



## Division 22 Plumbing

### 22 00 00 Plumbing

#### 22 05 00 *Common Work Results for Plumbing*

##### 22 05 05 General Requirements for Plumbing

1. The plumbing design for all UW Madison facilities shall comply with all of the provisions of the latest version of the Division of Facilities Development & Management (DFDM) Plumbing and Fire Protection Design Guidelines, which is available from the DFDM website.
2. References within the DFDM Guidelines regarding the DFDM Project Manager shall apply to the UW-Madison Project Manager on UW-Madison Managed Projects.
3. Project Specifications shall use as their basis all appropriate sections of the latest edition of the DFDM Master Specifications.
4. Deviations from DFDM's Design Guidelines or the DFDM Master Specification sections shall be made only upon approval from the UW-Madison Project Manager.
5. The Guidelines for Planning and Design of UW-Madison Facilities shall take precedence over DFDM Guidelines, but the A/E shall discuss all conflicts within the guidelines and specifications with the UW-Madison Project Manager.
6. The goals and guiding principles of the UW-Madison Campus Master Plan (latest edition) shall be considered and referenced as part of the planning, design, detailing, and material section for every project.
7. Owner training shall be included for all equipment and systems and training shall be scheduled and take place.
8. As-built record drawings shall be kept up to date on the job site, and turned over to the A/E prior to final pay requests. The drawings must be prepared by the A/E in a clear AutoCAD format and turned over to the UW-Madison Project Manager at Close Out.

##### 22 05 23 Valves for Plumbing Piping

1. Ball valves 3" and smaller should be two piece bronze-body with stainless steel ball and stem.
2. The use of gate valves should be avoided; if necessary they should be of the resilient seat / resilient wedge type.
3. The preferred RPZ backflow preventers are Watts #919 and Wilkins #975.
4. Butterfly valves of the grooved and lug type may be used. Lug valves require that solid flanges be used; grooved flange adapters are not approved for this type of valve. Butterfly valves 6" and larger must be provided with geared hand wheel operation; smaller valves may use lever handles.



5. Ball and butterfly valves that are used for flow balancing service must have handle locking devices.
6. The use of water pressure reducing valves should be avoided. Booster pump systems with VFDs and without PRVs are the preferred systems.
7. Balance valves shall have shut off valves on both sides of the valve.

## **22 10 00 Plumbing Piping and Pumps**

### ***22 11 00 Facility Water Distribution***

#### **22 11 05 General Requirements for Facility Water Distribution**

1. A drain shall be provided under recessed walk-off mats only in very heavily used entries. The need for an indirect drain or trap primer shall be considered in this instance. The drain shall be sufficiently sized and includes a sediment basket to retain the sandy debris that will accumulate. In most campus buildings, it is preferred to provide a recessed mat with no drain in the pan.
2. Acid dilution basins shall be used for new buildings, do not use acid neutralization basins on acid waste piping systems. Acid neutralization basins shall only be used in rare circumstances with unusually heavy acid use, and then, only after a review by UW-Madison Safety and Plumbing.
3. Tee-drilling of water supply branches shall not be allowed.
4. 1 ½ inch meter test pipe shall be installed to outside of building, this can also be used to supply building with water during main interruptions.
5. The contractor shall turn over, to the UW-Madison Project Manager, the initial registration and testing report required for backflow preventers and other cross connection control devices regulated by the Wisconsin Department of Safety and Professional Services.
6. Frost-proof hose bibs shall be provided where there is need for watering of landscaping including green roof areas, near a loading dock, and at roof level for window washing equipment.
7. Hose bibs shall be located such that the need to run hoses across sidewalks to water planting beds is avoided.
8. All parking ramps shall be designed with 1 ½ inch female connection and the valves shall be marked NON-POTABLE WATER or UNSAFE WATER. Connections shall be located in areas accessible for semi-annual flushing of concrete coatings. Connections shall be spaced no more than 100 feet for coverage with a 50 foot hose.
9. Galvanized steel shall not be used.
10. CPVC shall not be used.
11. Anything Type L copper 2 ½” and larger use mechanical grooved pipe connections; no solder.



12. System dead legs and long capped branches that could encourage bacterial growth are not allowed, particularly on hot water systems.
13. At pump panel controls mount the HOA switch on the outside of the panel.

