SECTION 22 10 30 – plumbing specialties

1. GENERAL
	* + 1. RELATED DOCUMENTS
				1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
				2. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them.
			2. SUMMARY
				1. Provide all materials and installation for plumbing specialties within building domestic water, sanitary waste and storm drainage systems; floor drains, floor sinks, hub drains, roof drains, cleanouts, backflow preventers, vacuum breakers, pressure regulating valves, water hammer arrestors, wall hydrants, hose bibbs, trap primer units, strainers, temperature gauges, pressure gauges and other normal parts that make the systems complete, operable, code compliant and acceptable to the authorities having jurisdiction.
			3. REFERENCE STANDARDS
				1. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.
				2. All reference amendments adopted prior to the effective date of this Contract shall be applicable to this Project.
				3. All materials, installation and workmanship shall comply with the applicable requirements and standards addressed within the following references:

2009 Edition of the International Plumbing Code.

NOTE: BJC HealthCare takes various exceptions to the International Plumbing Code and has adopted the more stringent requirements within the Uniform Plumbing Code. These exceptions are included within Project Specifications and/or Project Design Drawings.

ANSI/NSF Standard 61 - Drinking Water System Components - Health Effects.

* + - 1. QUALITY ASSURANCE

Manufacturer’s name and pressure rating shall be permanently marked on valve body.

All materials shall be new, undamaged, and free of rust. Protect installed products and associated materials during progression of the construction period to avoid clogging with dirt, and debris and to prevent damage, rust, etc. Remove dirt and debris as work progresses.

Manufacturer Qualifications: Company shall have minimum three years documented experience specializing in manufacturing the products specified in this section.

Installer Qualifications: Company shall have minimum three years documented experience specializing in performing the work of this section. Installation of plumbing systems shall be performed by individuals licensed by the AHJ as a Journeyman or Master Plumber. Installation may be performed by Apprentice Plumbers provided they are registered with the AHJ and under direct supervision of a licensed plumber. All installation shall be supervised by a licensed Master Plumber.

* + - 1. SUBMITTALS
				1. Product Data:

Provide Code and Standards compliance, component dimensions, service sizes and finishes.

* + - * 1. Record Documents:

Manufacturer’s certification documentation for backflow preventers.

Submit proposed location of access panels which vary from quantities or locations indicated on Contract Drawings.

Provide full written description of manufacturer’s warranty.

Record actual locations of plumbing specialties installed.

* + - * 1. Operation and Maintenance Data:

Include testing procedures for backflow preventers, adjustment procedures for water pressure regulating valves.

Include installation instructions, exploded assembly views. servicing requirements, inspection data, installation instructions, spare parts lists, replacement part numbers and availability, location and contact numbers of service depot, for all plumbing specialties installed

