



Division 238200

Convection Heating and

Cooling Units

DESIGN GUIDE

1 General

1.1 General

- A. Reserved for future content.

2 Materials

2.1 Fan Coils

- A. Units shall be furnished and balanced with 2" MERV 13 filtration.
- B. Belt drive is not preferred. Direct drive units shall be furnished with speed controller mounted at the unit for adjustment of airflow.
- C. Provide service through drop down panels in inaccessible ceilings or through acoustical tile ceilings. Drop down service panels shall be hinged and provided with tamperproof fasteners.
- D. Typically control valves and controllers are provided by 230900 and located outside of the unit and accessed through a ceiling panel.
- E. Heating coils and chilled water coils must be 100% drainable and must have drain valves and air vents installed.
- F. For all heating and cooling coils, a means of cleaning the air side of the coil shall be provided, (i.e. hinged access door) on inlet side of coil



including coils in terminal units. Due to space restraints, 4 pipe fan coils may have access on one side of the coil.

- G. When units do not have overflow drains piped to drain, 230923 shall provide condensate sensor and shut off the fan coil chilled water valve (and alarm BAS) in high condensate condition. Do not shut off power to the controller in the high condensate situation.

2.2 Fin Tube and Radiators

- A. Typically control valves by 230900 and other devices do not fit within radiant heating element service panels. Consider location of control valves, strainers and balance valves when utilizing radiant heat.

2.3 Chilled Beams

- A. Provide safety controls to ensure cooling system is operating above dewpoint so that condensation does not form on the chilled beam. Consider two levels of safety:
 1. First, 230923 shall control fluid temperature to be above the space dewpoint
 2. Second, the chilled water valve shall close upon detection of condensate.
 3. The intent is not to design buildings without air condition but is simply a safety control due to malfunction of control valve that controls the system water temperature.
- B. Provide means of balance of water and airflow to each chilled beam.
- C. When chilled beams are operating with 100% outside air that do not operate at night, the building shall be equipped with function to either recirculate air at night for unoccupied heating or heat independent of the air systems with fin-tube, radiators or other terminal heating devices. 100% outside air shall not be utilized for night heating unless system is already required to operate (lab use).

2.4 Electric Wall Heaters

- A. Provide with heavy duty louvers.



3 Execution

3.1 Fan Coils

- A. When installed above inaccessible ceiling, provide isolation valves for each unit located outside of unit. Organize service valves, control valves and controller location to be accessed from a single access door when practical. If not practical, provide multiple access doors.
- B. It is preferred that condensate pumps be avoided where practical. This may necessitate need for additional floor drains in the project. Failure of the condensate pump shall alarm the BAS.
- C. Section 230923 shall provide low limit controls for any units with untempered outside air connected.

3.2 Fin Tube and Radiant Heat

- A. It is preferred that control valves be located in the same room as the associated controller.

3.3 Electric Wall Heaters

- A. Provide controls by 230923 to allow for night setback for normally occupied spaces that have unoccupied schedules.

4 Appendix

4.1 Reserved for future content.

