



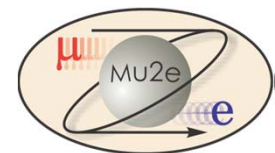
U.S. DEPARTMENT OF
ENERGY

Office of
Science

Mu2e Director's Review – Breakout Conventional Facility Mechanical

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Requirements

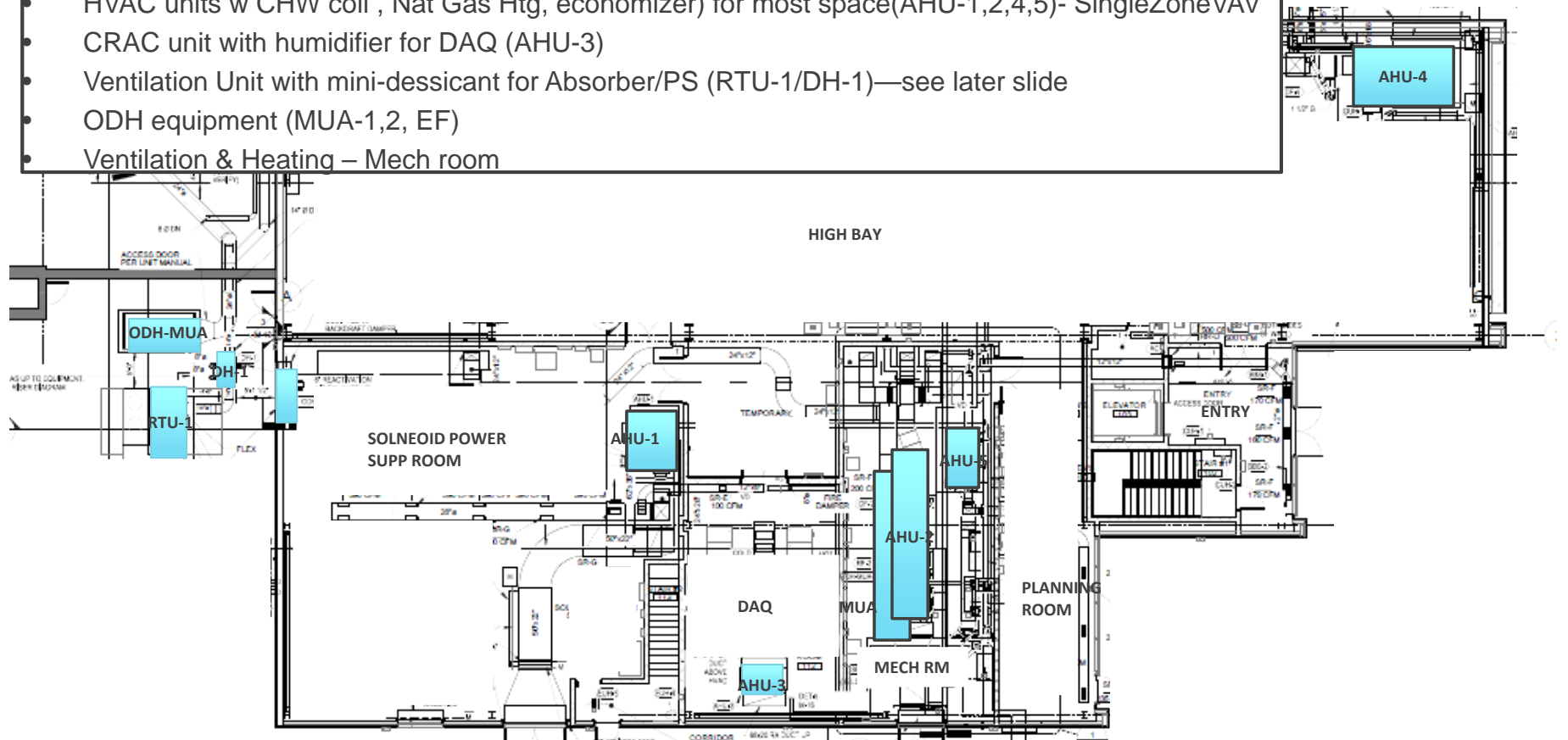
- Documented in Docdb# 1088 “CF Requirements”
- Basic building utilities (DWS, SAN, NAT GAS, ICW)
- High Bay
 - HVAC heat load to air (~35KW)
 - No ODH; no tight temp stability reqmnt; 68Fmin; 78F max
- Power Supp Room,
 - HVAC heat load to air (~50KW)
 - ODH ventilation 6,300 cfm; no tight stability reqmnt; 68Fmin; 85F max
- DAQ room
 - Heat load to air (~49 kw); No ODH
 - >20%RH min to 60%RH max

