BEAVERTON SCHOOL DISTRICT

BSD Technical Standard
Division 22: Plumbing

1. PURPOSE

1.1. This is the Beaverton School District (BSD) Technical Standard for Plumbing. This document, in coordination with BSD's Educational Specifications and Technical Standards, communicates fundamental policies, procedures, standards, and expectations for consultant services. This Division 22 outlines the minimum acceptable standards for products, materials, systems, and documentation used in all District facility plumbing improvements. Though Technical Standards loosely follow CSI MasterFormat, under no circumstances are the BSD Technical Standards to be used as unedited project specifications.

2. GENERAL

2.1. PROJECT RECORD DOCUMENTATION

2.1.1. In addition to Contract and Division 01 Technical Standards requirements, provide additional documentation as listed in individual sections.

2.1.2. Design Drawings and Specifications

2.1.2.1. The Design Team is responsible for obtaining room numbering assignments from the District. If room numbers other than District-assigned numbers are initially used on the drawings, final as-built documentation must cross-reference these room number assignments on the drawings.

2.1.2.2. Drawings shall contain location and routing of buried pipes, equipment schedules, valve and pipe schedules, etc.

2.1.3. Submittals

2.1.3.1. Submittals for Plumbing Piping and Fixtures

2.1.3.2. Contractor shall provide document describing their management of inventory to ensure potable components and systems are separate from non-potable.

2.1.4. Testing and Inspections

2.1.4.1. The Owner's Representative and BSD's Maintenance Administrator shall be notified at all under floor, framing, and top out inspections, so that piping routes, valves, connections, and any other pertinent plumbing applications can be verified and documented.

2.1.4.2. New or remodeled potable plumbing systems shall be tested for lead by a BSD approved third party environmental consultant. If test results detect more than 1 ppb of lead, contractor shall be responsible to provide either mitigation and retesting until

required results are achieved or flush draw tests showing the source of lead is outside the scope of the project.

2.1.5.Closeout Deliverables

2.1.5.1. Closeout Deliverables for Plumbing Piping and Fixtures

2.1.5.1.1. Architect or Engineer (A/E) shall provide a statement 1) certifying that drawings and specifications were designed in compliance with low-lead or lead-free standards, 2) affirming that approved submittals met the design requirements, and 3) listing the applicable specifications and drawings for reference.

2.1.5.1.2. Contractor shall provide a statement certifying that materials and construction met the design documents' low-lead or lead-free requirements.

2.1.5.1.3. Record drawings identify actual location and routing of buried pipes

2.1.5.1.4. Record drawings include additional sheets with all approved change order drawings and details

2.1.5.1.5. Submittals for all potable water components and systems, marked up to document all deviations from the original submittal that occurred in O&M info and shop drawings, include the reason for the change, and the A/E's submittal approval stamp.

2.1.5.1.6. Copies of final test reports and any deficiency lists

2.1.5.2. Closeout Deliverables for Plumbing Equipment

2.1.5.2.1. Record drawings include additional sheets with all approved change order drawings and details

2.1.5.2.2. Documentation of all deviations from the shop drawing submittals, including equipment that was changed and the reason for the change

2.1.5.2.3. Documentation of all deviations in O&M information from that provided with original equipment submittals

2.1.5.2.4. Copies of final test reports and any deficiency lists

2.1.6.Training

2.1.6.1. Provide video recorded training session of maintenance and school personnel for future use.

2.1.6.2. Training shall include a review of the O&M manual

2.1.6.3. Demonstrate how to monitor status readouts and history logs of systems

2.1.7.Required maintenance

2.1.7.1. Troubleshooting, including contact names and phone numbers for factory support

2.2. COMMON WORK RESULTS

2.2.1.Quality of Material

2.2.1.1. All piping systems shall be designed and installed in a manner that provides the best possible long-term value for the District. Take special care to minimize the effects of electrolysis and corrosion.

2.2.1.2. For all construction impacting drinking water, taps and piping shall be designed and constructed in compliance with all applicable current laws regarding low-lead and lead-free drinking water, including the Safe Drinking Water Act (SDWA). For new schools or system-wide plumbing remodels, taps must pass lead testing as described in OAR 333-061-0400 for Reducing Lead in School Drinking Water with no more than 1 part per billion (ppb) of lead detected.