* + - 1. DELIVERY, STORAGE and HANDLING
				1. Accept specialties on site in shipping containers and maintain in place until installation.
				2. Provide temporary protective coating and end plugs on valves not packaged within containers. Maintain in place until installation.
				3. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work and isolating parts of completed system.
				4. Protect all materials before and after installation from exposure to rain, freezing temperatures and direct sunlight. EXCEPTION: Materials manufactured for installation within exterior environments.
			2. EXTRA MATERIALS
				1. Provide two loose keys for each type of wall hydrant box.
1. PRODUCTS
	* + 1. GENERAL
				1. All materials shall meet or exceed all applicable referenced standards, federal, state and local requirements, and conform to codes and ordinances of authorities having jurisdiction.
				2. Provide plumbing specialties as indicated and scheduled on the Contract Drawings and as specified herein. All materials and work shall meet or exceed all applicable Federal and State requirements and conform to adopted codes and ordinances of authorities having jurisdiction.
				3. Pressure and temperature ratings of plumbing specialties shall be suitable for the anticipated system pressures and temperatures in which they are installed.
				4. All materials within domestic water distribution systems that may come in contact with the potable water delivered shall comply with ANSI/NSF Standard 61.
				5. All brass and bronze plumbing specialties within domestic water distribution systems that may come in contact with the potable water delivered shall have no more than 15% zinc content.
				6. Specialties of same type shall be product of one manufacturer.
			2. acceptable manufacturers
				1. Floor Drains: Wade, Zurn, Smith, Josam.
				2. Floor Sinks: Wade, Zurn, Smith, Josam.
				3. Roof Drains: Wade, Zurn, Smith, Josam.
				4. Wall/Floor Cleanouts: Wade, Zurn, Smith, Josam.
				5. Backflow Preventers and Vacuum Breakers: Watts Regulator, Febco, Conbraco.
				6. Water Pressure Regulating Valves: Wilkins, Watts Regulator, Cla-Val.
				7. Water Hammer Arrestors: Wade, Zurn, Smith, Josam.
				8. Wall Hydrants: Wade, Zurn, Smith, Josam.
				9. Hose Bibbs: Chicago.
				10. Trap Primer Units: As Specified Herein
				11. Stainers: Conbraco, Wilkins, Watts
				12. Temperature Gauges: Ashcroft, Trerice, Weksler
				13. Pressure Gauges: Ashcroft, Trerice, Weksler
			3. Floor drains (FD)
				1. All floor drains shall be furnished and installed with all options and accessories required for a waterproof installation within the particular construction in which they are to be mounted.
				2. Each floor drain shall be provided with a deep-seal p‑trap unless noted otherwise.
				3. Floor drains installed for general floor area drainage within toilet rooms and other finished spaces shall have cast iron body with flange, adjustable top and sediment bucket, integral reversible clamping collar, seepage openings, 1/2" plugged primer tap, and 6” diameter nickel bronze or stainless steel strainer with vandal proof screws.
				4. Floor drains installed for general floor area drainage and light to medium flow indirect equipment discharge within mechanical rooms shall have cast iron body with plugged 1/2" primer tap, integral clamping collar, seepage openings, adjustable top and 11-1/2” diameter ductile iron loose set tractor grate.
				5. Floor drains installed for non-monolithic shower stall floors shall have cast iron body with flange, adjustable top, integral reversible clamping collar, seepage openings and 5” diameter nickel bronze or stainless steel strainer with vandal proof screws.
				6. All floor drains shall be as sized and scheduled on Contract Drawings.
			4. Floor Sinks (FS)
				1. All floor sinks shall be furnished and installed with all options and accessories required for a waterproof installation within the particular construction in which they are to be mounted.
				2. Each floor sink shall be provided with a deep-seal p‑trap unless noted otherwise.
				3. Floor sinks installed for general floor area drainage shall have 8” round cast iron body with 3" sump, acid resistant enamel interior, aluminum dome strainer, seepage flange, membrane clamping device and 7-3/8” diameter stainless steel or nickel bronze top.
				4. Floor sinks installed to receive indirect equipment discharge shall have cast iron 12" square body with 8" sump, acid resistant enamel interior, aluminum dome strainer, seepage flange, membrane clamping device and stainless steel top. Top shall be ½ or ¾ grate as scheduled on Drawings.
				5. All floor sinks shall be as sized and scheduled on Contract Drawings.
			5. HUB Drains (HD)
				1. Hub drains shall be cast iron soil pipe hubs or hub adapters set with top of hub one-half inch (1/2”) above finished floor. Each hub drain shall be provided with a deep-seal P‑trap.
			6. Roof drains (RD)
				1. Primary roof drains shall be furnished and installed with all options and accessories required for a waterproof installation within the particular construction in which they are to be mounted and have lacquered cast iron body with sump, removable cast iron or bronze dome strainer, flashing flange and clamp, gravel stop, deck clamp and drain receiver. Provide extension where required.
				2. Secondary (emergency overflow) roof drains shall be furnished and installed with all options and accessories required for a waterproof installation within the particular construction in which they are to be mounted and have minimum 2” high water dam, acid resistant epoxy coated cast iron body and sump, removable bronze dome strainer, flashing flange and clamp, gravel stop, deck clamp and drain receiver. Provide extension where required.
				3. Roof drains shall be sized as indicated on Contract Drawings.
			7. Cleanouts:
				1. Cleanouts shall be the same nominal size as the pipe they serve up to four inches. For pipes larger than four inches nominal size, the size of cleanouts shall be six inches.
				2. Cleanouts shall have cast iron body with tapered cast brass or bronze plug providing gas and watertight seal.
				3. Interior floor cleanouts shall have stainless steel or nickel bronze scoriated top. Provide carpet marker when installed in areas to be covered by carpet.
				4. Exterior cleanouts at grade shall have scoriated cast iron top.
				5. Wall cleanouts shall be provided with stainless steel access covers of adequate size to allow rodding of drainage system. Wall cleanouts incorporating cover screws that extend completely through the access plug are not acceptable.
			8. Backflow preventers (includes backpressure and backsiphonage)
				1. Reduced Pressure Zone Type (Not For Use In Fire Protection Water Supply):

