

220010-H: SUPPLEMENTAL PLUMBING SPECIALTIES (15430-H)

Related Sections

Basis Guideline: [220010](#) – “Plumbing Specialties”
[064040-H](#) – “Architectural Woodwork”

For an explanation of the use of these guidelines, see [“Design Guidelines for UMHHC Facilities”](#)

Included as part of this UMHHC guideline section are the details described within the following UM Master Specification sections:
[224200](#) – “Plumbing Fixtures”

The UM Master Specifications may be used as a reference and/or basis, but the A/E is completely responsible for contract specifications (meeting the intent of the UMHHC Guidelines and Preferred Manufacturers List) that are used in UMHHC projects.

UMH Standard Details:
[D220010H-1](#) – “Typical Mixing Valve Detail”

General

Each patient toilet room shall have individual isolation valves on H&CW lines accessible above ceilings.

Plumbing fixtures in behavioral health applications shall conform to the latest “Design Guide for the Built Environment of Behavioral Health Facilities” published by FGI.

Plumbing Fixtures

General

Water supplies to lavatories and water closets shall be chrome-plated brass with keyed shut-off valves.

All local mixing valves (i.e. shower mixing valves, lavatory ADA mixing valves, etc.) shall be provided with additional, external check valves on the hot and cold water feeds to the valve to supplement the check valves inherent in the mixing valve.

The AE shall pay special attention to the use of plumbing fixtures in psychiatric patient areas. All fixtures shall utilize an anti-ligature design specifically intended for psychiatric patients.

Water Closets

Water closets shall be dual-flush, flush valve, elongated bowl, and floor mounted. Water closet footprint shall be continuous from floor to back wall. Fixture shall be rated for 1,000 lbs. Provide with white plastic, open front seat and self-sustaining hinges.

In off-site outpatient facilities with limited incoming water services, pressure-assisted flush tank water closets are allowed.

Sinks/ Lavatories

Handwashing

- The minimum size for stainless steel and vitreous china handwashing sinks shall be 16”x14”x7-1/2” deep.
- UMH prefers to utilize a wall-hung integral solid-surface (i.e. “Corian”) backsplash/ counter/ bowl assembly with an offset grid strainer for all handwashing sink applications. Integral solid surface handwashing sinks shall utilize 16-1/4”x13”x6” deep oval bowls. Contact UMH project manager for more details.

- All counter-mounted handwashing sinks and lavatories mounted in a solid-surface counter shall utilize an integral solid-surface bowl or under mount stainless steel bowl. See architectural design guideline 064040-H “Architectural Woodwork”.
- Clinical handwashing sinks shall be provided without an overflow drain.

Stainless steel sink fixtures should be sound deadened with an undercoating of special mastic. Stainless steel shall be 18 gauge with coved corners and satin polished finish, unless otherwise noted.

All exposed water & waste piping on barrier-free lavatories and sinks shall be insulated per ADA.

All exposed trim (tailpieces and traps) for sinks and lavatories shall be minimum 17-gauge chrome-plated cast brass. All concealed trim may be either PVC or rough brass.

Wall-hung vitreous china lavatories/ sinks shall utilize concealed arm carriers. All carriers for wall hung lavatories/ sinks shall be rated for a minimum 250-pound load on the plumbing fixture.

Faucets

All faucets on handwashing sinks shall utilize an integral 1.0 GPM flow control device in the base of a gooseneck faucet with a laminar, non-aerated, discharge. Aerators are not allowed on clinical handwashing sinks.

All lavatory faucets, both in public and private toilet rooms, shall be provided with 0.5 GPM flow control aerators.

Infection control measures dictate that faucet discharge shall not terminate directly over the sink drain outlet. The A/E shall be responsible for coordinating the faucet spout dimensions with the bowl outlet to prevent this.

To help facilitate UMH’s handwashing policy, all electric eye faucets shall be factory programmed to remain on for 30 seconds of continuous, uninterrupted water flow (UMH handwashing policy requires a minimum 15 secs of wash time).

The A/E shall specify the following faucet type based on location/ use. Where multiple faucet types are specified, the A/E shall coordinate with users for preferred type:

Faucet Location/ Use	Faucet Type			
	Foot pedal	Wrist blade	Single Lever	Electric Eye (1)
Handwashing Sink (general use) (3)	X	X		
Handwashing Sink (critical care use) (2) (3)	X			
Lavatory, Public		X		X
Lavatory, Private or Staff		X		
Sink, Soiled Utility	X	X		
Sink, Break Room, General Purpose		X	X	

(1) Per approval from UMH clinical staff. Electric eye faucets shall utilize battery power in lieu of a hard-wired power source.