2.2.2.Labeling

2.2.2.1. All piping systems shall be permanently labeled identifying type of fluid and direction of flow. Post a laminated copy of the valve schedule and valve locations in the custodial office.

2.2.2.2. All valves shall be labeled identifying function and valve number as set out in the posted valve schedules. All valves located above the drop ceiling shall be clearly marked on the grid (not on ceiling tiles) with printed labels.

2.2.3.Energy Use

2.2.3.1. All piping and mechanical systems shall meet and/or exceed current Oregon Energy Code. Insulate all hot water, cold water, heating water, and chilled water pipes and fittings unconditioned spaces.

2.2.3.2. Design goals should provide building energy use that would allow easy qualification as an Energy Star rated building and fall within Oregon Department of Energy Guidelines for School's EUIs for schools in the western region.

2.2.3.3. Fixtures that are chosen on the basis of energy saving should provide a 10 year or less payback with anticipated maintenance costs included. The Design Team shall provide Oregon Energy Code Compliance documentation to the Owner concurrently with submittal to the building department.

2.2.4.Piping Demo, Remodels, and Re-pipes

2.2.4.1. All brass fittings that are touched in a piping remodel must be either verified as lead safe or must be replaced.

2.2.4.2. All piping being demolished or abandoned must be removed, along with all resulting construction debris, with the following exceptions:

2.2.4.2.1. Piping 1"Ø or less may be abandoned in place. Under special circumstances, piping larger than 1"Ø may be abandoned in walls (requires Owner approval)

2.2.4.2.2. Underground piping and piping in slabs may be capped and abandoned in place

2.2.4.2.3. Piping in tunnels: If tunnel is being sealed off and abandoned, then piping may be abandoned in place. If tunnel is being reused or still being used (contains active pipes, conduit, or duct work), then demolished piping larger than 1"Ø must be removed from tunnel and all construction debris removed

3. PIPING AND PUMPS

3.1. FITTINGS

3.1.1.No field manufactured fittings. No Tee pulling.

3.2. SUPPORTS

3.2.1. All piping must be supported per code. Double nut required on all threaded hangers.

3.3. VACUUM BREAKERS

3.3.1. Vacuum breakers shall not be installed in walls or in recessed cabinets. Overflow from vacuum breakers located inside the building must flow directly to a drain.

3.4. DISSIMILAR METALS

3.4.1. Minimum of 6” long, brass fitting shall be used between dissimilar metals. Use of dielectric unions is not acceptable in domestic water systems, with the following exceptions:

3.4.1.1. Use 3/4"Ø dielectric copper flex connector for water heater connections

3.4.1.2. Use 6” long, brass fitting, brass valve, or dielectric fittings where necessary in hydronic piping systems

3.5. COPPER

3.5.1. Type “L” or better. Use sweat or brazed fittings. Grooved fittings with BSD approval on a case-by-case basis.

3.6. GALVANIZED STEEL

3.6.1. Galvanized pipe and fittings are unacceptable for domestic water use on District Projects; acceptable for dry pipe systems, waste connections, or for use as sleeves.

3.7. BLACK IRON

3.7.1. Use of black iron pipe is acceptable for the following two applications:

3.7.2. Natural Gas piping

3.7.3. Fire Protection Sprinkler Systems: Groove-lock or Victaulic-type connectors are acceptable for use in wet fire sprinkler systems. This is the only allowed use of steel or iron groove-type fittings on District Projects.

3.8. EXPANSION JOINTS

3.8.1. Use where vibration or expansion is a concern. Braided stainless steel only.

3.9. WIRSBO AND PEX

3.9.1. WIRSBO and PEX piping systems require written permission from BSD’s Representative prior to release of Construction Documents, except as noted herein. Use of WIRSBO/PEX up to 1.5”Ø is allowable for branch lines. The lateral/trunk lines must be copper and the WIRSBO/PEX must not be used to feed a whole wing/pod. WIRSBO may also be used for the building supply (from the meter to the building) without BSD approval.

