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, via the UT Project Manager, 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
   7. State of Texas Accessibility Standards (TAS)
   8. Americans with Disabilities Act (ADA)

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, water closets and drinking fountains with fixture carriers with legs and welded steel bearing plates for urinal and drinking fountains anchored to floor.

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. Provide a minimum flow pressure at 35 psi and 30 psi residual flowing, maximum static pressure at 80 psi, water temperature range at 60 degrees to 95 degrees F.

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.

H. 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.

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

<table>
<thead>
<tr>
<th>Fixture Type</th>
<th>Maximum Certified Flow* (Ref. Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilets</td>
<td>1.28 gpf</td>
</tr>
<tr>
<td>Urinals (Standard)</td>
<td>0.5 gpf</td>
</tr>
<tr>
<td>Urinals (HEU)</td>
<td>No greater than 0.25 gpf</td>
</tr>
<tr>
<td>Showerheads</td>
<td>2.0 gpm</td>
</tr>
<tr>
<td>Kitchen Sink</td>
<td>1.5 gpm</td>
</tr>
<tr>
<td>Bath Lav</td>
<td>0.5 gpm</td>
</tr>
<tr>
<td>Commercial Lav</td>
<td>0.5 gpm</td>
</tr>
</tbody>
</table>

*(gpm = gallons per minute; gpf = gallons per flush)

J. Minimum pressure and flushing flow rate requirements for low flow flush-valve type fixtures (water closets, urinals, etc.): Provide minimum supply of 25 gpm at each fixture. Provide a minimum flow pressure at 35 psi and 30 psi residual (flowing), maximum static pressure at 80 psi. Design engineer is required to verify the adequacy of the water pressure using water supply data from the City of Austin distribution system and flow testing at new or existing building systems.

Note: High-Efficiency Urinals (HEUs) which use .25 gpf or less should be considered for LEED and/or as required for new University of Texas and State buildings and for major renovation projects at or greater than 2 million dollars per State Energy Conservation Office Water Efficiency Standards (SECO). All plumbing fixtures intended for use at the University of Texas shall also comply with the minimum standards as scheduled above in section 1.02/I and the State of Texas Health and Safety Code Section Title 5-B Chapter 372 Amended 9/1/2009.

**PART 2: PRODUCTS**
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2.01 Plumbing Fixture Specifications

A. Comply with applicable standards below and other requirements specified.
   2. Stainless-Steel Fixtures Other than Service Sinks: ASME A112.19.3M.
   3. Vitreous-China Fixtures: ASME A112.19.2M.
   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.
   3. Brass and Copper, Supplies and Tubular Brass: ASME A112.18.1M.

2.03 Miscellaneous Component Specifications

A. Comply with applicable Specifications below and other requirements specified for components for plumbing fixtures, equipment, and appliances.
   3. Supports: ASME A112.6.1M.

2.04 Miscellaneous Materials

A. Copper Piping:
   1. Pipe Size 2” and Smaller:
      a. Copper tube; Type "L", hard-drawn wrought-copper fittings, solder-joints. Use Dutch Boy or Silvabrite 100 lead-free solder, Composition 95/5, Solder Filler Metals: ASTM B 32, Solder containing lead is not permitted.
      b. Copper Tube; Type "L" with copper Press Fittings with rubber O-rings made with hydraulic compression tool, Viega ProPress or approved equal.
      c. Piping smaller than ¼” shall not be allowed.
   2. Pipe Size 2 1/2 and Larger:
      a. Copper tube; Type "K", hard-drawn wrought-copper fittings, brazed sil-fos-joints manufactured by Sil-fos, Solder Filler Metals: Solder containing lead is not permitted.
      b. Copper Tube 2-1/2 to 4’; Type "K", with copper Press Fittings with rubber O-rings and stainless steel grip ring made with hydraulic compression tool, Viega ProPress or approved equal.

B. Exposed Connections
   1. Provide chrome-plated solid brass ¼ turn ball 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 and meet water use standards. 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. Water Closet WC-1 (ADA and Standard) HET 1.28 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: Provide products by the following:
   c. Flush Valve FV-2 Piston type (Automatic with hardwired sensor) 1.28 gpf: Sloan Optima, Crown, and Zurn Metroflush.