(2) Critical care units shall include Infusion, ICU and other units where patient care requires a hands-free handwashing sink. Coordinate with clinical staff.

(3) All handwashing sinks shall utilize a gooseneck spout

Patient Care Units

Do not install factory packaged Patient Care Units. Instead, AE shall detail and specify standard plumbing fixtures (water closet, sink, faucet, bed pan washer, etc.), as outlined in this section, installed in custom cabinetry. Plumbing fixtures and cabinetry shall conform to UMH design guidelines and UMH preferred manufacturer’s list. See DG 064040-H: ARCHITECTURAL WOODWORK for cabinetry requirements.

Bed pan washers shall be wall-mounted swing down type as opposed to hand-held type. Coordinate type with UMH staff.

Scrub Sinks

Scrub sinks shall be specified by the AE, contractor provided and installed.

- Sinks shall be constructed of 16 gauge (minimum thickness), type 304 stainless steel with horizontal and vertical corners covered to ¼" radius. All corners are to be welded and all welds ground and polished to match No. 4 finish. Outer enclosure shall be constructed of 18 gauge (minimum thickness), type 304 stainless steel and shall have removable stainless steel access panels.
- All sinks shall be factory pre-piped including piping accessories (i.e. mixing valves). All piping shall be concealed yet be accessible for maintenance/replacement. All hydronic specialties (mixing valves, shutoff valves, etc.) shall conform to UMH standards.
- Sinks to have sloping basin to eliminate backsplash.
- Provide sink with adjustable thermostatic controlled pressure regulating mixing valve, one per station. Mixing valve shall be equipped with internal check stops for serving to prevent cross-flow. In addition, AE shall detail the need to install fully redundant check valves on the HW & CW feeds to the mixing valve.
- In-wall concealed carrier shall be utilized to hang surgical scrub sink. No pedestal style base supports shall be allowed. A minimum of 16" free area clearance shall be provided from the bottom of sink to finished floor level.
- Do NOT provide sinks with optional soap dispensers. Michigan Medicine will install external soap dispensers via direction from the Infection Prevention department.
- Coordinate with surgical sink staff on preference for utilizing splash screen basin dividers for dual basin sink station applications. Typically, dividers are not desired.
- Water flow shall be activated/de-activated by electronic infrared sensor technology. Do NOT provide foot pedals or knee operated panels. Water shall remain on as long as the infrared sensor is activated and shall not be governed by a pre-set time period.
- Each sink station shall be equipped with a visual digital water flow timer.
- No eyewash should be provided unless required by Infection Prevention or Safety Management Services. In rare cases where required, provide a separate, dedicated eye wash fixture compliant with ANSI standards. Do not integrate handwashing and eyewash.

Miscellaneous

Janitor closets require a floor mounted mop sink, with rim guard, rough chrome plated brass faucet, wall mounted 36" above the floor with wall bracket, pail hook, vacuum breaker, wall mounted mop holding bracket and 3'-0" rubber hose connected to hose end of faucet. In addition, provide a separate, dedicated non-potable CW connection for chemical mixing/ dilution, consisting of a ½" CW with hosebibb connection, fed from a RPZ backflow preventer racked on the wall, for ease of servicing. Mount hosebibb over mop sink. Provide sign over non-potable hosebibb indicating "Chemical Connection Faucet Only".

Drinking fountains shall be located in alcoves or recesses in corridors. They shall be refrigerated and designed for barrier-free use. Drinking fountains in high public traffic areas shall be provided with integral water bottle refill stations.

Shower mixing valves shall be safety, non-scalding type, thermostatic or pressure and shall be provided with additional, external check valves on the hot and cold water feeds to the valve to supplement the check valves inherent in the mixing valve. Supplemental check valves shall be accessible, ideally located in the ceiling with an access panel or in an accessible ceiling. Showers shall be equipped with an adjustable shower head. In addition, showers shall be provided with a flexible 4'-0" hose and secondary shower head with temperature adjustment at the mixing valve. Either shower head shall be operable, but not simultaneously.

Floor Drains

Each toilet room shall have a floor drain. All floor drains in toilet rooms shall utilize a gravity fed trap primer consisting of a 1/2" tube interconnecting the lavatory's p-trap to the toilet room floor drain (i.e. JR Smith "Prime-Eze Water Saver Trap Primer"). Valve-based trap primers shall not be acceptable.