Requirements...continuation

- Lower DS
 - minor heat load to air (~16 kw)
 - ODH ventilation 7,000 cfm; no tight stability reqmnt; 68Fmin; 80F max
- Absorber, PS,
 - Dry outside air ventilation
 - Decay airflow limit ~900cfm; ODH ventilation 7,000cfm
- Remote Handling /Extinction Monitor
 - Ventilation air (part of supply to absorber)
 - Currently no ODH ventilation reqmnt
- Misc equipment (tracker cooling skid, dehumidifier, vac pump)
 - Chilled Water taps
- Misc spaces (mech room, planning room, entry)=
 - HVAC except for mech rm

Design Building grade level

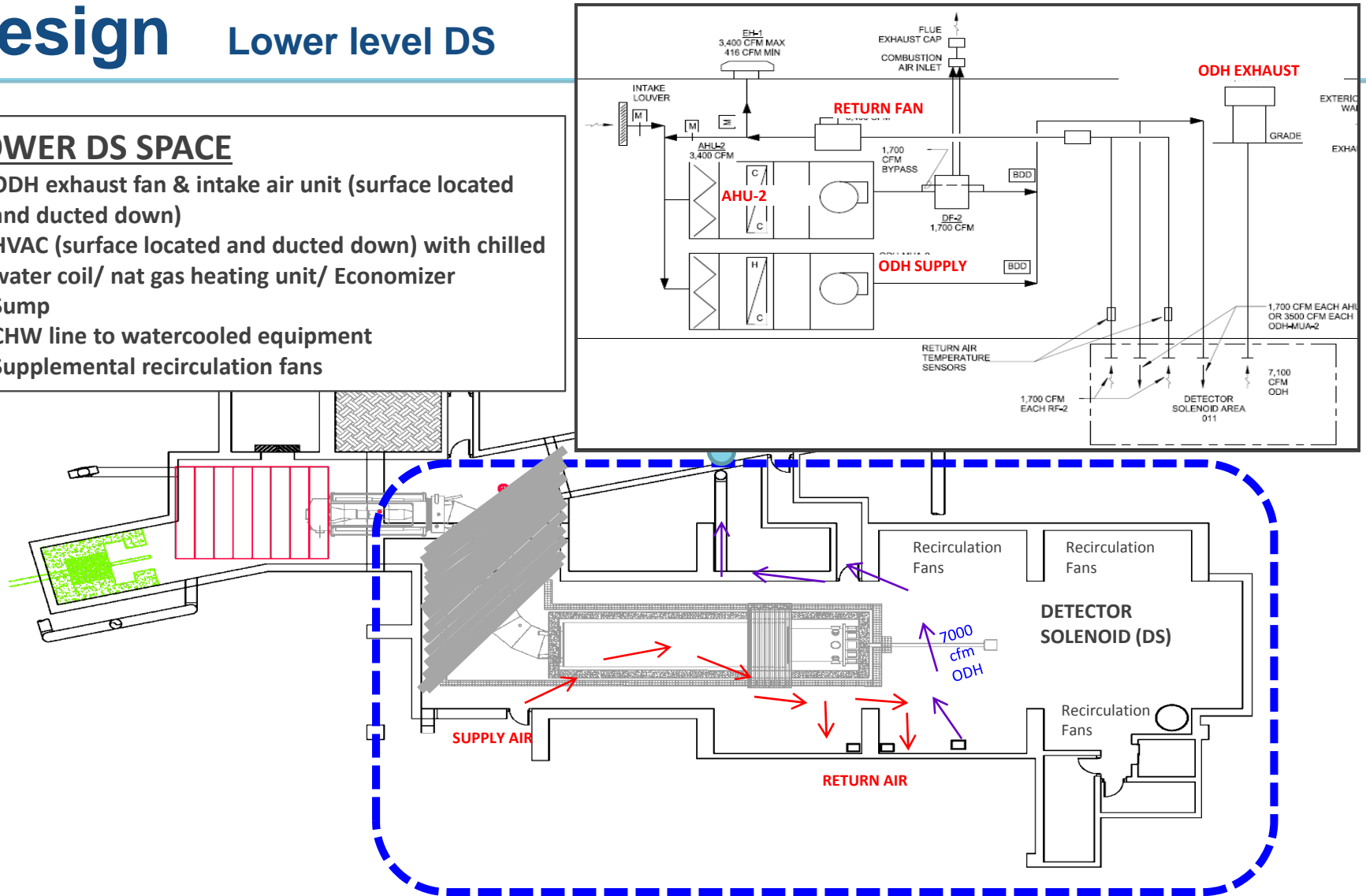
- Drawing M-5 from CF Bid Drawing Set
- Using CUB (central utility building) chilled water (CHW)
- HVAC units w CHW coil , Nat Gas Htg, economizer) for most space(AHU-1,2,4,5)- SingleZoneVAV
- CRAC unit with humidifier for DAQ (AHU-3)
- Ventilation Unit with mini-dessicant for Absorber/PS (RTU-1/DH-1)—see later slide
- ODH equipment (MUA-1,2, EF)
- Ventilation & Heating – Mech room