3.9.2. Use of WIRSBO/PEX requires connection details to be included in the Construction Documents. Details shall be provided showing transitions, manifolds, hangers, supports, connections, and attachments.

3.10. DRAIN AND WASTE PIPING

3.10.1. Use ABS for all buried waste lines and all vent pipes. Cast iron pipe is to be used above ground only. Cast iron applications include noise suppression on waste piping stacks between floors and for upper floors. Fittings for each are as follows:

3.10.1.1. ABS: Glued fittings only

3.10.1.2. Cast iron: Hubless (no-hub) fittings only

3.10.2. Clean Outs: Drain lines under 3"Ø, including floor sinks and floor drains, must have an accessible clean out.

3.10.3. Trap Primers: For single trap application, use Precision Plumbing Products[1] P-1 or P-2 primers connected to flush-o-meters. For a bank of traps, exceeding four traps, use electronic trap primer. Connection of trap primer to DDC system will not be accepted.

3.10.4. Laboratory Piping Systems: Acid resistant piping and neutralization basins as required by code. Tank opening must be located outside of the building and be easily accessible for clean out.

3.10.5. Grease Traps and Interceptors: Only as required by code. Tank opening must be located outside of the building and be easily accessible for clean out.

[1] See List of Brand Name Products as approved via School Board Resolution 14-409 in accordance with ORS 279C.345.

K. PIPING SCHEDULE			
Service	**Size**	**Location**	**Material**
Hydronic and Chilled Water Systems	Through 2”Ø	All	copper-type “L” or better, soldered fittings
	2-1/2”Ø	All	copper-type “L” or better, brazed fittings
	3”Ø and larger	All	black steel w/ welded or flanged fittings
Potable Water (Hot and Cold Water) Systems	Through 2”Ø	All	copper-type “L” or better, soldered fittings
	2-1/2”Ø and larger	All	copper-type “L” or better, brazed fittings
	1.5" Ø or smaller	Requires written case by case approval	PEX or WIRSBO, brass or copper manifolds and fittings
	All	All	no galvanized for potable
Drain and Waste Systems		All, **except** waste stacks between floors	ABS, glued fittings
		Above ground **only**: between floors for noise suppression	cast iron, hubless fittings, no Bell & Spigot
	1-1/4” to 3”	Waste connection	galvanized is permissible
Natural Gas**	Through 2”Ø	No threaded gas pipe greater than 2 psi inside of building	black steel w/ threaded or welded fittings
	2-1/2”Ø and larger		black steel w/ welded or flanged fittings
Fire Sprinkler Systems***		All	copper type “L” or better, soldered fittings, or black steel w/ threaded or welded fittings
		Wet systems **only**	copper type “L” or better, or black steel w/ grooved or Victaulic fittings
		Dry systems: case by case approval	galvanized steel w/ threaded or black steel w/ welded fittings
Joining Dissimilar Metals	All potable	All potable	**NO** dielectric unions
	¾”	Water heaters	water heater connections use ¾”Ø dielectric copper flex connector FIP nut x FIP nut.
	All	All other	Use 6” minimum length brass nipple or fitting for dielectric protection when joining dissimilar metals.
	Hydronic	Hydronic	Use 6” minimum length brass nipple or dielectric fitting for dielectric protection when joining dissimilar metals.

**New technology such as “Vega Pro-Press” stainless fittings for natural gas piping may be used when it is approved by Northwest Natural Gas, the engineer, and local codes for use in schools.

*** New technology such as “Vega Pro-Press” stainless fittings for black piping may be used in sprinkler systems when it is approved by the system manufacturer, the engineer, and local codes for use in schools.

3.11. SUMP PUMPS

3.11.1. Interior sump pumps shall be installed for serviceability.

3.11.2. Provide local alarm indication in a conspicuous area. Indicator may be a light, sound signal, or both. Alarm lights should be clearly marked as to what they serve and be of a different color than those used in other alarms.

3.11.3. Alarm should be auto reset when the problem is resolved. For new schools, include alarm output to the HVAC control system; for remodels include this alarm output as design and project allows.

