

This standard is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design for new construction and renovations. 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.

- B. All new construction and renovation involving plumbing fixture and emergency equipment installation shall meet requirements of the currently adopted revisions of the following standards and guidelines.
1. ANSI A117.1 Standard on Accessible and Usable Buildings and Facilities
 2. ANSI Z124.2 Standard for Plastic Shower Head
 3. ASSE 1016 Pressure Balancing Shower Valves
 4. ANSI A112.18 Chrome Plated Brass Shower Head
 5. ANSI Z358.1 Standard for Emergency Eyewash and Shower Equipment

E. The plumbing fixtures and appurtenant devices listed below are selected to establish examples of design intent and to set a standard of quality. Equivalent products from other manufacturers may be available and may be submitted for approval. The PSP must closely review the features and performance parameters of any alternate fixtures against the fixtures specified herein.

F. According to the current edition of the ANSI Z358.1 standard, provide emergency eye wash or combination eye/face washer in each work area and lab and a drench hose face washer at each major sink (cup sinks excluded) where an individual is using and/or exposed to injurious or hazardous materials. 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.

G. 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 80 psi, water temperature range at 60 deg. F, and flow rate between 2.5 and 12 gpm.

H. 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.

I. Consult the most current edition of the *Maximum Performance (MaP) Testing of Popular Toilet Models* report in order to select the most efficient manufacturer and model available. Toilet models ranked according to MaP score with highest score given preference for selection for installation. The MaP report is published through the internet and is available free-of-charge on the websites of the Alliance for Water Efficiency (AWE) or the Canadian Water and Wastewater Association (CWWA) or the California Urban Water Conservation Council (CUWCC). MaP testing results for additional toilet models not included in the main report may be found by contacting the above organizations.

J. NOT USED

K. For renovations and new construction, provide with Manufacturers' certified flows for fixtures as indicated below.

Fixture Type	Replacement Flow
Toilets	1.6, +0.32 gpf

Note: 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. High-Efficiency Urinals (HETs), which use 1 gpf or less, should also be considered.

PART 2: PRODUCTS

2.01 Plumbing Fixture Specifications

A. Comply with applicable standards below and other requirements specified.

1. National Sanitation Foundation Construction: NSF 2.
2. Stainless-Steel Fixtures Other than Service Sinks: ASME A112.19.3M.
3. Vitreous-China Fixtures: ASME A112.19.2M.
4. Water-Closet, Flush Valve, Tank Trim: ASME A112.19.5.
5. ANSI 2124.2
6. ANSI A117.1
7. Texas Accessibility Standards (TAS)
8. ASSE 1016 Shower Valves
9. ANSI A112.18 Shower Heads

2.02 Miscellaneous Fitting Specifications

A. Comply with ASME A112.18.1M and other requirements specified for fittings, other than faucets. Include polished, chrome-plated finish, except where otherwise indicated. Coordinate fittings with other components and connectors.

1. Atmospheric Vacuum Breakers: ASSE 1001.
2. Automatic Flow Restrictors: ASSE 1028.
3. Brass and Copper, Supplies and Tubular Brass: ASME A112.18.1M.
4. Fixed Flow Restrictors: ASSE 1034.
5. Manual-Operation Flushometers: ASSE 1037.

2.03 Miscellaneous Component Specifications

- A. Comply with applicable Specifications below and other requirements specified for components for plumbing fixtures, equipment, and appliances.
1. Plastic Toilet Seats: ANSI Z124.5.
 2. Supply and Drain Insulation Kits: ANSI/CABO A117.1.
 3. Supports: ASME A112.6.1M.

2.04 Miscellaneous Materials

- A. Solder Filler Metals: ASTM B 32, Solder containing lead is not permitted.
1. Tube Size 2" and Smaller: Copper tube; Type "L", hard-drawn temper; wrought-copper fittings, solder-joints. Use Dutch Boy or Silvabrite 100 lead-free solder. Composition 95/5 manufactured by Engelhard Corporation.
 2. Tube Size 3" and Larger: Copper tube; Type "K", hard-drawn temper; wrought-copper fittings, brazed sil-fos-joints manufactured by Sil-fos. NO 2-1/2" permitted
- B. Provide chrome-plated solid brass valves, fittings, nipples, escutcheons, etc., for all exposed plumbing connections. Provide chrome-plated sleeves where existing exposed nipples must be re-used, so that all exposed parts have new chrome finish.