3. Bowl Type and Operation: Elongated
4. Mounting and Outlet: Wall Hung, wall outlet supported with fixture carrier.
5. Fixture Bolt Caps: Metal with protective flat washer.
6. Rim Height: Standard: 15” inches., Handicapped: 17” inches
7. 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.
8. Flushometer Valve Operation: Piston. (Manual or Automatic)
10. Flushometer Valve, Water Consumption: Factory set or field adjusted 1.28 gal. maximum per flushing cycle.
11. Manual Flushometer valve components include the following:
   a. Brass, lever-handle actuation
   b. Nonhold-open feature.
12. Toilet Seat: Solid-plastic, water-closet seat with bumpers and hardware, compatible with water closet and as follows:
   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.

C. Water Closet WC-2 (ADA or Standard) 1.28 GPF: Floor Mounted Top-Spud Flush-Valve Type: Where plumbing fixtures of this designation are indicated, provide products complying with the following:

1. Manufacturers: Provide products Manufactured by the following:
   a. Water Closet: (ADA or Standard), Toto, Crane, American Standard, Zurn and Kohler.
   c. Flush Valve FV-2 Piston type (Automatic with hardwired sensor) 1.28 gpf: Sloan, Optima, Crown, and Zurn Metroflush.

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 16” inches, Handicapped: Top of seat minimum 17” and 19” maximum.
7. Flusometer 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.
10. Flush meter Valve, Water Consumption: Factory set or field adjusted 1.28 gal. maximum per flushing cycle.
11. Manual Flusometer valve components include the following:
   a. Brass, lever-handle actuation.
   b. Nonhold-open feature.
12. Toilet Seat: Solid-plastic, water-closet seat with bumpers and hardware, compatible with water closet and as follows:
   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.

D. Water Closet WC-3 Floor Mounted (Pressure Assisted Tank Type): Where plumbing fixtures of this designation are indicated, provide products complying with the following:
1. Manufacturers: Provide products manufactured by the following:
   a. Water Closet (Floor Discharge, ADA or Standard): Mansfield, Gerber, Crane, Kohler, Zurn and Gerber.
   b. Pressure Assist Flushing Mechanism: Sloan Flushmate IV or Equal, Water Sense labeled.
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 16” inches, Handicapped: Top of seat minimum 17” and 19” maximum.
7. Pressure assist mechanism water consumption: Factory set or field adjusted, 1.28 gal. maximum per flushing cycle or less.
8. Toilet Seat: Solid-plastic, water-closet seat with bumpers and hardware, compatible with water closet and as follows:
   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.

E. Water Closet WC-4 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:
   b. Gravity Flushing Mechanism.
3. Bowl Type and Operation: Elongated.
4. Mounting and Outlet: Floor mounted Bottom outlet with floor flange and ring seal.
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5. Fixture Bolt Caps: White, plastic or china.
6. Standard Seat Height 16” inches, Handicapped: Top of seat minimum 17” and 19” maximum.
7. 1.28 gal. maximum per flushing cycle or less.
8. Toilet Seat: Solid-plastic, water-closet seat with bumpers and hardware, compatible with water closet and as follows:
   b. Size: Elongated.
   c. Pattern: Open front without cover.
   d. Hinge Type: Check (CK).

F. Provide with anti-microbial agent formed into the plastic Urinal (UR-1): (ADA and Standard) HEU 0.5 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:
   c. Flush Valve FV-4 Piston type (Automatic with hardwired sensor) 0.5 gpf: Zurn Metroflush and Sloan Optima Crown.
3. 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 Finish: Polished, chrome-plated, exposed metal parts.
6. Flush meter Valve, Water Consumption: Factory set or field adjusted 0.5 gal. maximum per flushing cycle.
7. Flushometer valve components include the following:
   a. Brass, lever-handle actuation.
   b. Nonhold-open feature.