The assembly shall meet the requirements of ASSE 1013, AWWA C511.

The assembly shall consist of a pressure differential relief valve located in a zone between two positive seating check valves and captured springs. Backsiphonage protection shall include provision to admit air directly into the reduced pressure zone via a separate channel from the water discharge channel. The assembly shall include two tightly closing shutoff valves before and after the valve and test cocks.

Test cocks

Seats: Bronze, removable and replaceable without removing valve from the line.

Checks: Independently operating.

Relief Valve: Independently operating, located between the two check valves.

Rated 175 psi maximum working pressure with continuous temperature range of 33 to 140°F.

Unit to be complete with vent-port funnel to maintain the air gap and to provide a drain connection point.

Sizes 1/4" and 1/2" - Bronze body, bronze strainer, upstream and downstream quarter-turn ball valves, union connections: Watts Regulator Company Series 009.

Sizes 3/4" through 2" - Bronze body, bronze strainer, upstream and downstream quarter-turn ball valves, union connections: Watts Regulator Company Series 919.

Sizes 2-1/2" through 10" - FDA epoxy coated cast iron body, FDA epoxy coated strainer, upstream and downstream OSY – UL/FM outside stem and yoke resilient seated gate valves, flange connections: Watts Regulator Company Series 909.

* + - * 1. Reduced Pressure Zone Type (For Use In Fire Protection Water Supply):

The assembly shall meet the requirements of ASSE 1013, be U.L. classified and FM Approved.

The assembly shall consist of a pressure differential relief valve located in a zone between two positive seating check valves and captured springs. Backsiphonage protection shall include provision to admit air directly into the reduced pressure zone via a separate channel from the water discharge channel. The assembly shall include two tightly closing shutoff valves before and after the valve and test cocks.

Test cocks

Replaceable seats

Checks: Independently operating.

Relief Valve: Independently operating, located between the two check valves.

Rated 175 psi maximum working pressure with continuous temperature range of 33 to 110°F.

Unit to be complete with vent-port funnel to maintain the air gap and to provide a drain connection point.

Sizes 2-1/2" through 10" - Schedule 40 stainless steel body, upstream and downstream UL/FM outside stem and yoke resilient seated gate valves or UL/FM grooved gear operated butterfly valves with tamper switches: Watts Regulator Company Series 957.

* + - * 1. Double Check Valve Assembly (Not for Fire Protection Water Supply):

The assembly shall meet the requirements of ASSE 1015, AWWA C510

Top entry access points for each check assembly

Replaceable seats

Test cocks

Rated 175 psi maximum working pressure with continuous temperature range of 33 to 140°F.

Sizes 1/2" through 2" - Bronze alloy body, bronze strainer, upstream and downstream quarter-turn ball valves, union connections: Watts Regulator Company Series 719.