2.05 Fixtures:

- A. The plumbing fixtures listed in the Articles below are selected to establish examples of design intent and to set a standard of quality. Equivalent products from other manufacturers may be available and may be submitted for approval. The PSP must closely review the features and performance parameters of any alternate fixtures against the fixtures specified herein.
- B. ADA and Standard Lavatory (LAV-1): Wall mounted 20"W x 18"D vitreous china lavatory, with rectangular basin and minimum 4" backsplash, splash lip, front overflow, fabricated for concealed arm supports, and having two soap depressions. Drill lavatories for 4" center faucets. Provide concealed arm carriers, "Type-A or B" faucet, trap, copper chrome plated supplies, angle 1/4 turn ball valves and vinyl covers as specified in the Articles below.
1. When new construction or renovation of plumbing fixtures of this designation are indicated, use products by Manufacturers' listed or an approved equivalent: Toto Gerber, Crane, American Standard, Kohler, Sloan and Eljer.

- C. ADA and Standard Lavatory (LAV-2): Self-rimming counter top mounted 20" x 17", Oval vitreous china lavatory, and front overflow. Drill lavatories for 4" center faucets. "Type-A or B" faucet, trap, supplies, angle valves and vinyl covers as specified in the Articles below.
1. When new construction or renovation of plumbing fixtures of this designation are indicated, use products by Manufacturers' listed or an approved equivalent: Toto, Gerber, Crane, American Standard, Kohler, Sloan and Eljer.
- D. Water Closet WC-1 (ADA and Standard) 1.6 GPF: Wall-Hung Top-Spud Flush-Valve Type (ADA when mounted in raised position): Where plumbing fixtures of this designation are indicated, provide products complying with the following:
1. Manufacturers: Where applicable, provide products by the following:
 - a. Water Closet (3-bolt) Blowout Action: Crane Water Closet (4-bolt) Siphon Jet Action: Kohler, Toto, Crane, Gerber, American Standard, Kohler, Sloan and Eljer.
 - i. RLM requires American Standard or Gerber brand only
 - b. Flush Valve FV-1 Piston type (Manual) SLOAN
 - c. Flush Valve FV-2 Piston type (Automatic with sensor) 1.6 GPF: Auto Sloan Optima.

- E. Water Closet WC-2 (ADA or Standard) 1.6 GPF: Floor Mounted Top-Spud Flush-Valve Type: Where plumbing fixtures of this designation are indicated, provide products complying with the following:
1. Manufacturers: Where applicable; provide products Manufactured by the following:
 - a. Water Closet: (ADA or Standard), Toto, Gerber, Crane, American Standard, Kohler, Sloan and Eljer.
 - i. RLM Requires American Standard or Gerber Only
 - b. Flush Valve FV-1 Piston type (Manual) 1.6 GPF Sloan
 - c. Flush Valve FV-2 Piston type (Automatic with sensor) 1.6 GPF: Auto Sloan Optima.
 - i. RLM NO AUTO FLUSH VALVES
 - d. Flush Valve FV-2 Diaphragm type, (Automatic with sensor) 1.6 GPF: Auto Sloan Optima
 - i. RLM NO AUTO FLUSH VALVES
 2. Fixture Color: White.
 3. Bowl Type and Operation: Elongated
 4. Mounting and Outlet: Floor mounted, floor outlet with closet flange and seal.
 5. Fixture Bolt Caps: White, plastic or china.
 6. Standard Seat Height minimum 16” inches, Handicapped: Top of seat minimum 17” and 19” maximum.
 7. Design Water Consumption: 1.6 gal. per flushing cycle.
 8. Flushometer Valve Construction: Cast-brass body, brass or copper pipe or tubing inlet in the wall flange and tailpiece with spud, screwdriver check stop, and vacuum breaker.
 9. Flushometer Valve Operation: Piston.
 10. Flushometer Valve Finish: Polished, chrome-plated, exposed metal parts.
 11. Flushometer Valve, Water Consumption: Factory set or field adjusted, 1.6 gal. maximum per flushing cycle.
 12. Manual Flushometer valve components include the following:
 - a. Brass, lever-handle actuation.
 - b. Nonhold-open feature.
 13. Toilet Seat: Solid-plastic, water-closet seat with bumpers and hardware, compatible with water closet and as follows:
 - a. Color: White.
 - b. Class: Commercial, Standard.
 - c. Size: Elongated.
 - d. Pattern: Open front without cover or same as existing.
 - e. Hinge Type: Check (CK).
 - f. Provide with anti-microbial agent formed into the plastic.
- F. Water Closet WC-3 Floor Mounted (Pressure Assisted): Where plumbing fixtures of this designation are indicated, provide products provide products complying with the following:
1. Manufacturers: Where applicable, provide products manufactured by the following:
 - a. Water Closet (Floor Discharge, (ADA or Standard) : Mansfield, Gerber, Eljer, Crane, Kohler (Rear Discharge, ADA) and Gerber.
 - i. RLM requires American Standard or Gerber brand only