4. VALVES

4.1. GENERAL

4.1.1. Whenever possible, match existing brand used at the site.

4.1.2. Provide adequate shut-off valves for service isolation. Isolation valves will be available for each plumbing branch and on both sides of any equipment.

4.1.3. Minimize the use of electronic valves; none permitted in areas open to students.

4.2. SPECIFIC VALVE TYPES

4.2.1. Gate Valves: For steam systems only. No gate valves for potable water or hydronic systems (unless required by state boiler code).

4.2.2. Globe Valves: No globe valves in domestic water systems.

4.2.3. Ball Valves: Full-port bronze. Use for isolation, shut-off, drains, and throttling.

4.2.4. Butterfly Valves: 3"Ø and larger, shut-off and throttling.

4.2.5. Backflow/Check: Must be able to be disassembled for maintenance without breaking the line. Below 2”Ø, FEBCO only; 2-1/2”Ø and larger, FEBCO or Watts.

4.2.6. Pressure Reducing Valve (PRV): Watts, or equal.

4.2.7. Backwater Valve (Backflow Preventer): For sanitary and storm sewer, when needed.

4.2.8. Emergency Gas Shut-Off: NFPA rated.

VALVE SCHEDULE

System	Service	Valve Type	Size	Material
Hydronic and Chilled Water Systems	shut-off, throttling, drain	ball, full-port	All	bronze
	shut-off, throttling	butterfly	3”Ø or larger	cast iron or bronze
	throttling	globe	All	bronze

Potable Water (Hot and Cold Water) Systems	shut-off, throttling, drain	ball, full-port	All	bronze
	shut-off, throttling	butterfly	3"Ø or larger	cast iron or bronze
	backflow	double check		FEBCO only
	PRV			Watts or equal
Steam		Gate or other steam rated valve		
Drain and Waste Systems	backflow preventer when needed			
Natural Gas	shut-off	ball		
	emergency shut-off			
Fire Sprinkler Systems	shut-off, drain	ball		

5. FIXTURES/CHROME, VITREOUS CHINA

5.1. FAUCETS AND FLUSH-O-METERS

5.1.1.Electronics

5.1.1.1. No electronic fixtures, faucets, or flush-o-meters. Under special circumstances, electronic fixtures may be approved on a case-by-case basis. On installations where electronic fixtures are approved, shut-off valves and strainers are mandatory.

5.1.1.2. Hardwire only. No battery-operated fixtures will be accepted.

5.1.1.3. As an option to electronics, consider the use of the Chicago 802-VE2805-665CP. This is a pushbutton automatic shut-off faucet. It can also be ordered with quarter turn spring-loaded automatic shut-off stems.

5.1.2.Flush-o-Meters

5.1.2.1. Sloan Royal mechanical type flush-o-meters only. No Delaney or Zurn.

5.1.2.2. No electronics. No air operated flush-o-meters or valves.

5.1.3.Faucets and Shower Valves

5.1.3.1. Chicago only. No Acorn, Delta, Powers, or Symmons

5.1.3.2. All fixtures should be as outlined in the table or the current equivalent by the same manufacturer. Care should be taken to see that all components of a fixture are of the same quality shown in the table. Many of the items specified are complete with components such as the spout and handles but can be bought as a body and then have lower-quality parts added.

FAUCET SCHEDULE			
Application	**Manufacturer**	**Model**	**Description**
Lavatory	Chicago	802-VCP	2-hole, 4" center-set
Lavatory	Chicago	802-VE2805-665CP	2-hole, 4" center-set, metered shut off, low flow

