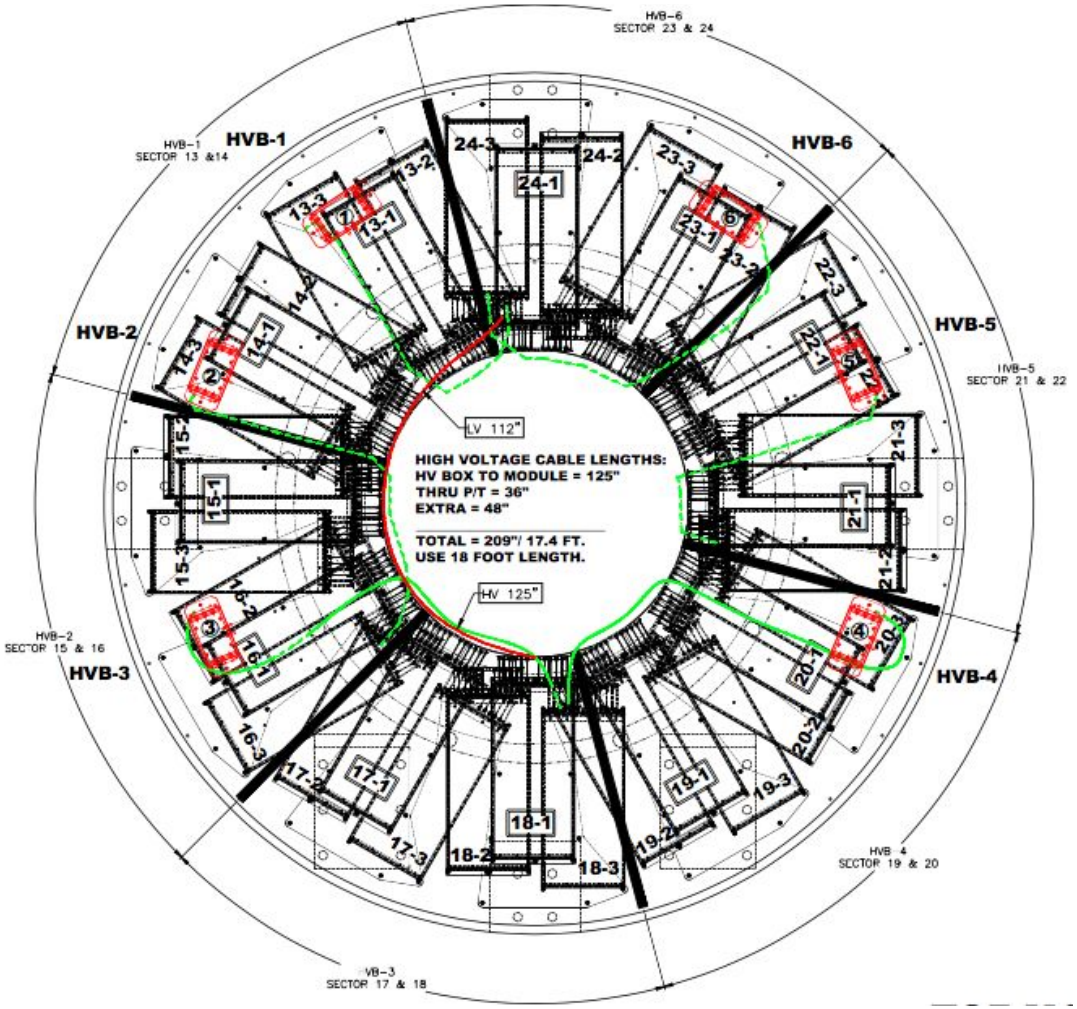
Flex tray closed



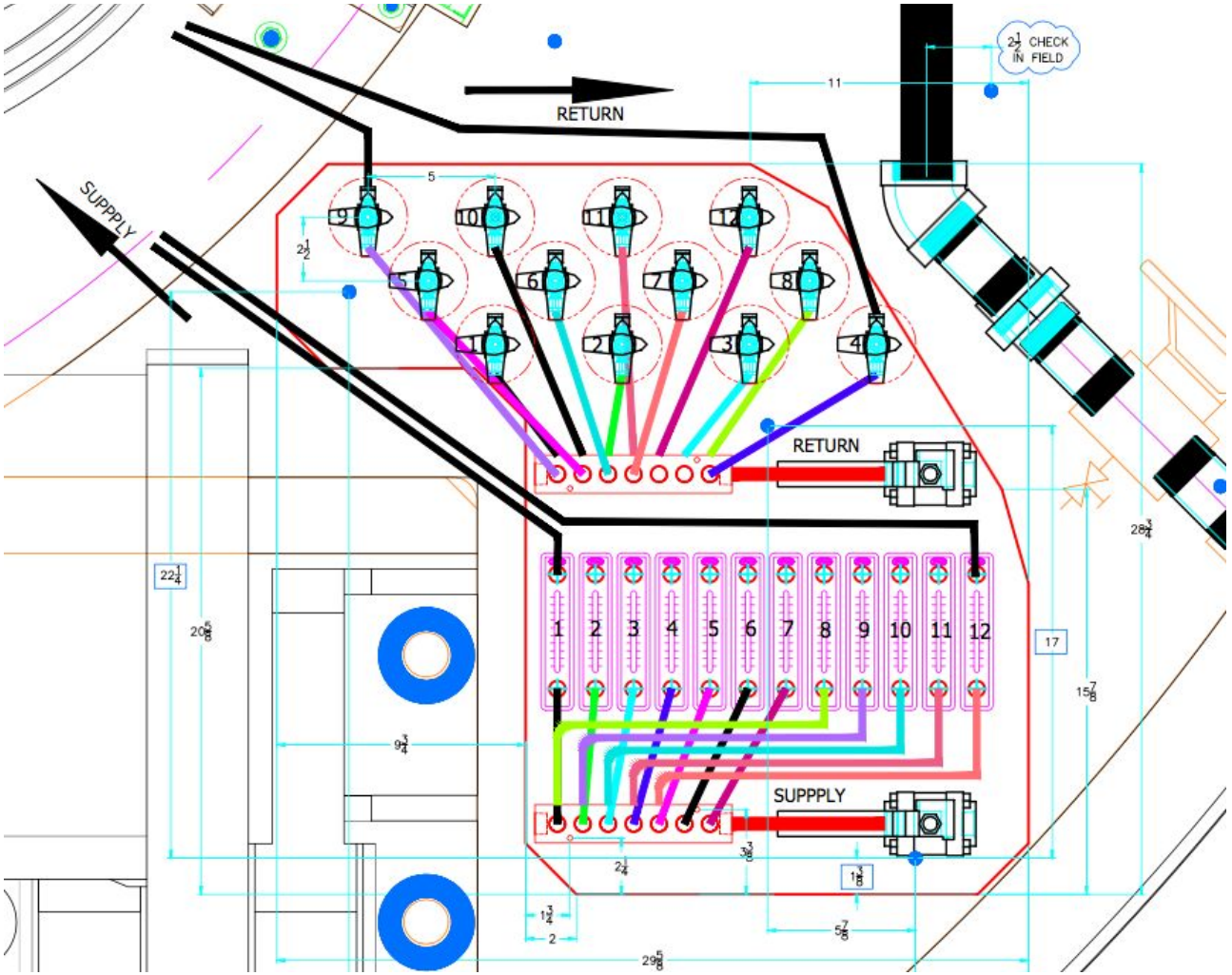
HV distribution box schematic



HV distribution box layout



eTOF gas distribution panel schematic



eTOF gas supply

- eTOF will run in purge mode at 600 ccm R134A and 30 ccm Isobutane.
- If we can demonstrate a very low leak rate, we can ask permission to add SF6 at 3 ccm. This is the mixture used by the MTD. eTOF could then use the MTD flow controllers.
- If not, eTOF will have flow controllers similar to the MTD.

Installation plans

- The STAR detector may be ready for roll-in by the first week of November. About 1-month ahead of schedule.
- If we can have 24 of 36 eTOF modules installed by then, the final 12 modules can be installed after roll-in. The modules in sectors 17, 18, 19, and modules 16-2, 16-1, and 20-1 can be easily installed after the detector is rolled in.
- The STAR shut-down schedule will be updated in a few weeks once the iTPC installation on the west side is underway and the roll-in date is well determined. At this point we can make definite plans for commissioning eTOF.
- After the detector is rolled in and power is restored, and before the beam pipe is installed, we will need a week or so to connect the module electronics and commission the readout. We should estimate how long this will take and request the eTOF commissioning time be included in the STAR schedule.

Thanks for your attention.