- b. Pressure Assist Flushing Mechanism: Sloan Flushmate III or Equal, Water Sense labeled.
2. Fixture Color: White.
3. Bowl Type and Operation: Elongated.
4. Mounting and Outlet: Floor mounted Bottom outlet with floor flange and ring seal.
5. Fixture Bolt Caps: White, plastic or china.
6. Standard Seat Height minimum

- J. ADA Stainless Steel Sinks (SK-1): 25"L x 21"W x 5-1/2" Deep Single bowl, 20 gauge type 304 Stainless Steel, self-rimming, single compartment sink, drain opening located off centered rear 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.
- K. Service Sink (SS-1): 24" x 20" x 12" deep bowl minimum, acid-resisting enameled inside, cast iron service sink with back wall hanger and with stainless steel rim guard and 10" backsplash. Provide complete with service sink 3" cast iron adjustable trap standard to wall with floor support and cleanout plug, having acid resisting enamel finish inside, painted outside, with strainer, and outlet for 3" cast iron pipe. Provide "Type-D" faucet as specified in the Articles below.
- L. Service Sink (SS-2): (Mop Basins) 36" x 24" Molded Stone floor mounted sink with 12" minimum 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.
- M. Emergency Showers (ES-1): (Ceiling or floor mounted), emergency, drench type, having 10" diameter stainless steel deluge shower head, 1" I.P.S. cold water rough, chrome plated Instant action stay open brass ball valve that stays open until manually closed, activated by rigid stainless steel pull rod with 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. Units (Ceiling or floor mounted) shall be mounted to meet all ADA barrier free requirements. Unit shall be provided with waste receptor (floor drain) piped to sanitary sewer.
- N. 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 piped to sanitary waste. Wall mounted type to be provided complete with trap. Units (Ceiling or floor mounted) shall be mounted to meet all ADA barrier free requirements.
- O. 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. cold water rough chrome plated Instant action stay open brass ball valve that stays open until manually closed,
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4-3/4" shank shall accommodate 3-1/2" mounting thickness with 32 oz. Polyethylene tank globe. For wall mounted installation above sinks, provide a manual push dispenser for one handed use, metered foam spray manufactured by Technical Concepts Model 450017. **RLM does not require counter mounted soap dispensers.**

- 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 pressure compensating flow control 0.5 GPM spray head (Aerator), single-wing handles indexed "HOT" and "COLD". Provide supplies, angle valves, grid drain strainer and vinyl covers specified in the Articles below.
- D. Faucet (Type-D): Service Sink faucet (Fixture back or Wall Mounted) Chrome plated cast brass, 8" center set, spout 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):
Wheelchair ADA Compliant Shower Faucet (Type-C): (Individual Shower Unit) SH-1: Preassembled 18 Ga. 304 stainless steel panel housing with all stainless steel or chrome plated brass fittings, with (1) heavy commercial shower head mounted on panel unit and (1) accessible hand held spray shower unit with 60" inch Stainless steel flexible hose with inline backflow preventer (vacuum breaker) and mounting post attached to 24" inch slide bar mounted on wall and diverter valve with cast brass body and cast brass chrome plated lever handle. Unit shall deliver 2.0 gpm including the following:
1. RLM Requires Symmons Temptrol II S-96-1
 - a. Housing and Mounting: Stainless steel housing and hinges, surface mounted with stainless steel bolts.
 - b. Shower Valve for Hot/Tempered and Cold Supply: Heavy-duty pressure balancing mixing type shower valve with stainless steel piston and cartridge, 1/2" chrome plated brass stem, tamper resistant brass limit stop, vandal resistant single blade (ADA) and (TAS)compliant

1. Manufacturers:
 - a. Neoperl PCA spray B9.65F3.1 (vp), 0.5 GPM
 - b. Niagara tamperproof N3205FTP, 0.5 GPM
 - c. Niagara N3210N, 1.0 GPM
 - d. Neoperl B9.78F3.1, 2.2 GPM
2. Water Consumption: 0.5, 1.0, and 2.2 gallon maximum per minute as specified for each location.
3. Aerators Dual threaded: coordinate threads of existing faucet to be retrofit and provide model with compatible threads.
4. Aerators spray and laminar flow type as indicated.

2.07 Flush Valves:

- A. Flush Valve (FV-1): **No Manual Flush Valves Unless approved by SHSU - Fixed volume Piston Type** for (Water Closet) exposed closet flush valve, chrome plated, metal oscillation non-hold-open handle, 1" I.P.S. screw driver()-3.2(-7.917 -1.146 455(i)-3.3(f)10.1(i)-3.2(e)-3.9(d f)1

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

A. Toilet Seats: Elongated, solid white plastic, closed back/open front, less cover, and having stainGN ANt

D. Provide escutche