

5.22.40 - PLUMBING FIXTURES

DESIGN AND CONSTRUCTION STANDARD

PART 1: GENERAL

1.01 Purpose:

- 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 design and construction of their facilities. Deviations from these guidelines must be justified through LCC analysis and submitted to the University for approval.

1.02 References:

- A. All fixtures shall meet the requirements of ANSI A117.1, ANSI Z124.2 and the State of Texas Accessibility Standards (TAS).
- B. Certification of compliance with specified ANSI, UL, and ASHRAE Standards will be required, as appropriate, for all plumbing fixtures and appurtenant devices. Also, specific fixture selection and design shall incorporate all requirements and standards of the Americans with Disabilities Act (ADA) and all State Standards as may apply.
- C. ANSI Z358.1 – American National Standard for Emergency Eyewash and Shower Equipment.
- D. Emergency equipment and installations shall comply with the Texas Accessibility Standards (TAS), OSHA Standards for Emergency Eyewash and Showers no. 29 CFR 1910.151 and 1926.50, ANSI Z358.1 1998 and the U.T. Lab Safety Handbook U.T. Department Environmental Health and Safety.

1.03 Requirements:

- A. All faucets, fittings, supply stops and similar devices shall be of one manufacturer unless otherwise indicated. The PSP shall specify fixtures that meet the following requirements and is encouraged to specify fixtures that carry the WaterSense seal.
- B. Provide custodial closets with wall mounted, floor sink with minimum 12 inch high sides and shall be located near door.
- C. Support all wall mounted urinals and water closets with fixture carriers with legs anchored to floor.
- D. Provide emergency eye or combination eye and face washers in hazardous areas as required by code.
- E. Provide emergency eye wash or combination eye/face washer in each work area

5.22.40 - PLUMBING FIXTURES

DESIGN AND CONSTRUCTION STANDARD

and lab and a drench hose face washer at each major sink (cup sinks excluded) where an individual is exposed to injurious materials and wherever an individual are using and / or exposed to any corrosive material. Minimum flushing flow rate for eye and eye face wash shall be 0.4 gpm for 15 minutes and the minimum flushing flow rate for a drench hose shall be 3.0 gpm for 15 minutes.

- F. Provide emergency eye or combination eye and face washers in each lab, preferably at each major sink (cup sinks excluded). Minimum flow pressure at 20 psi, maximum static pressure at 125 psi, water temperature range at 60 deg. to 95 deg. F, and flow rate between 2.5 and 12 gpm.
- G. Provide emergency deluge stations in corridors serving several research labs. Provide deluge stations near the entry to all teaching labs. Provide floor drains with deep seal traps and trap primers at each deluge station. Emergency deluge stations will have pull chain activation, unless directed otherwise.

[LEED WE Credit 2: Innovative Wastewater Technologies – Reduce potable water use for building sewage conveyance by 50% through the use of water-conserving fixtures (water closets, urinals).]

[LEED WE Credit 3.1: Water Use Reduction: 20% Reduction – Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation).]

[LEED WE Credit 3.2: Water Use Reduction: 30% Reduction – Employ strategies that in aggregate use 30% less water than the water use baseline calculated for the building (not including irrigation).]

PART 2: PRODUCTS

2.01 FIXTURES:

- A. ADA and Standard Lavatory (LAV-1): Wall mounted 20"W x 18"D vitreous china lavatory, with rectangular basin, splash lip, front overflow, fabricated for concealed arm supports, and having two soap depressions. Drill lavatories for 4" center faucets (Provide Additional hole 6-1/2" Min. to right of center for soap dispenser). Provide concealed arm carriers, "Type-A or B" faucet, trap, supplies, angle valves and vinyl covers as specified in the Articles below.
- B. ADA and Standard Lavatory (LAV-2): Self-rimming counter top mounted 20" x 17", Oval vitreous china lavatory, front overflow. Drill lavatories for 4" center faucets (Provide Additional hole 6-1/2" Min. to right of center for soap dispenser). "Type-A or B" faucet, trap, supplies, angle valves and vinyl covers as specified in the Articles below.
- C. Water Closet (WC-1): Vitreous china, back outlet, wall hung, siphon jet elongated closet bowl, with 1-1/2" top spud; quiet flushing action, with self-draining jets and

5.22.40 - PLUMBING FIXTURES

DESIGN AND CONSTRUCTION STANDARD

and large passageway. Provide carriers, seat and flush valve “Type-FV-1 or 2” as specified in the Articles below. Water closet will be designed as low flow type, (1.6 gpf). Mounted height of 15” floor to rim.