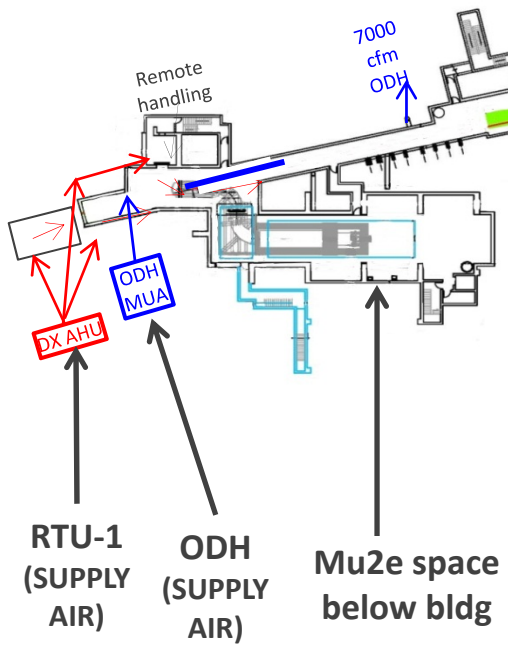
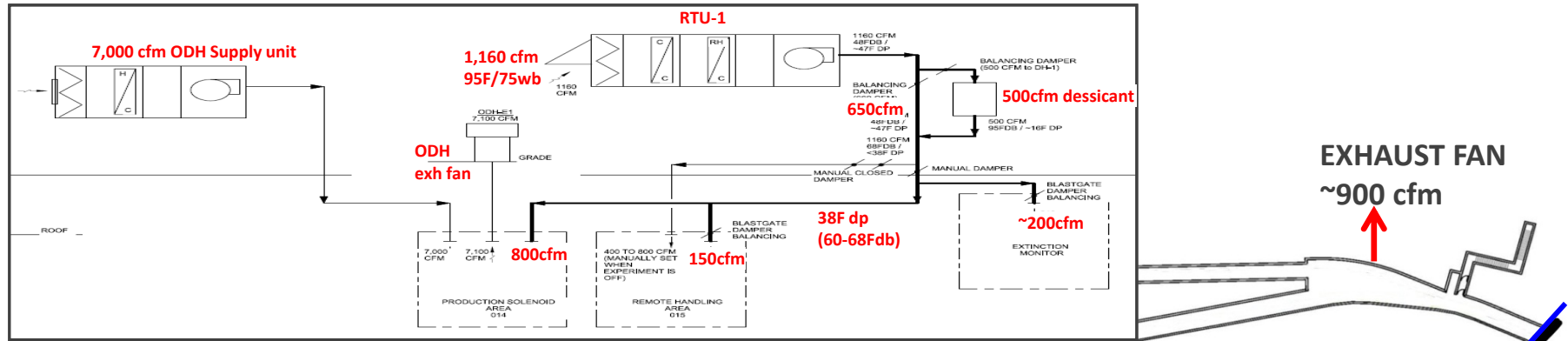
Design Lower level DS

LOWER DS SPACE

- ODH exhaust fan & intake air unit (surface located and ducted down)
- HVAC (surface located and ducted down) with chilled water coil/ nat gas heating unit/ Economizer
- Sump
- CHW line to watercooled equipment
- Supplemental recirculation fans