Kitchen Sink	Chicago	1100-GN2AE3-317CP or 895-317CP	2-hole, 8” center-set
Kitchen Pre-rinse	Chicago	919-LCP	Single hole, deck mount
Kitchen Pre-rinse	Chicago	923-HCLCP	wall mount, integral checks
Kitchen Pot Filler	Chicago	512-GCCP	vacuum breaker
Kitchen Handwashing	Chicago	802-317CP	2-hole, 4” center-set, paddle handles
Pantry	Chicago	350-CP	single hole, cold only
Science Lab Sinks	Chicago	930-369 CP	single hole
Science Lab Sinks	Chicago	928-369 CP	single hole, cold only
Science Lab Gas Valve	Chicago	909-GASCP	ball valve
Classroom Sinks	Chicago	1100-CP or 1100-GN2AE3VPAXKCP	2-hole, 8” center-set, swing or gooseneck spout
Classroom Sinks	Chicago	50-CP	Single hole, gooseneck spt
Classroom Sinks	Chicago	748-665CP	bubbler drinking fountain
Restroom Hose Bib	Chicago	952-CP	loose key handle
Service Sinks	Chicago	445-897SRCXKCP	wall mount, vacuum breaker, integral checks
Shower Valve	Chicago	1762-ISVOCCP	integral service stops

5.2. VITREOUS CHINA

5.2.1. Lavatories

5.2.1.1. Use wall hung, cast iron wall bracket, 4” center-set. Assure proper backing is provided in the wall to support sink. Stamped steel wall brackets are not acceptable. No concealed arms on sinks. No single hole sinks. Standard ADA compliant lavatory Kohler 2032 porcelain sink mounted with cast iron wall bracket.

5.2.2. Classroom Sinks

5.2.2.1. Stainless Steel, Elkay #DRKR2517

5.2.3. Water Closets and Urinals

5.2.3.1. Kohler or American Standard

6. DOMESTIC HOT WATER SYSTEM

6.1. GENERAL

6.1.1. Provide at least two independent hot water systems at all schools. One system is for general use delivering water at 120°F. The second is a dedicated system for kitchen use delivering water at 140°F.

6.1.2. A booster will be required to provide 180°F water to dishwasher final rinse. Do not use single tank system with mixing valves to provide dual temperature system.

6.1.3. Preferred: Commercial, 199,000 Btu, high efficiency (condensing 92%+) natural gas water heaters, at least one water heater per domestic hot water system. All systems exceeding 199,000 Btu shall adhere to BSD’s Division 23: HVAC Technical Standards.

6.1.4. Electric water heaters should not exceed 4.5 kW. Dual element water heaters with two non-simultaneous 4.5 kW elements are acceptable.

6.1.5. Electric water heaters may be used in distributed point-of-use systems where natural gas piping is not readily available.

6.1.6. Electric, tankless, instantaneous water heaters (e.g., Insta-Hot) will not be allowed. Use six-gallon local water heater to serve remote restrooms and other small applications.

6.1.7. Use multiple point-of-use mixing valves at the sink or fixture rather than one large valve. Point-of-use mixing valves allow greater flexibility in delivery temperatures and minimize disruption of service in surrounding areas should a malfunction occur.

7. KITCHEN

7.1. GENERAL

7.1.1. Install all equipment per code and per manufacturer's installation instructions. Design for ease of operation and maintenance.

7.1.2. For remodels in buildings with the possibility of point of use lead water fixtures, new faucets should be installed if safety cannot be verified.

7.1.3. Shut-offs shall be protected from accidental damage or shut-off but be readily accessible from the front side without requiring movement of any equipment.

7.1.4. After exiting wall cavity, run piping exposed, tight to wall behind equipment. Stub out 3'-0" to shut-off, then transition to flexible hose.

7.1.5. All equipment drops on gas lines shall be provided with a pressure tap (test tee). The test tee shall be located after the shut-off and prior to transitioning to flex.

7.1.6. Pressure at equipment shall meet manufacturer's requirements. Pressure drop calculations and appliance installation details shall account for pressure drop through flex and connectors. Design documents shall include maximum equivalent pipe length.

7.2. KITCHEN SPRAYERS AND HOSES

7.2.1. T & S only

7.3. GARBAGE DISPOSALS

7.3.1. Kitchen: Use Red Goat only.

7.3.2. Staff room and other applications: 1/2 HP minimum ISE Badger 5, or equal.

7.4. HANDWASHING SINKS

7.4.1. Equip with 4" paddle handles.

7.5. FOOD PREPARATION SINKS

7.5.1. Indirect drains with air-gap as required by code.

7.6. FLOOR SINKS

7.6.1. Cover portion of floor sinks exposed to foot traffic with grate.

7.6.2. Design and locate floor sinks to minimize potential trip hazards but still allow access for maintenance.

7.7. STEAM OVENS AND STEAM KETTLES

7.7.1. Provide quick disconnect hoses for ease of maintenance.

7.8. DISHWASHERS

7.8.1. Design and plumb for high temperature machines.

7.8.2. Along with ease of operation and maintenance, minimizing water use is a prime consideration when selecting and evaluating new dishwashing equipment.