- D. ADA Water Closet (WC-2): Vitreous china, back outlet, wall hung, siphon jet elongated closet bowl, with 1-1/2” top spud; quiet flushing action, with self-draining jets and large passageway. Provide carriers, seat and flush valve “Type-FV-1 or 2” as specified in the Articles below. Water closet will be designed as low flow type, (1.6 gpf). Mounted height of 17” floor to rim.
- E. ADA Water Closet (WC-3): Vitreous china, bottom outlet, floor mounted, siphon jet elongated closet bowl, with 1-1/2” top spud; quiet flushing action with self-draining jets and large passageway. Provide mounting bolt covers same color as fixture. Provide threaded bronze floor flange with gasket. Provide seat, and flush valve “Type-FV-1 or 2” as specified in the Articles below. Water closet will be designed as low flow type, (1.6 gpf) with 10” or 12” rough-in. Mounted height of 17” floor to rim.
- F. ADA Water Closet (WC-4): Vitreous china, bottom outlet, floor mounted, tank type elongated closet bowl with insulated tank. Class 5 3” flush valve min. and 2-1/8” trap way min. Provide mounting bolt covers same color as fixture. Provide threaded bronze floor flange with gasket. Provide seat as specified in the Articles below. Water closet will be designed as low flow type, (1.6 gpf) with 10” or 12” rough-in. Mounted height of 16-1/8” floor to min. rim.

[Dual flush or High-Efficiency Toilets (HETs), which use 1.3 gpf or less, should be considered as LEED options to earn water and sewer reduction credits.]

- G. Urinal (UR-1): Vitreous china, Washout wall hung urinal with integral extended shields, 14” extended Rim, 3/4” top spud, 2” N.P.S. tap outlet spud connection with supporting hanger, and chrome plated brass beehive strainer. Provide concealed steel bearing plate with steel upright legs and cast iron foot supports and flush valve “Type-FV-3 or 4” as specified in the Articles below. Mounted height of 24” floor to rim.
- H. ADA Urinal UR-2: Vitreous china, Washout wall hung urinal with integral extended shields, 14” extended Rim, 3/4” top spud, 2” N.P.S. tap outlet spud connection with supporting hanger, and chrome plated brass beehive strainer. Provide concealed steel bearing plate with steel upright legs and cast iron foot supports and flush valve “Type-FV-3 or 4” as specified in the Articles below. Mounted height of 17” floor to rim.
- I. ADA Stainless Steel Sinks (SK-1): 25”L x 21”W x 5-3/8” Deep Single bowl, 20 gauge type 304 Stainless Steel, self-rimming, single compartment sink, drain opening located on right side of sink bowl with standard (3) faucet holes for 8” on center set “Type-C” faucet. Basket strainer w/ rubber stopper and 1-1/2” chrome plated tailpiece. Trap, supplies and stops as specified in the Articles below.

