

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 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
 - 6. OSHA Standard 29 CFR 1910.151 and 1926.50
 - 7. State of Texas Accessibility Standards (TAS)
 - 8. Americans with Disabilities Act (ADA)
 - 9. U.T. Lab Safety Handbook
 - 10. U.T. Department of Environmental Health and Safety.
- C. Compliance with specified ANSI, UL, ASSE, State of Texas Accessibility Standards (TAS), and ASHRAE Standards will be required, as appropriate, for the installation all plumbing fixtures and appurtenant devices. Certification of compliance should be available upon request.

1.02 Requirements:

- A. All fixtures, fixture accessories, faucets, fittings, supply stops and similar devices shall be of identical (same) 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. Select combinations of fixtures and trim and other components that are compatible.
- C. Provide custodial closets with wall or floor mounted, floor sink with minimum 12 inch high sides and shall be located near a door.
- D. Support all wall mounted urinals and water closets with fixture carriers with legs and welded steel plate for urinal anchored to floor.

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- 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. to 95 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. In the case of any new construction or renovation, utilize the City of Austin rebate program to maximize rebates where applicable. Rebates are available for reduced flow fixtures (toilet & flush valve) replacements of pre-1992 fixtures. New construction rebates are available for the installation of HET low flow fixtures. Communication should be made with the City of Austin to clarify terms and conditions for all new construction installations and renovations to be eligible for corresponding rebates. The list of products included herein was chosen with regards to those rebate programs.
- K. For renovations and new construction, provide with Manufacturers' certified flows for fixtures as indicated below.

Fixture Type	Replacement Flow
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Toilets	1.6, +0.32 gpf
Urinals	1.0, +0.05 gpf
Showerheads	2.0, +0.10 gpm
Kitchen Sink	2.2, +0.25 gpm
Bath Lav	1.0, +0.15 gpm
Commercial Lav	0.5, +.05 gpm

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.

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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 2 1/2 and Larger: Copper tube; Type "K", hard-drawn temper; wrought-copper fittings, brazed sil-fos-joints manufactured by Sil-fos.
- 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 ¼ 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 (subject to compliance with requirements of city of Austin rebate program where applicable): Toto Gerber, Crane, American Standard, Kohler 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

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designation are indicated, use products by Manufacturers' listed or an approved equivalent (subject to compliance with requirements of city of Austin rebate program where applicable): Toto, Gerber, Crane, American Standard, Kohler 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: Subject to compliance with City of Austin Rebate Program requirements 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 and Eljer.
 - b. Flush Valve FV-1 Piston type (Manual) 1.6 GPF Toto TMT1NNC, Sloan Crown II, Zurn Metroflush.
 - c. Flush Valve FV-2 Piston type (Automatic with sensor) 1.6 GPF: Zurn Metroflush.
 - d. Flush Valve FV-2 Diaphragm type, (Automatic with sensor) 1.6 GPF: Sloan Optima.
 2. Fixture Color: White.
 3. Bowl Type and Operation: Elongated
 4. Mounting and Outlet: Wall Hung, wall outlet.
 5. Fixture Bolt Caps: Metal with protective flat washer.
 6. Rim Height: Standard: 15" inches., Handicapped: 17" inches
 7. Design Water Consumption: 1.6 gal. per flushing cycle.
 8. Flushometer Valve Construction: Cast-brass body, brass or copper pipe or tubing inlet with wall flange and tailpiece with spud, screwdriver check stop, and vacuum breaker.
 9. Flushometer Valve Operation: Piston. (Manual or Automatic)
 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.
- 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:

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1. Manufacturers: Subject to compliance with the City of Austin Rebate program requirements where applicable; provide products Manufactured by the following:
 - a. Water Closet: (ADA or Standard), Toto, Gerber, Crane, American Standard, Kohler and Eljer.
 - b. Flush Valve FV-1 Piston type (Manual) 1.6 GPF Toto TMT1NNC, Sloan Crown II, Zurn Metroflush.
 - c. Flush Valve FV-2 Piston type (Automatic with sensor) 1.6 GPF: Zurn Metroflush.
 - d. Flush Valve FV-2 Diaphragm type, (Automatic with sensor) 1.6 GPF: Sloan Optima.
 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 with 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: Subject to compliance with the City of Austin Rebate program requirements where applicable, provide products manufactured by the following:
 - a. Water Closet (Floor Discharge, (ADA or Standard) :