Floor drains in ADA showers, labor & delivery tub rooms and other bathrooms that are prone to having water on the floor shall utilize a low profile trench drain to separate wet areas from dry, extending from wall to wall. In addition, consider utilizing a secondary trench drain at the door threshold, to prevent water from flowing out into the patient room. Trench drain body & grate shall be manufactured from 304 or 316 stainless steel and shall be made to be mounted in a 2" deep concrete topping pour. Grate shall be heel-proof, coordinate type with architect. Trench drains shall utilize an external p-trap; models with an integral trap are not acceptable.

All emergency eyewash location shall terminate over a sink or bowl that is piped to the building sanitary waste system. All emergency shower locations shall be provided with a floor drain (drain does not require a trap primer) directly below the shower discharge. OSHA requires that emergency showers & eyewashes be periodically tested and should not puddle on the floor, posing a slipping hazard.

Water Filtration Devices

A/E to specify water filtration devices for all equipment supplied with domestic water, typically a 5-micron in-line cartridge type filter (coordinate filter requirements with equipment supplier and UMH maintenance):

- Ice Maker
- Vending Machines
- Sterilizers/ Washers
- Kitchen Equipment
- Refrigerators with integral water/ ice dispensers

Backflow Preventers

The A/E shall clearly indicate the size and discharge location of indirect drains off of backflow preventers, sized to handle a full discharge of flow.

Emergency Safety Equipment

Emergency eye washers and safety showers shall conform to ANSI/ ISEA Z258.1, set to utilize a tepid source (i.e. 60°F-90°F) via an approved emergency mixing valve manufactured for the dedicated purpose of serving safety equipment. Mixing valve shall fail in full cold flow in the event of valve failure.

Where an emergency eye wash is required, AE shall specify a dedicated eye wash unit with integral bowl piped to drain. Where space/ use does not allow the use of a dedicated eye wash unit, AE shall specify an ANSI Z358.1 compliant combination faucet/ eye wash at the sink in the room (i.e. Speakman SEF-1801). Sink shall be clean use only (i.e. handwashing) and not dirty functions. The AE shall coordinate the sink bowl dimensions needed to prevent splashing during regular testing of the eyewash with the vendor published data on eyewash plume. Typically, the sink dimensions used with combination faucet/ eye wash units shall utilize a minimum 13" deep bowl (front to back clear dimension) to capture the eyewash plume and prevent splashing and puddling on the floor.

Water Quality

Many of UMHHC's facilities receive domestic water from the City of Ann Arbor Water Treatment facility. The City of Ann Arbor water supply is a blend of surface water (Huron River) and well water. The City utilizes a cold lime softening process in combination with the use of chloramine disinfectant, which results in a water service exhibiting the following characteristics:

- High pH of 8-9
- High conductivity of 500-700 uS

- Medium hardness of ~140 mg/L

These conditions have been shown to cause premature failure of numerous materials utilized in traditional plumbing systems, predominantly in the domestic hot water and high temperature hot water distribution systems, as raising the temperature of the water increases the corrosive potential of the water. See "[Domestic Water Analysis – Premature Failures in UMH Domestic Hot Water Systems](#)" report published under the Policy Papers section of UMHHC's design guidelines for more details.

To address this issue, the A/E shall incorporate the following into their design for all domestic water work in facilities served by the City of Ann Arbor Water Treatment plant (i.e. the main healthcare campus, Wall St campus, Briarwood facilities, EPW, East Ann Arbor campus, etc.):

- Materials (piping, valve bodies & trim, fixture bodies & trim, DHW heaters, etc.) used in the domestic hot water system shall predominantly be based on Type L copper and 316 stainless steel. Limit the use of brass, mild steel and lower quality stainless steels (i.e. 304).
- Limit/ eliminate the use of open cell elastomerics like EPDM, which are traditionally used in gaskets for grooved fittings, in the domestic hot water system. Where necessary to utilize EPDM, specify the use of peroxide-cured EPDM which has been found to be more resistant to our water quality.
- Limit/ eliminate the use of mixing valves in domestic water systems. These valves have exhibited a high failure rate and are a source of numerous bleed thru problems throughout campus. Where mixing valves are required (i.e. showers, emergency fixtures, ADA fixtures), provide redundant check valves in the HW & CW connections upstream of the mixing valve.