Sizes 2-1/2" through 10" - FDA epoxy coated cast iron body, FDA epoxy coated strainer, upstream and downstream OSY – UL/FM outside stem and yoke resilient seated gate valves, flange connections: Watts Regulator Company Series 709.

* + - * 1. Double Check Valve Assembly (For Use In Fire Protection Water Supply):

The assembly shall meet the requirements of ASSE 1015, be U.L. classified and FM Approved.

Two independent tri-link check modules within a single housing

Sleeve access port

Four test cocks

Rated 175 psi maximum working pressure with continuous temperature range of 33 to 110°F.

Sizes 2-1/2" through 10" - Schedule 40 stainless steel body, upstream and downstream UL/FM outside stem and yoke resilient seated gate valves or UL/FM grooved gear operated butterfly valves with tamper switches: Watts Regulator Company Series 757.

* + - * 1. Continuous Pressure Vacuum Breaker (Not For Use In Fire Protection Water Supply. Not to be used for backpressure protection):

Tested and certified under ASSE Standard 1056.

Suitable for continuous pressure hot and cold water.

Brass body and seat with silicon rubber discs.

Rated maximum pressure 150 psi and working temperature 33 to 180 degrees F.

Complete with quarter turn ball valves and test cocks.

Sizes 3/8” through 1” - Spill-resistant, Watts Regulator Company Series 008PCQT.

* + - * 1. Dual Check Valves (For Use in Beverage Dispenser Water Supply):

Certified to ANSI/NSF Standard 18.

Tested and certified under ASSE Standard 1022.

Atmospheric port

316 stainless steel body

Rated maximum pressure 150 psi and working temperature 33 to 130 degrees F.

Sizes ¼” and 3/8” – Watts Regulator Company Series SD-3.

* + - 1. Water pressure regulating valves
				1. Low to Moderate Flow Systems (Less Than 70 GPM) and Individual Equipment

Sizes 1/2" through 2"

 All bronze body

0.25% maximum weighted average lead content

Integral stainless steel strainer screen

Built-in bypass check valve

FDA approved elastomers

Renewable seat

Union end connection

Rated for water temperature up to 180°F and minimum 300 psi inlet pressure. Provide model with inlet pressure rating, reduced pressure range and factory preset outlet pressure as scheduled on Contract Drawings.

Manufactured by Wilkins Series 600XL or approved equal by Watts.

* + - * 1. Large Demand Systems

Sizes 1-1/4” through 2 - ASTM B62 bronze body

Sizes 2-1/2” and larger - ASTM A536 ductile iron body

Pressure reducing pilot control

Stainless steel disc guide, seat and bearing cover

Stainless steel stem, nut and spring

FDA approved Nylon reinforced Buna-N rubber diaphragm

Provide model(s) with size, temperature range, inlet pressure rating, reduced pressure range, outlet pressure and options as scheduled on Contract Drawings.

Cla-Val Company Series 90 or approved equal by Watts.