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- Mansfield, Gerber, Eljer, Crane, Kohler (Rear Discharge, ADA) and Gerber.
 - 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 16" inches, Handicapped: Top of seat minimum 17" and 19" maximum.
 - 7. Design Water Consumption: 1.6 gal. per flushing cycle.
 - 8. Pressure assist mechanism water consumption: Factory set or field adjusted, 1.6 gal. maximum per flushing cycle.
 - 9. 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.
 - e. Hinge Type: Check (CK).
 - f. Provide with anti-microbial agent formed into the plastic.
- G. Water Closet WC-4 Wall Hung (Pressure Assisted, ADA when mounted in raised position): Where plumbing fixtures of this designation are indicated, provide products complying with the following:
- 1. Manufacturers: Subject to compliance with the City of Austin Rebate program requirements where applicable; provide products Manufactured by the following:
 - a. Water Closet: Eljer, and Mansfield.
 - b. Pressure Assist Flushing Mechanism: Sloan Flushmate III or as approved
 - 2. Fixture Color: White.
 - 3. Bowl Type and Operation: Elongated, siphon jet.
 - 4. Mounting and Outlet: Floor mounted, floor outlet.
 - 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. Pressure assist mechanism water consumption: Factory set or field adjusted, 1.6 gal. maximum per flushing cycle.
 - 9. 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.

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- e. Hinge Type: Check (CK).
 - f. Provide with anti-microbial agent formed into the plastic.
- H. Water Closet WC-5 Floor Mounted (Tank Type minimum class-6): Where plumbing fixtures of this designation are indicated, provide products complying with the following:
- 1. Manufacturers: Subject to compliance with the City of Austin Rebate program requirements where applicable, provide products Manufactured by the following:
 - a. Water Closet Floor Discharge, (ADA or Standard):
Gerber, Eljer, Crane, American Standard, Kohler and Toto.
 - b. Gravity Flushing Mechanism:
 - 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 16" inches, Handicapped: Top of seat minimum 17" and 19" maximum.
 - 7. Design Water Consumption: 1.6 gal. per flushing cycle.
 - 8. 1.6 gal. maximum per flushing cycle.
 - 9. 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.
 - e. Hinge Type: Check (CK).
 - f. Provide with anti-microbial agent formed into the plastic.
- I. Urinal (UR-1): (ADA and Standard) 1.6 GPF: Wall-Hung Top-Spud Flush-Valve Type (ADA when mounted in lowered position) Washout Action minimum 17"X26" body. Where plumbing fixtures of this designation are indicated, provide products complying with the following:
- 1. Manufacturers: Subject to compliance provide products by the following:
 - a. Urinal Washout Action: Kohler, Toto, Crane, Gerber, American Standard, Kohler and Eljer.
 - b. Flush Valve FV-1 Piston type (Manual) 1 GPF Toto TMT1NNC, Sloan Crown II, Zurn Metroflush.
 - c. Flush Valve FV-2 Piston type (Automatic with sensor) 1.6 GPF:
Zurn Metroflush.
 - 2. Mount height: Standard: 24 inches floor to rim, Handicapped: 17 inches floor to rim. Handicapped fixture rim shall extend 14" from back of fixture to front center of fixture.
 - 3. Design Water Consumption: 1.0 gal. per flushing cycle.

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4. Flushometer Valve Construction: Cast-brass body, brass or copper pipe or tubing inlet with wall flange and tailpiece with spud, screwdriver check stop, and vacuum breaker.
 5. Flushometer Valve Operation: Piston.
 6. Flushometer Valve Finish: Polished, chrome-plated, exposed metal parts.
 7. Flushometer Valve, Water Consumption: Factory set or field adjusted, 1.0 gal. maximum per flushing cycle.
 8. Flushometer valve components include the following:
 - a. Brass, lever-handle actuation.
 - b. Nonhold-open feature.
- 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.

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- 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, 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 with outlet connected to sanitary waste. 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. Unit shall be mounted to meet all ADA barrier free requirements. Unit shall be provided with waste receptor (floor drain) piped to sanitary sewer.
- P. Soap Dispensers: For counter mounted sinks provide dispenser with pump type deck mounted valve, 4" 316 stainless steel spout 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. For wall mounted installation above sinks, provide a manual push dispenser for one handed use, metered foam spray manufactured by Technical Concepts Model 450017.
- Q. Electric Water Cooler Wall Mounted ADA (ADA Compliant): (Single and two-level units). 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, standard color with stainless steel basin, easy touch controls front and side with apron attached to high unit. 8 GPH capacity with one refrigeration unit to serve two-level units, as manufactured by Elkay. Models EZSTLR8C high unit on right or EZSTL8C high unit on left.
- R. Hose Bibs 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.
- S. Wash Down Hose Station (WS-1): For Hot and cold water service, thermostatically controlled mixing valve with dial-in temperature setting, temperature limit stop and temperature gauge. For hot and cold water service provide (cast bronze ball valves with inline check valves, unions). Water gun with 50 ft. high pressure hose with swivel connection fitting and stainless steel hose rack Manufactured by Strahman, inc, model M-200-TS-Y with 21S Swivel and 150 Spray Nozzel.

