

## **5.22.00 - PLUMBING GENERAL**

### **DESIGN AND CONSTRUCTION STANDARD**

---

#### **PART 1: GENERAL**

##### **1.01 General Requirements**

- A. This standard is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. The responsibility of the engineer is to apply the principles of this section and the ones that follow such that the University may achieve a level of quality and consistency in the plumbing design of their facilities. Deviations from these guidelines must be justified through LCC analysis and submitted to the University for approval.
- B. Indicate required service clearances on drawings with dashed lines. Design shall provide for service and maintenance access to all equipment. Service area shall comply with codes and manufacturer's recommendations and shall be reasonably planned for human access. Project shall provide elevator access to all levels including basement and attic mechanical spaces. Elevators shall be sized and designed for equipment removal.
- C. Design shall include plan for removal of all equipment. Plan shall indicate sizes of major pieces of equipment and clearly marked paths of removal and egress for this equipment from point of installed equipment-to-equipment loading area exterior to building. Entire egress path shall be coordinated for removal of equipment. Preference is to remove all equipment through elevators to ground level. Egress paths of equipment through removable louvers or roof cupolas are acceptable provided louver or cupolas locations are crane accessible. Coordinate with structural to add lifting beams as required to move or replace heavy equipment.
- D. Building utilities are required to be metered including but not limited to domestic water. Locate hydronic metering equipment inside a machine room. Provide isolation valves to accommodate meter service.
- E. Include a 0-100 psi pressure gauge on the domestic water header. Also include an electronic pressure sensor on the header, suitable for connection to Owner's BAS system.
- F. Avoid 3-1/2 and 5 inch pipe diameters.
- G. Do not locate plumbing piping or equipment in transformer vaults, elevator hoistways, elevator equipment rooms, electrical rooms, or telecommunications rooms.
- H. Verify location, available capacity and connection of new building services to existing campus utilities (domestic water, sanitary sewer, natural gas, etc.) with the University.

## 5.22.00 - PLUMBING GENERAL

### DESIGN AND CONSTRUCTION STANDARD

---

- I. Provide sufficient unions, flanges, and isolation valves to permit removal of equipment.
- J. Provide dielectric unions or dielectric nipples with a non-dielectric union to join dissimilar piping materials.
- K. Slope plumbing systems to permit drainage. Provide drain valves at lower points and manual air vents at high points.
- L. Conceal piping within building walls, above ceilings or in furred chases. Use exposed piping only in mechanical rooms unless directed otherwise.
- M. Provide one-piece (preferred) or split hinge stainless steel escutcheons for piping entering floors, walls, and ceilings in exposed spaces.
- N. Coordinate plumbing system design requirements with overall project design objectives with respect to LEED requirements.
- O. Provide N+1 redundancy for equipment providing building utility service such as domestic water backflow preventers (piped in parallel) and domestic hot water converters. Redundancy shall also be provided for equipment serving critical applications such as deionized water circulating pumps.

#### 1.02 Codes:

- A. Refer to Section 4.01.02 Codes and Standards

#### 1.03 Plumbing Systems Selection:

##### A. Plumbing

1. Floor drain traps installed in inaccessible areas shall be brought to the attention of the Owner for consideration of priming at that time.
2. There shall be one 12" x12" floor sink per air handler for fin water (condensate from cooling coils), and one 12"x12" floor sink per pump battery to facilitate multiple condensate lines, and to eliminate trip hazard of condensate lines routed over floors.
3. Refer to section 5.22.20 for water recovery standards.
4. Domestic water softening shall be required at sites with high domestic water loads such as residence halls, animal research, and rec. sports. Laboratory water softening shall be considered on a case by case basis. Water shall be tested for hardness and softening system shall be selected to

**5.22.00 - PLUMBING GENERAL**  
**DESIGN AND CONSTRUCTION STANDARD**

---

to reduce hardness to acceptable level and sized for building demand.  
Consult the University for preferred chemical treatment suppliers.

1.05 Plumbing System Warranties

- A. All plumbing systems, components and controls shall be provided with a minimum 12 month warranty that shall initiate upon substantial completion of building. Specific plumbing components may have longer warranty periods. Warranty shall be unconditional and include material, labor and response within 24 hours of notification.

END OF STANDARD