G. Urinal (UR-2): (ADA and Standard) HEU no greater than 0.25 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:
   b. Flush Valve FV-5 Piston type (Manual) no greater than 0.25 gpf, Kohler, Zurn and American Standard Flowise.
3. Flush meter 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. Flush meter Valve Finish: Polished, chrome-plated, exposed metal parts.
6. Flush meter Valve, Water Consumption: Factory set or field adjusted no greater than 0.25 gal. per flushing cycle.
7. Flush meter valve components include the following:
   a. Brass, lever-handle actuation.
   b. Nonhold-open feature.
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H. ADA and Standard Lavatory (LAV-1): Wall mounted 20”W x 18”D vitreous china lavatory, with rectangular basin and minimum 4” high 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 (section 2.06), trap, copper chrome plated supplies, angle ¼ turn ball valves and vinyl covers as specified in the Articles below, (section 2.10). Use products by Manufacturers listed or an approved equivalent, Toto, Crane, Zurn, American Standard and Kohler.

I. 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, (Section 2.06), trap, supplies, angle valves and vinyl covers as specified in (Section 2.10). Use products by Manufacturers listed or an approved equivalent, Toto, Crane, Zurn, American Standard and Kohler

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 as specified in (section 2.06). Basket strainer w/ rubber stopper and 1-1/2” Brass chrome plated tailpiece. Trap, supplies and stops as specified in (Section 2.10).

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 (section 2.06).

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 (Section 2.06).

M. Emergency Showers (ES-1): (Ceiling or floor mounted), emergency, drench type, having 10" diameter stainless steel deluge shower head, 1”-1/4” I.P.S. cold water rough, provide a minimum pressure of 30 psi, 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, provide Trap Guard trap seal protection device or engineered equal.

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). 3/4” I.P.S. cold water rough provide a minimum pressure of 30 psi. 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, provide Trap Guard trap seal protection device or engineered equal.

O. Emergency Shower & Eyewash Fountain Combination (ES/EW-1): (Shower), Floor mounted emergency, drench type, having 10" diameter stainless steel deluge shower head, 1”-1/4” I.P.S. cold water rough, provide a minimum pressure of 30 psi, chrome plated instant action stay open brass ball valve that stays open until manually closed, activated by rigid stainless steel pull rod with and
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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, provide Trap Guard trap seal protection device or engineered equal.

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 Compliant Mounted): (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 if designated by TAS/ADA as a protruding object. 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. Single unit, Elkay Model EZS8.

R. Hose Bibs Toilet Rooms (HB-1): Inside sill faucet, polished chrome plated brass, vacuum breaker, 3/4” hose thread outlet mounted at 22” above finished floor, 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 Nozzle.

2.06 Faucets:

A. Faucet (Type-A): ADA Compliant manual faucet. Polished chrome plated cast brass, 4” center set, 4” spout with chrome-plated pressure compensating vandal resistant 0.5 GPM aerator, single-wing ADA handles indexed "HOT" and "COLD", Provide supplies, angle valves, vinyl covers and 1-1/2" waste with grid drain strainer as specified in (Section 2.10).

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 Quatum 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/6-24 VAC sensor operated hand wash faucet for tempered hot and cold water with below sink mounted control module or concealed internal to faucet. Polished chrome plated cast brass, 4” center set trim plate, and 5” spout with chrome-plated, pressure compensating vandal-resistant 0.5 GPM aerator. 120 VAC/6-24 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 is to be routed in metal conduit. Provide below sink or concealed internal to faucet. Thermostatic mixing control valve for water temperature control, balanced water temperature to a maximum temperature of 120°F. Provide supplies, angle valves, grid drain strainer, trap and vinyl covers over supplies and drain specified in (section 2.10).

C.

Faucet (Type-C): Kitchen Sink Faucet ADA Compliant manual 8” spout x 12” high Goose Neck swing spout faucet. Polished chrome plated cast brass, 8” center set, spout with chrome plated pressure compensating vandal resistant 1.5 GPM aerator, single-wing ADA handles indexed "HOT" and "COLD". Provide supplies, angle valves, grid drain strainer and vinyl covers specified in section 2.10.