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2.06 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 .5 GPM, 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.
1. When new construction or renovation of plumbing fixtures of this designation are indicated, use products by Manufacturers' listed below or an approved equivalent (subject to compliance with requirements).
 - a. Chicago Faucet 802-317CP – dual lever with Quatern repairable disc.
 2. For new construction and renovations, all installed faucets shall include ADA compliant 4 inch wrist paddles.
- B. Faucet (Type-B): ADA Compliant electronic 120VAC/24 VAC 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, pressure compensating flow control 0.5 GPM spray head (Aerator). 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, each solenoid valve requires 15VA each). All electrical wiring from transformer to control module to be routed in conduit. Provide below sink thermostatic mixing valve for water temperature control, balanced water temperature to max. 110°F. Provide supplies, angle valves, grid drain strainer, trap and vinyl covers over supplies and drain 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 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:

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- 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 level handle, chrome plated brass cap, ASSE certified, hot water limit screw, and integral checkstops on inlets.
 - c. Shower Head: Cone spray, heavy commercial chrome plated solid brass body, vandal proof, t-handle volume control and ball joint movement.
 - d. Accessible (ADA) and (TAS) compliant Unit: Hand held spry 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.
 - e. Exposed Supply Piping Shroud: Stainless steel 18 Ga. 304 panel vertical housing shroud sized (length) to fill void and cover water supply piping above shower panel and extend to ceiling the full length of exposed water piping. The width of shroud to match width of shower panel.
 - f. Basis of Design (Manufacture and Model): Bradley, Individual Shower Unit model WS-1X-NH-HD-SB-SFTHV-SHV. Individual Shower Unit with heavy duty pressure balancing valve, 24" slide bar, deluxe shower head and t-handle volume control and vertical shroud.
- F. Faucet repair or replacement Aerators shall be as listed below: New faucets shall be provided with manufactured supplied vandal resistant aerators complying with certified flows for fixtures as indicated in Standard 15.22.40 Section 1.02.
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): Manual 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 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. Mount ADA compliant flush valve handle to wide side of toilet stall, if no stall is incorporated, install to wide side of open area within room. Manufacturers: Toto TMT1NNC, Sloan

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Crown II, Zurn Metroflush.

- B. Flush Valve (FV-2): Automatic for (Water Closet) electronic sensor operated, exposed, hard wired, 24 VAC integral solenoid operated exposed flush valve 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 8 closet / urinal flush valves, coordinate with manufactures recommendations), 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 maximum total of 8 water closets and/or urinals in each toilet room, coordinate with manufactures recommendations. (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. Mount sensor on wide side of toilet stall, if no stall is incorporated, install to wide side of open area within room. Manufacturers: Sloan Optima (Diaphragm), Zurn Metroflush (Piston).
- C. Flush Valve (FV-3): Manual Fixed volume Piston Type 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 1 G.P.F. Mount ADA compliant flush valve handle to wide side of Toilet room within partitions. Manufacturers: Toto TMT1NNC, Sloan Crown II, Zurn Metroflush.
- D. Flush Valve (FV-4): Automatic electronic sensor operated, 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 8 or 10 closet / urinal flush valves , coordinate with manufactures recommendations). 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 maximum total of 8 or 10 water closets and/or urinals in each toilet room, coordinate with manufactures recommendations). (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. Mount sensor on wide side of toilet stall, if no stall is incorporated, install to wide side of open area within room. Manufacturers: Sloan Optima (Diaphragm), Zurn Metroflush (Piston).

2.09 Fixtures Supports:

- A. Lavatory Supports: Cast iron supports, having tubular steel uprights with welded

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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.

2.10 Fittings, Trim, and Accessories:

- 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.

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- D. Traps for Lavatories: Cast brass, 1-1/2" 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. Assemble plumbing fixtures and trim, fittings, faucets, and other components according to manufacturers' written instructions.
- B. Install fixtures level and plumb according to manufacturers' written instructions, roughing-in drawings, and referenced Specifications.
- C. Provide a stop valves in an accessible location in the water connections to each fixture.
- D. Provide escutcheons at each wall, floor, and ceiling penetration in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons where required to conceal protruding pipe fittings.
- E. Seal joints between fixtures and adjoining walls, floors, and counters using sanitary-type, 1-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Grout shall/may be used on floor mount toilets where the existing floor is concrete.
- F. Install traps on fixture outlets. Omit external traps on fixtures having integral traps. Omit traps on indirect waste drain lines, except where otherwise indicated. Indirect waste from sanitary sewer shall be trapped and vented.

END OF STANDARD