5.22.40 - PLUMBING FIXTURES

DESIGN AND CONSTRUCTION STANDARD

- J. Service Sink (SS-1): 24" x 20" acid-resisting enameled inside, cast iron service sink with back wall hanger and with stainless steel rim guard. Provide complete with service sink 3" cast iron adjustable trap standard to wall with cleanout plug, having acid resisting enamel finish inside, painted outside, with strainer, and outlet for 3" iron pipe. Provide "Type-D" faucet as specified in the Articles below.
- K. Service Sink (SS-2): (Mop Basins) 36" x 24" Molded Stone floor mounted sink with 10" high walls with aluminum bumper guard, wall guard. Provide 3" stainless steel flat grid strainer. Provide Type-D" faucet as specified in the Articles below.
- L. Emergency Eyewash Fountains (EW-1): (Wall or floor mounted), stainless steel receptor with integral wall mounting bracket or 1-1/4" steel pipe pedestal with floor flange. Unit shall have wrap-around spray head with hinged dust cover with positive link actuation (push flag and or foot actuation). Instant action stay open brass ball valve that stays open until manually closed; pressure compensated stream control and chrome plated strainer and 1-1/4" tailpiece. Wall mounted type to be provided complete with trap.
- M. Emergency Showers (ES-1): (Ceiling or floor mounted), emergency, drench type, having 10" diameter stainless steel deluge shower head, 1" I.P.S. rough chrome plated Instant action stay open brass ball valve that stays open until manually closed, activated by rigid stainless steel pull rod with and triangular handle. Provide with audible alarm (preferably bell) to sound upon detection of flow. Floor mounted type supported by 1-1/4" steel pipe pedestal with 9" diameter floor flange.
- N. Emergency Shower & Eyewash Fountain Combination (ES/EW-1): (Shower), Floor mounted emergency, drench type, having 10" diameter stainless steel deluge shower head, 1" I.P.S. rough chrome plated Instant action stay open brass ball valve that stays open until manually closed, activated by rigid stainless steel pull rod with and triangular handle. Floor mounted and supported by 1-1/4" steel pipe pedestal with 9" diameter floor flange. (Eyewash), Stainless steel receptor with 1-1/4" steel pipe outlet connected to emergency shower steel pipe pedestal. Unit shall have wrap-around spray head with hinged dust cover with positive link actuation (push flag and or foot actuation). Provide with audible alarm (preferably bell) to sound upon detection of flow. Instant action stay open brass ball valve that stays open until manually closed; pressure compensated stream control and chrome plated strainer and 1-1/4" tailpiece.
- O. Soap Dispensers: Pump type valve Lavatory deck mounted, 2-1/2" 16 stainless steel spout, sink mounted and 4" stainless steel spout, deck mounted, 316 stainless steel plunger activated with less than 5 lbs. force, 4-3/4" shank shall accommodate 3-1/2" mounting thickness with 32 oz. Polyethylene tank globe.

5.22.40 - PLUMBING FIXTURES

DESIGN AND CONSTRUCTION STANDARD

- P. Wall Mounted ADA Water Cooler (ADA Compliant): (Single and two level units), Refer to fixture schedule on drawings for Designations, Mfg. and Model. Units shall be factory assembled and tested, listed and labeled in compliance with UL Standard 399, and have capacities rated in accordance with ASHRAE Standard 18, ARI Standard 1010 and ANSI/NSF61, Section 9-1997B. All units shall be lead free design and standard color.
- Q. Hose BibbsHose Bibbs Toilet Rooms (HB-1): Inside sill faucet, polished chrome plated brass, vacuum breaker, 3/4" hose thread outlet, removable tee handle, 3/4" female inlet with escutcheon (flanged) Chicago Faucets NO. 952.
- R. Wash Down Hose Station (WS-1): Hot and cold water mixing valve (cast bronze valve with integral check valves, unions and globe valve stops), water gun, 50 ft. high pressure hose with swivel connection fitting and stainless steel hose rack

2.02 FAUCETS:

- A. Faucet (Type-A): ADA Compliant manual faucet. Polished chrome plated cast brass, 4" center set, 4" spout with chrome-plated constant flow aerator, single-wing handles indexed "HOT" and "COLD", and 1-1/2" waste with grid drain strainer. Provide supplies, angle valves and vinyl covers specified in the Articles below.
- B. Faucet (Type-B): ADA Compliant electronic 24 VAC adjustable sensor operated hand wash faucet for tempered hot and cold water with below sink mounted control module. Polished chrome plated cast brass, 4" center set trim plate, 5" spout with chrome-plated constant flow 0.5 GPM spray head. 120 VAC/24 VAC 50/60 hz. box mounted transformer (Sized to operate total number of faucets used and located maximum 50 ft. from furthest faucet), All electrical wiring from transformer to control module to be routed in conduit. Provide below sink manual mechanical mixing valve for water temperature control, balanced water temperature to max. 110°F and 1-1/2" waste with grid drain strainer. Provide supplies, angle valves and vinyl covers specified in the Articles below
- C. Faucet (Type-C): ADA Compliant manual 7" Goose Neck swing spout faucet. Polished chrome plated cast brass, 8" center set, spout with chrome-plated constant flow aerator, single-wing handles indexed "HOT" and "COLD" and 1-1/4" waste with grid drain strainer. Provide supplies, angle valves and vinyl covers specified in the Articles below.
- D. Faucet (Type-D): Service Sink faucet (Wall Mounted) Chrome plated cast brass, 8" center set, integral stops, 9-1/2" spout to wall with vacuum breaker, hose thread, bucket hook spout and supported with adjustable wall bracket. Faucet handles indexed "HOT" and "COLD". Provide 30" hose and wall hose bracket.
- E. ADA Compliant Shower Faucet (Type-E): Washerless, mixer type shower valve assembly with metal blade handle, hand spray shower head and fixed wall mounted shower head. Valve shall open to cold water first and then through warm mix to hot. Faucet shall have all operating parts separately replaceable from