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 201-AGN-317CP – dual lever with Quaturn repairable disc.

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 (Type E): Wheelchair ADA Compliant Shower Faucet (Individual Shower Unit) SH-1: Pre-assembled chrome plated brass fittings, with (1) heavy commercial shower head wall mounted 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 30” inch slide bar mounted on wall and diverter valve with cast brass body and cast brass chrome plated lever handle. Unit shall deliver Maximum of 2.0 gpm including the following:

1. Shower Valve for Hot/Tempered and Cold Supply: Heavy-duty pressure balancing thermostatic type with anti-scald limit stops 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 check stops on inlets.
2. Shower Head: Cone spray, heavy commercial chrome plated solid brass body, vandal proof, and t-handle volume control and ball joint movement.
3. Accessible (ADA) and (TAS) compliant Unit: Hand held spray shower unit with 60 inch stainless steel flexible hose with inline backflow preventer (vacuum breaker) and mounting post attached to 30” inch slide bar mounted on wall and diverter valve with cast brass body and cast brass chrome plated lever handle.

F.

Shower (Type F): Shower Faucet (Individual Shower Unit) SH-2: Pre-assembled chrome plated brass fittings, with heavy commercial shower head wall mounted. Unit shall deliver Maximum of 2.0 gpm including the following:

1. Shower Valve for Hot/Tempered and Cold Supply: Heavy-duty pressure balancing thermostatic type with anti-scald limit stops, 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 level handle, chrome plated brass cap, ASSE-certified hot water limit screw, and integral check stops on inlets.
2. Shower Head: Cone spray, heavy commercial chrome plated solid brass body, vandal-proof, and t-handle volume control and ball joint movement.
G. 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 5.22.40 Section 1.02/K.
   1. Manufacturers:
      a. Neoperl High-Efficiency PCA spray (Vandal resistant)
      b. Niagara High-Efficiency (Vandal resistant)
   2. Water Consumption: 0.5 and 1.5, gallon maximum per minute as specified for each location.
   3. Dual threaded: coordinate threads of existing faucet to be retrofit and provide model with compatible threads.
   4. Spray and laminar flow type as indicated.

H. Shower Head Replacements shall be as listed below: New Showers shall be provided with manufactured supplied shower head complying with certified flows for fixtures as indicated in Standard 5.22.40 - Section 1.02/I.
   1. Manufacturers:
      a. Niagara High-Efficiency showerhead N2920CH or approved equal.

2.07 Flush Valves:


Exposed closet flush valve, chrome plated, metal oscillation non-hold-open handle, 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, if no stall is incorporated, install to wide side of open area within room. Manufacturers: Toto, Sloan Crown, Zurn Metroflush, Kohler, and American Standard Flowise.

B. Flush Valve (FV-2): Automatic for (HET Water Closet 1.28 GPF) electronic sensor operated, exposed, hard wired, 6-24 VAC integral solenoid operated exposed flush valve with solenoid electrical box cover plate, infrared sensor with electric box and cover plate, 120 VAC / 6-24 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. Manufacturers: Sloan Optima Crown and Zurn Metroflush.

C. Flush Valve (FV-3): Manual Fixed volume Piston Type exposed urinal flush valve for (HEU Urinal 0.5 GPF), 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 0.5 gpf Mount ADA compliant flush valve handle to wide side of Toilet room within partitions. Manufacturers: Toto, Sloan Crown, Zurn Metroflush, Kohler, and American Standard Flowise.

D. Flush Valve (FV-4): Automatic electronic sensor operated exposed, 24 VAC integral solenoid operated exposed flush valve for (HEU Urinal 0.5 GPF) 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). Requires a 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 0.5 gpf. Manufacturers: Sloan Optima Crown and Zurn Metroflush.
5.22.40 - PLUMBING FIXTURES
DESIGN AND CONSTRUCTION STANDARD

E. Flush Valve (FV-5): Manual Fixed volume Piston Type exposed closet flush valve for (HEU Urinal no greater than 0.25 GPF), 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 within partitions. Manufacturers: Kohler, Zurn and American Standard Flowise.