7.9. DISHWASHER BOOSTER HEATERS

7.9.1. To minimize electric demand charges, gas-fired booster heaters are preferred. Gas-fired boosters must have independent venting and adequate provision for combustion air to prevent odors in the building.

7.9.2. Booster must be sized to provide 180°F water to dishwasher final rinse. Booster sizing must take into account all other hot water use at the site.

8. MISCELLANEOUS

8.1. DRINKING FOUNTAINS

8.1.1. One chilled unit per school, ADA compliant (Elkay EZSTL8LC, or equal). Others (non-chilled) use standard wall-mounted drinking fountain. Outside drinking fountains are discouraged.

8.1.2. Elkay and Sunroc are the preferred manufacturers for both interior and exterior drinking fountains.

8.1.3. Install Aqua Pure AP101T water filter on all chilled units and for any other units requiring filtration.

8.2. EMERGENCY SHOWERS AND EYEWASH EQUIPMENT

8.2.1. For new construction, emergency showers and eyewash equipment are required in locations as specified by the BSD Educational Specifications.

8.2.2. Install Haws[1] equipment only.

8.2.3. All emergency showers and eyewash equipment must meet ANSI standards and OSHA program directives.

8.2.4. Emergency showers must be installed with proper floor drainage. Must drain to the sewer via readily accessible indirect waste receptacles (i.e., floor sink or plumbing drain).

8.2.5. For retrofits, consult with the BSD representative.

8.3. CAN WASH

8.3.1. Provide frost-proof valves for all exposed assemblies.

8.3.2. Jay R. Smith 3370/3371 Sani-Ceptor Can Washing Floor Drain with 3380 valve box or equal.

8.4. CHEMICAL DISPENSERS

8.4.1. For new construction, chemical dispensers will be located in locked custodial closets with proper ventilation above the mop sink, and with hot and cold-water hose bib.

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[2]1 See List of Brand Name Products as approved via School Board Resolution 14-409 in accordance with ORS 279C.345.

8.4.2. Chemical dispensers are to be installed so they do not interfere with the use of the room and/or area and are readily accessible to the user with no inconveniences.

8.4.3. The installation height for the chemical dispensers must be 48" from the finished floor to the bottom of the dispenser.

8.4.4. Verify with the local Authority Having Jurisdiction (AHJ) regarding backflow requirements.

8.4.5. Chemical dispensers shall meet the requirements of ASSE Standard 1055 indicating the dispensing unit has a built-in air gap.

8.4.6. Coordinate with the BSD Representative to verify compliance and integration with all other related building design elements prior to installation of chemical dispenser assemblies and/or systems.

8.4.7. For retrofits, consult with the BSD Representative.

8.5. ICE MACHINES

8.5.1. The BSD requires drainable ice machines for all locations specified in the Educational Specifications. See also Division 11.

8.5.2. Ice machines must drain to the sewer via readily accessible indirect waste receptacles (i.e., floor sink or plumbing drain). No drainless ice machines.

8.5.3. Ice machines will be equipped with Aqua Pure AP101T water filters.

REVISION HISTORY FOR DIVISION 22 PLUMBING TECHNICAL STANDARD

Rev 1: 12/23/16

Section	Section Title	Revision
III.I.	PIPING SYSTEMS; WIRSBO AND PEX	*Modified text* **Use of WIRSBO/PEX up to 1.5"Ø is allowable for branch lines. The lateral/trunk lines must be copper and the WIRSBO/PEX must not be used to feed a whole wing/pod. WIRSBO may also be used for the building supply (from the meter to the building) without BSD approval.**
III.K.	PIPING SYSTEMS; PIPING SCHEDULE	*Schedule- Modify text* **Potable Water (Hot and Cold Water) Systems - 1.5" Ø or smaller**