#### **22 11 16 Domestic Water Piping**

1. For 4 inch diameter or greater underground domestic water, ductile iron piping shall be used. For less than 4 inch diameter, copper piping shall be used. PVC shall be used only in very rare circumstances where there is a proven history of corrosive soil conditions.
2. Refer to *Division 21 Fire Suppression* for dual water service and dual valve requirements for entry piping.

### ***22 13 00 Facility Sanitary Sewerage***

#### **22 13 16 Sanitary Waste and Vent Piping**

1. PVC is the preferred material for underground drainage systems. Locations where high temperature discharge could occur such as mechanical rooms and kitchens must be either cast iron or high temperature rated CPVC chemical waste piping material.
2. PVC may be used for above ground portions of systems but must be evaluated on a case by case basis. Locations where sound transmission is an issue must use cast iron No Hub material.
3. Heavy duty No Hub couplings should be used at the lowest levels and base of drain stacks and roof conductors where higher pressures could occur. Standard couplings should be used for the balance of these systems.

### ***22 14 00 Facility Storm Drainage***

#### **22 14 29 Sump Pumps**

1. Detail and install sewage ejection pumps and other sump-mounted equipment so that isolation valves check valves, etc. are located above the sump or in a dry well next to the sump in an area where they are more serviceable.
2. All utility pits are to be provided with a sump pump basin to receive a sump pump when needed. A GFI outlet for the pump and an additional convenience outlet, as well as appropriate lighting for work shall be provided.

## **22 40 00 Plumbing Fixtures**

### ***22 42 00 Commercial Plumbing Fixtures***

#### **22 42 05 General Requirements for Commercial Plumbing Fixtures**

1. Black fixtures shall not be used, as they are difficult to keep clean.
2. A minimum of one mop sink shall be provided on every floor, preferably near toilet rooms. The mop sink rim shall be a maximum of 6 inches high to allow for ease of use by custodians to drain equipment.
3. At least one bottle filler shall be included within each campus building.



4. Plumbing connections shall be coordinated for all owner furnished specialty equipment such as water polishers, ice machines, etc.
5. Point of use hot water heaters should not be used.
6. The use of thermostatic mixing valves should be avoided or minimized as much as possible.

#### **22 42 13 Commercial Water Closets and Urinals**

1. Battery operated or low voltage infrared sensors shall be provided on all urinals. The power source shall be determined on a project by project basis. Sloan SMO (side mount operator) or similar battery operated flush valves shall be provided on urinals only. The campus preferred faucet is the Chicago Faucets, for ease of repair. Dual handle models that meet ADAAG shall be provided. Sensor faucets are high maintenance and not preferred, but can be discussed for use in specific situations. Urinals shall be wall hung with one floor mounted urinal per building.
2. Metered or sensor faucets and flush valves should not be used with the exception of battery operated flush valves.
3. Urinal flow rates should be a minimum of .25 GPF.
4. 1.28 GPF toilets may be used if they are the flush valve type toilets.
5. 1.28 GPF tank type toilets may only be used if they are the flush valve/power flush type.

#### **22 42 16 Commercial Lavatories and Sinks**

Lavatory flow rates should be a minimum of .5 GPM.

### ***22 45 00 Emergency Plumbing Fixtures***

#### **22 45 13 Emergency Showers**

Drains under all emergency showers shall be provided. In large spaces, where multiple showers are required, one drain shall be centrally located.

#### **22 45 36 Emergency Fixture Water-Tempering Equipment**

Emergency eyewash and showers must supply tempered water in a temperature range of 75-90 degrees Fahrenheit. Tempered water shall be provided using a pumped loop and fail-safe tempering valve. Campus recommends using the same loop to supply hand washing water to restrooms to keep water fresh. Individual tempering valves that serve a single eyewash or shower shall be prohibited.

### ***22 47 00 Drinking Fountains and Water Coolers***

#### **22 47 13 Drinking Fountains**

Drinking fountains shall comply with ADA requirements and campus standards, if bottle filler is used, the unit must be installed on the “Low” fountain. The bottle filler mechanism shall be hands free operation, and shall not require the use of an activation button. The campus preferred brand is Elkay.