5.22.40 - PLUMBING FIXTURES

DESIGN AND CONSTRUCTION STANDARD

outside the wall, rotating cylinder type operating mechanisms, equipped with replaceable nonmetallic seats contained in stainless steel lined sockets. Valve shall be equipped with pressure balance spool and sleeve device of Type 302 stainless steel which will maintain a preset (High temperature limit / anti-scald); with an adjustable stop to prevent the possibility of the valve being turned to full hot water. Provide with hand held shower head with swivel fitting and fixed wall mounted shower head with lever diverter valve, 60" flexible stainless steel hose, in-line vacuum breaker, and 24" chrome plated shower head slide guide, Reference architectural drawings for control valve, shower heads, diverter valve and slide guide position and mounting heights.

2.03 FLUSH VALVES:

- A. Flush Valve (FV-1): Quiet, exposed closet flush valve for (Water Closet), chrome plated, metal oscillation non-hold-open handle, 1" I.P.S. screw driver operated combination angle check and stop valve with protective cap, adjustable tailpiece, vacuum breaker flush connection and spud coupling for 1-1/2" top spud flanges. Mount ADA compliant flush valve handle to wide side of toilet stall.
- B. Flush Valve (FV-2): Automatic electronic sensor operated, quiet exposed, 24 VAC integral solenoid operated exposed flush valve for (Water Closet) with solenoid electrical box cover plate, infrared sensor with electric box and cover plate, 120 VAC / 24 VAC (50 VA) class II UL listed J-Box mount, multiple flush valve transformer (max. of 10 closet / urinal flush valves), chrome plated, 1" I.P.S. screw driver operated combination angle check and stop valve with protective cap, adjustable tailpiece, vacuum breaker flush connection and spud coupling for 1-1/2" top spud flanges. 1.6 G.P.F. Note: Only (1) transformer is required for the Max. total of 10 water closets and/or urinals in each toilet room. (Size transformer to operate total number of flush valves used and locate maximum 50 ft. from furthest flush valve), All electrical wiring from transformer to control module to solenoid valve to be routed in conduit.
- C. Flush Valve (FV-3): Quiet, exposed closet flush valve for (Urinal), chrome plated, metal oscillation non-hold-open handle, 3/4" I.P.S. screw driver operated combination angle check and stop valve with protective cap, adjustable tailpiece, vacuum breaker flush connection and spud coupling for 3/4" top spud flanges. Mount ADA compliant flush valve handle to wide side of Toilet room.
- D. Flush Valve (FV-4): Automatic electronic sensor operated, quiet exposed, 24 VAC integral solenoid operated exposed flush valve for (Urinal) with solenoid electrical box and cover plate with integrated infrared sensor, 120 VAC / 24 VAC (50 VA) class II UL listed J-Box mount, multiple flush valve transformer (max. of 10 closet / urinal flush valves). chrome plated, 3/4" I.P.S. screw driver operated combination angle check and stop valve with protective cap, adjustable tailpiece, vacuum breaker flush connection and spud coupling for 3/4" top spud flanges. 1 G.P.F. Note: Only (1) transformer is required for the Max. total of 10 water closets and/or urinals in each toilet room. (Size transformer to operate total number of flush valves used and locate maximum 50 ft. from furthest flush valve), All

5.22.40 - PLUMBING FIXTURES

DESIGN AND CONSTRUCTION STANDARD

valve), All electrical wiring from transformer to control module to solenoid valve to be routed in conduit.