Rev 2: 04/30/17

Section	Section Title	Revision
VIII.D.	CHEMICAL DISPENSERS	*Added new section for chemical dispensers*
VIII.E.	ICE MACHINES	**The BSD requires drainable ice machines for all locations specified in the Educational Specifications. See also Division 11. Ice machines must drain to the sewer via readily accessible indirect waste receptacles (i.e., floor sink or plumbing drain). No drainless ice**

		machines. **Ice machines will be equipped with Aqua Pure AP101T water filters.**

Rev 3: 05/30/18

Section	Section Title	Revision
VIII.B.	EMERGENCY SHOWERS AND EYEWASH EQUIPMENT	*Added new section for eyewash equipment with brand name callout for Haws.* **For new construction, emergency showers and eyewash equipment are required in locations as specified by the BSD Educational Specifications. Install Haws equipment only. All emergency showers and eyewash equipment must meet ANSI standards and OSHA program directives. Emergency showers must be installed with proper floor drainage. Must drain to the sewer via readily accessible indirect waste receptacles (i.e., floor sink or plumbing drain).**

Rev 4: 12/31/18

Section	Section Title	Revision
various	various	~~In accordance with ORS 279C.345, a link to a list of brand name products approved via School Board Resolution 14-409 which are used throughout the BSD Technical Standards can be found at:https://www.beaverton.k12.or.us/depts/facilities/development/Pages/Technical%20Standards.aspx~~ **See List of Brand Name Products as approved via School Board Resolution 14-409 in accordance with ORS 279C.345.**
II.G.	GENERAL; PIPING DEMO, REMODELS, AND RE-PIPES	*GDSR-40* **All brass fittings that are touched in a piping remodel must be either verified as lead safe or must be replaced. In addition,** ~~A~~all piping being demolished or abandoned must be removed….
III. L. (new section)	PIPING ~~SYSTEMS~~ AND PUMPS; SUMP PUMPS	*GDSR-91* **L. Sump Pumps** **Interior sump pumps shall be installed for serviceability. Provide local alarm indication in a conspicuous area. Indicator may be a light, sound signal, or both. Alarm lights should be clearly marked as to what they serve and be of a different color than those used in other alarms. Alarm should be auto reset when the problem is resolved. For new schools, include alarm output to the HVAC control system; for remodels include this alarm output as design and project allows.**
VII.	KITCHEN	*GDSR-40* **For remodels in buildings with the possibility of point of use lead water fixtures, new faucets should be installed if safety cannot be verified.**

Rev 5: 05/31/2019

Note: **Bold** indicates new text; ~~strikethrough~~ indicates removed text; plain text indicates unchanged text; *italics* indicate summarized information.

Section	Section Title	Revision
I.	General	*Clarify General statemen*t **The Technical Standards loosely follow CSI MasterFormat. Under no circumstances are the BSD Technical Standards to be used as unedited project specifications.**

I.A.	GENERAL: PROJECT RECORD DOCUMENTATION	**In addition to Contract, Division 0 and Division 1 Technical Standards requirements, provide additional documentation as listed in individual sections.**
I.A.2.a)	Submittals	*GDSR-131* **a) Submittals for Plumbing Piping and Fixtures Contractor shall provide document describing their management of inventory to ensure potable components and systems are separate from non-potable.**
I.A.3.a)	Testing and Inspections of Plumbing Piping and Fixtures	*GDSR-131 Added potable water requirements for lead testing and third party inspection*
I.A.4.a)	Closeout Deliverables for Plumbing Piping and Fixtures	*GDSR-131 Added requirements for statements of lead-free compliance for A/E and Contractor. Clarified submittal markups and A/E stamp of approval.*
I.B.1.	COMMON WORK RESULTS	*GDSR-131 Added common work results: required lead-free potable systems; required compliance with laws impacting drinking water in schools*

Rev 6: 1/2025

Section	Section Title	Revision
All	All	Renumbered all sections of the Technical Standard; included other minor formatting and edits for clarity.