Note: Only (1) transformer is required for the maximum total of 8 or 10 water closets and/or urinals in each toilet room, coordinate installation 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 shall be routed in metal 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 (Piston), Zurn Metroflush (Piston).

2.08 Commissioning and Cleaning Electronic Flush Valves:

A. Sensor Operated Flush Valves:
1. Mount 120 VAC / 6 VDC-24VDC power converters and distribution panel in NEMA-1 electrical enclosure mounted in plumbing chase wall, cover enclosure with stainless steel access panel, label access panel (power converter). Furnish and install one power converter and distribution panel for each set of (men’s and women’s) toilet rooms, (max. of 8 water closet / urinal flush valves total for each power converter). Reference and show location on plumbing plans. Install as recommended by flush valve manufacturer.

B. Cleaning:
1. Flush all new and existing potable water systems from the connection to the main risers to each individual fixture. Flush with clean potable water. Systems shall be flushed prior to disinfecting systems and prior to the installation of new faucets and flush valves. Flushing shall be observed by University of Texas inspector.

C. Commissioning:
1. Each automatic flush valve shall be commissioned in order to achieve a “passing” status. Make all adjustments and troubleshoot as per manufacturers recommendations. Demonstrate proper operation including sensor control and sensor delay. Training shall include a minimum of four (4) hours by authorized manufacturer’s representative. The commissioning procedure listed below in Section D. is to be used as a sample guide. Installer shall provide a commissioning plan and test procedure for automatic flush valves per the specific manufacturer’s recommendations.

D. Prepare and Test each Flush Valve as Follows:
1. Flush out the supply line. Make sure the control stop is closed. Remove Flushometer cover. Lift out the trip mechanism. Install the Flushometer cover wrench tight and open control stop. Turn on water supply to flush line of any debris or sediment. After completion, shut off the control stop, remove cover and reinstall the trip. Install Flush meter cover wrench tight. Water flushes for the correct duration.
   DONE __________
   NOT DONE __________

2. Adjusting the control stop. Open control stop full open. Activate Flush meter simulating a user. Adjust the control stop only to prevent splashing. Installer to consult with owner/engineer prior to reducing water flow to any fixture.
   DONE __________
3. The switch settings for the flush valve's controller are as follows (left is on, right is off):
   Switch 1 - Automatic Flush - OFF
   Switch 2 - Red/Green LED - ON
   Switch 3 - Courtesy Flush – OFF

   DONE
   NOT DONE

4. Sensor's Red/Green LED is functional. The red light illuminates when an object is detected. The green light illuminates after the object has been detected for a period of 8 seconds then leaves. The green light indicates the flushing sequence.
   PASS
   FAIL

5. Sensor's range adjustment is correct. Flushing should occur when object is detected within 30" of sensor. Make range adjustments by turning adjustment screw CW to increase range, and CCW to decrease range. Caution: range adjustment rotates only ½ turn min. to max. Do not exceed.
   PASS
   FAIL

6. Controller's override button is functional. Upon manually activating override button, valve automatically flushes for proper duration. (Feature is provided at water closets).
   PASS
   FAIL

7. Controller's maintenance override feature is functional. The sensor may be disabled for 10 minutes by placing a magnet on sensor lens for 3 to 5 seconds. After 10 minutes the sensor will automatically resume functioning.
   PASS
   FAIL

2.09 Fixtures 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 for siphon jet 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 for siphon jet 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 (Escutcheon) 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 (Escutcheon) 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: Chrome plated Cast brass 17 GA., 1-1/2" adjustable "P" trap with cleanout and waste to wall, 1-1/2" tailpiece with grid strainer.

E. Traps for Sinks: Chrome plated Cast brass 20 GA., 1-1/2" adjustable "P" trap with cleanout and waste to wall, brass basket strainer and tail piece with brass stopper.

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, rough in drawings, and referenced Specifications.

C. Provide 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 and equipment having integral traps. Omit traps on indirect waste drain lines, except where otherwise indicated. Indirect waste from sanitary sewer shall be trapped and vented.