



Office of University Building Official

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Mechanical and Plumbing Review Tips

1. Read and follow the GMU Design Standards Manual and include our material requirements. Proof read and edit specifications for conflicts, redundancies, completeness, and compliance with GMU HECOM and Design Standards Manual.
2. Our requirements for steam and MTHW pipe are the same for pipes in tunnels and inside the building. All components on HPS, HPR (drip) and pumped condensate shall be rated for 270 psig saturated steam. Components on MPS shall be rated for 200 psig saturated steam. MTHW valves shall be rated for 250 psig & 400 degrees F, all other MTHW components shall be rated for 180 psig and 230 degrees F.
3. Provide complete design details including adequate access clearance, locating all duct detectors, smoke detectors, fire, smoke and isolation dampers, design for thermal expansion etc. Schedules need to state if multiple pumps, converters, etc. are each 100% capacity, 75%, 50% etc. Schedules need to state which pumps have VFD's and which are on emergency power.
4. Put the controls in division 25 but limit the specification to the requirements in the GMU Design Standards Manual. The revenue meters are to be OFCI. Follow the new GMU Standard Sequences. Provide control diagrams and sequences on the plans. We prefer to have thermostats shown on the duct plans rather than piping plans.
5. Do not use unusual designs like fume hood alcoves, venturi valves, high dilution exhaust fans etc. until getting approval. Where specialized research equipment or procedures are needed and redundant cooling or ventilation is needed the mechanical and plumbing loads need to be identified to verify that the required services in the capacity needed are available in the proposed location and what the real cost may be to provide them. These issues need to be addressed during the schematic review phase.
6. To reduce overall energy usage, minimize fan HP by minimizing the cooling coil APD and duct pressure drop. The University's target is 10% less than allowed by the Energy Codes. This will require larger than usual mechanical rooms and shafts and no oversized discharge plenums or transition elbows. Minimize pumping energy. Size all chilled water coils for a 60 to 62 LWT. Limit pipe velocities in buildings to 9 fps and limit elbows.
7. Nonpotable water systems are governed by the 2018 USBC including the revised

Chapter 29 of the 2018 VCC and Chapter 13 of the 2018 VPC. Cooling coil condensate can be treated as rainwater, reclaimed water or gray water as appropriate.

8. Heat stair wells from the bottom and cool from the top to prevent simultaneous heating and cooling. Use instantaneous domestic water heaters as much as practical. Provide systems that save energy.
9. Telephone/Data/server rooms, elevator machine rooms, etc. shall be maintained below 80 degrees. Dedicated chilled water FCU's are needed where loads are 24/7, ductless split systems are only allowed where chilled water is not available year-round. VAV boxes are acceptable where the load follows occupancy. 2018 VCC 3005.2 can be satisfied with a dedicated VAV box.
10. Minimize HVAC noise. Where a waiver is granted for a plenum return, acoustically lined "Z" ducts are required on return grilles.
11. Follow the GMU Design Standards Manual and ASHRAE security recommendations; locate OA intakes high and provide exhaust from mail rooms.