



Standard Mechanical Basis of Design: Multifamily Housing

October 18, 2018

Plumbing

Site water piping will enter a heated room in each building, to an accessible backflow preventer and shut-off valve. Within the building, cold water mains will run in heated space above grade to a shut-off valve in each unit's space. No water piping will be allowed within exterior walls. Water piping will be Type L copper, with cold water and hot water insulated, or Niron or equal polypropylene, with only hot water insulated. No other piping materials allowed; CPVC or PEX piping will not be used. Cast iron above-ground drain-waste-vent piping is best for noise control and should be used wherever there is good noise control design of walls and floors, or wherever there is a priority to use environmentally-responsible materials. PVC may be selected by Owner if proper firestopping methods are used at assembly penetrations.

Fixtures (china or 20-ga. stainless steel) and faucets (Symmons, Moen or equal) will be approved by Owner, Architect, and Engineer. Toilets will have a MaP rating of 1000 and have insulated tanks. Gas water heaters are not recommended for safety reasons. Electric water heaters can be storage type, whole-apartment instantaneous (where allowed), or heat pump type. Storage tank water heaters will be sized per HUD-FHA guidelines, and will have individual thermostatic mixing valves. All water heaters and washing machines will be protected against flooding via a trap primer floor drain (or equivalent) or a flood stop sensor/valve/alarm system. Solar thermal domestic hot water will not be provided.

Flat roof drainage (if applicable) will be via roof drains located by Architect, with cast iron rain leaders within the heated space to a storm drain exit separate from the sewer exit.

HVAC

The heating system will be either (1) hydronic baseboard radiation, with at least two oil and/or pellet boilers per building, or with a district heating system, or (2) mini-split air-to-air heat pump systems (Mitsubishi or Daikin), with at least one indoor heat pump per floor of each apartment. Hydronic: radiation or a kick space heater in each room, and separate thermostats for each floor and for living vs. sleeping areas. Heat Pumps: any areas that include bedrooms will have ducted heat pumps, and non-sleeping rooms can be served by ducted or ductless heat pumps (ceiling cassettes or floor-mount units). There will be either one outdoor unit per apartment, or one or more large outdoor units per building. Outdoor units will be located in strict accordance with manufacturer's recommendations, or specifically approved in writing by the manufacturer.

There will be continuous mechanical ventilation of apartments and common areas – either by energy recovery ventilators (ERVs), or, for apartments, by exhaust fans that have no “off” position. ERVs will be located in heated and insulated space, such as basements, or attics with thermal insulation at the roof.

Recirculating or vented kitchen range hoods will be specified by Architect. Dryers will be electric, with vents of rigid metal ductwork discharging out through a sidewall, or there can be condensing dryers vented within the space.