2.04 ELECTRIC WATER COOLERS:

- A. Drinking fountains shall be electric, wall type, surface mounted in wall recess. Mount all bubbler spouts 36" above finished floor to meet ADA requirements. Where two (2) fountains are mounted side by side, they shall be mounted at different heights, one for ADA, and one standard. Side by side units shall be served by one refrigeration unit only. Provide with filters.

2.05 FIXTURE SUPPORTS:

- A. Lavatory Supports: Cast iron supports, having tubular steel uprights with welded base and concealed arms and sleeves, mounted on adjustable headers with escutcheons, and complete with heavy cast iron short feet, alignment trusses, and mounting fasteners.
- B. Water Closet Supports: Adjustable, factory painted, cast iron face plate, support base, and appropriate type waste fitting having face plate gasket; coated steel fixture studs and fasteners; coated and threaded adjustable wall coupling face plate with neoprene closet outlet gasket; and chrome plated fixture cap nuts and fiber fixture washers. Provide an appropriate model to suit deep or shallow rough-in, siphon jet or blow-out water closet, and type of sanitary piping system to which it is connected. Universal floor mount foot supports with rear anchor tie down.
- C. ADA Water Closet Supports: Adjustable, factory painted, cast iron face plate, support base, and appropriate type waste fitting having face plate gasket; coated steel fixture studs and fasteners; coated and threaded adjustable wall coupling face plate with neoprene closet outlet gasket; and chrome plated fixture cap nuts and fiber fixture washers. Units shall have elevated mounting heights of ADA fixtures, siphon jet or blow-out water closet, and type of sanitary piping system to which it is connected. Universal floor mount foot supports with rear anchor tie down.
- D. Urinal Supports: Concealed wall supports for urinals shall have steel top and bottom support bearing plates with bolts to support fixture independently from the wall; coated rectangular steel uprights with welded feet, adjustable support plates, and fasteners
- E. Water Cooler Supports: Concealed wall supports for water cooler shall have steel top and bottom support bearing plates with bolts to support fixture independently from the wall; coated rectangular steel uprights with welded feet, adjustable support plates, and fasteners.

2.05 FITTINGS, TRIM, AND ACCESSORIES:

5.22.40 - PLUMBING FIXTURES

DESIGN AND CONSTRUCTION STANDARD

- A. Toilet Seats: Elongated, solid white plastic, closed back/open front, less cover, and having stainless steel check hinge and replaceable bumpers. All toilet seats to be Anti-Microbial type.
- B. Supplies and Stops for Lavatories and Sinks: Polished chrome-plated, loose-keyed heavy commercial ¼ turn ball angle stop with wall flange having 1/2" inlet and 3/8" O.D. x 12" long flexible supply riser tubing outlet, and brass chrome-plated escutcheon.
- C. Supplies and Stops for Tank Type Water Closets: Polished chrome-plated loose-keyed heavy commercial ¼ turn ball angle stop with wall flange having 1/2" inlet and 1/2" O.D. x 12" long flexible supply riser tubing outlet with collar, and escutcheon.
- D. Traps for Lavatories: Cast brass, 1-1/4" adjustable "P" trap with cleanout and waste to wall.
- E. Traps for sinks: Cast brass, 1-1/2" adjustable "P" trap with cleanout and waste to wall.
- F. ADA trap covers: Molded resilient vinyl lavatory p-trap and angle valve antimicrobial insulation covers secured with snap-clip flush fasteners.
- G. Tub Waste and Overflow Fittings: Concealed lever operated pop-up bath waste and overflow, chrome plated waste spud with universal type outlet connection suitable for 1-1/2" I.P.S., or 1-1/2" O.D. tubing, or 1-1/2" solder-joint outlet connection on waste tee.
- H. Escutcheons: Chrome-plated cast brass with set screw.

PART 3: EXECUTION

3.01 Installation:

- A. Provide a stop valve in an accessible location in the water connection to each fixture.
- B. Provide escutcheons at each wall, floor, and ceiling penetration in exposed finished locations and within cabinets and millwork.

END OF STANDARD