Design Lower level PS



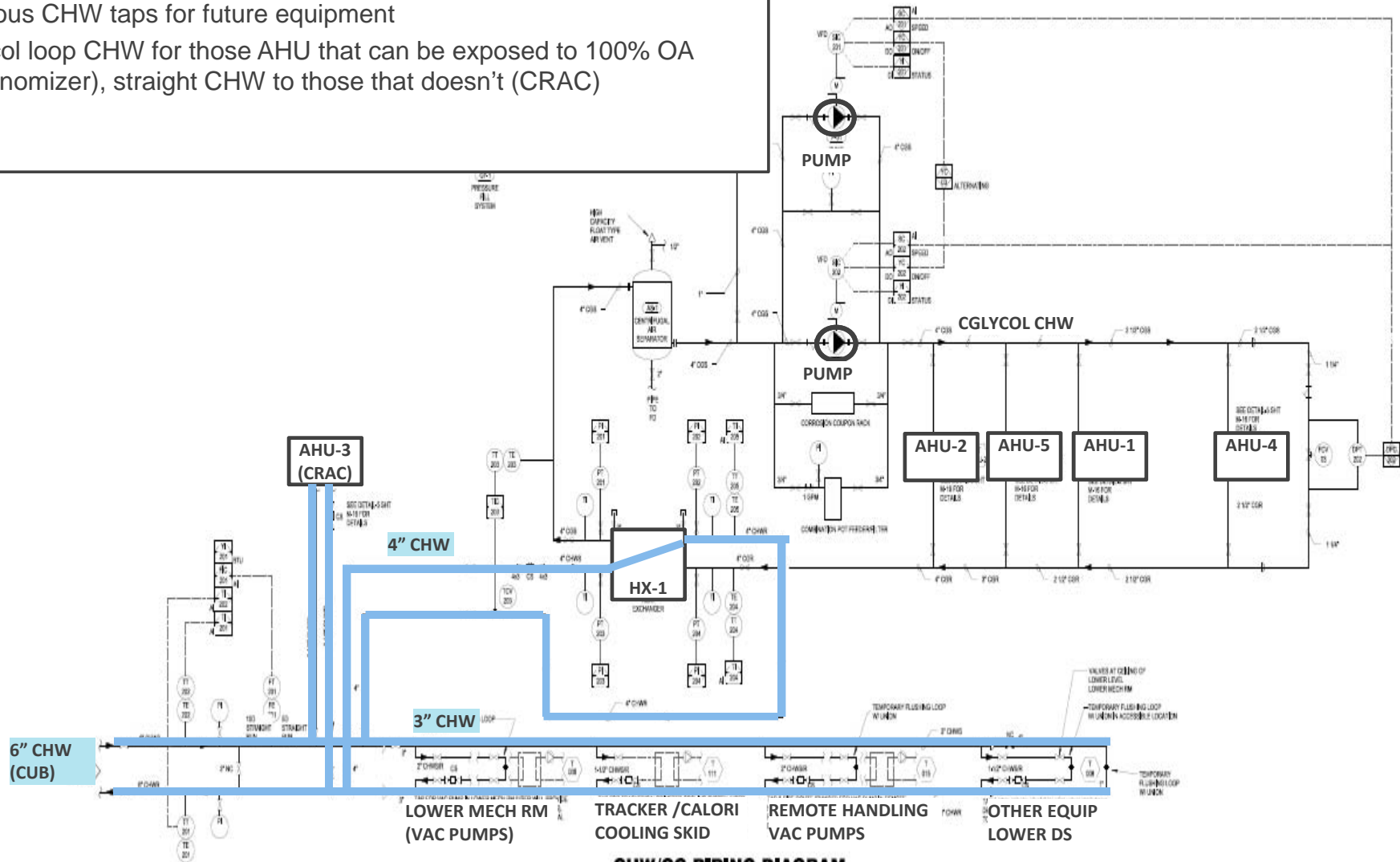
Lower PS area

- RTU-1: 1,100cfm OA unit- DX (refrigerant based) system with minor side stream to mini-dessicant to provide $\leq 38F$ dp supply air.
- Once through system- no recirculation of air
- About 800cfm direct airflow thru absorber, the rest to Extinction Monitor & Remote handling
- 800cfm supply to the absorber requirement 2"wc, and will be connected to absorber piping manifold (by others)
- Additional airflow route to the remote handling (w manual dampers). All buried ductwork to be coated and internally lined steel pipe.
- Interlock to Exhaust fan at near delivery ring
- ODH make up air unit in the surface ducted & separate exhaust fan
- sealing of htaches, between DS & PS & on all penetrations by user
- No air cooling in the beam tunnel



Design CHW Piping

- Taken from Dwg M-11 of the CF Bidg Package set
- Various CHW taps for future equipment
- Glycol loop CHW for those AHU that can be exposed to 100% OA (economizer), straight CHW to those that doesn't (CRAC)



CHW/CG PIPING DIAGRAM
SCALE: NTS

Summary

- Design is complete. Commissioning is included with the project.
- Upper and lower spaces will be left open to each other for a while, (duration of years after the CF project is done and before the experiment begins). The current design includes control sequence for pressurization & can be simulated during commissioning but the pressurization will be highly dependent on proper sealing of the multiple penetrations, chases and spaces.
- ODH sensors and actuation of the ODH system will be by WBS 2 (accelerator)