* + - 1. WATER HAMMER ARRESTORS (Shock Absorbers):
				1. Nesting type bellows operated water hammer arrestor with male N.P.T. connection. Bellows and body casing made of Type 304 stainless steel. Water hammer arrestors shall be certified to the PDI WH-201 Standard and ASSE Standard 1010.
				2. Arrestors shall be designed and manufactured for a maximum working temperature of 250F and maximum operating pressure of 125 P.S.I.G.
				3. All arrestors shall be designed and approved for sealed wall installation without an access panel.
				4. Water hammer arrestors shall be sized according to water hammer arresters standard PDI-WH-201 and as indicated on Contract Drawings.
			2. WALL HYDRANTS (wh)
				1. Provide antisiphon, non-freeze wall hydrant with brass casing, integral backflow preventer, vandalproof box with loose-key handle and finish as scheduled on Drawings.
			3. hose bibbs (hb)
				1. General Areas: Provide Chicago Faucet No. 387 chrome plated brass hose bibb with ¾-inch female inlet, wall flange, tee handle and No. E27 vacuum breaker.
				2. Housekeeping Mop Sinks: Provide Chicago Faucet No. 293-369COLDCP chrome plated brass hose bibb with ¾-inch female inlet, wall flange and lever handle.
			4. FLOOR DRAIN TRAP SEAL GUARDS
				1. Floor drain trap seal protection insert shall provide watertight seal inside the floor drain and prevent emission of sewer gas and backup of sewage.
				2. Insert material shall be resistant to common cleaning solutions, lime scale and microbiological growth and incorporate a Elastomeric flexible tube that closes when water is not passing through and opens to permit water flow from an intermittent drip. Insert shall provide no restriction on water flow up to 30 gallons per minute.
				3. Insert shall properly functions despite lodging of common debris such as mop strings, food residue, etc.
				4. Trap seal protection insert shall not be installed in floor drains receiving waste that may have a temperature greater than 140 degrees F.
				5. Trap seal protection insert shall not be installed in floor drains receiving waste discharge flow of greater than 30 gallons per minute.
				6. Trap seal protection insert shall not be installed in floor drains receiving corrosive or chemical waste.
				7. Trap seal protection insert shall be manufactured by ProSet "Trap Guard", model to suit installation.
			5. TRAP PRIMER UNITS (TP)
				1. Trap Priming devices that rely upon line pressure differential for activation are not allowed.
				2. Electronic Trap Primers:

Provide model with quantity of outlets and type of mounting box as scheduled on Contract Drawings.

The number of traps served by a single trap priming device shall not exceed the number of header outlets provided within the device. Auxiliary distribution units are not allowed.

All unused header outlets shall be capped water-tight with compatible threaded fittings.

Each electronic trap primer device shall be provided with a readily serviceable strainer immediately upstream of the device solenoid valve.

Electronic trap primers shall provide 10 second water injection to traps every twenty-four hours, complete with galvanized steel box and cover, copper inlet connection, brass ball type stop valve, slow closing 24 VAC solenoid valve with integral strainer, 120-24 VAC transformer, brass atmospheric vacuum breaker, and copper waterway.

Electronic trap primers shall be manufactured by Zurn Z1020-CW or approved equal by Precision Plumbing Products “Prime Time”, model to suit installation.

* + - * 1. Vacuum Breaker Trap Primer for use with exposed Flushometers:

This type of device shall not serve more than one trap.

One Piece, Chrome Plated Flush Connection.

Water Deflector to control the amount of water diverted from the flush.

3/8” Elbow and Flex-bend Tube connection from Vacuum Breaker to wall.

Diverter Wall Flange and Fittings

Chrome Plated Wall Flange and Fitting to connect ½” NPT pipe.

High Back Pressure Vacuum Breaker.

One-piece Bottom Hex Coupling Nut.

Sloan Model VBF-72-A1

* + - * 1. Trap Primer for use with Lavatory or Sink Drain Tailpiece:

This type of device shall not serve more than one trap.

Polished Chrome Plated Cast Bronze P-trap with Ground Joint Outlet.

Threaded Wall Tube, Slip Joint Nuts, Washers and Escutcheons.

1/2" Polished Chrome Plated Bronze Primer Tube with Compression Fitting Connection at Wall.

Jay R. Smith Model 2698 or approved equal of a referenced acceptable manufacture.

* + - 1. strainers
				1. Strainers, 2" and smaller, bronze body, screwed ends, No. 20 mesh type 304 stainless steel screen, screwed cap with bronze blow‑off valve (size to be determined by standard tap size in cap).
				2. Strainers, 2-1/2" and larger, Cast iron body, isolating type flanged ends where installed in copper lines, .125” perforated type 304 stainless steel screen, flanged cap with bronze ball blow‑off valve (size of blow‑off valve shall be determined by standard tap size in cap). Special Note: All strainers 6" and larger shall have studs mounted in the body flange in lieu of bolts for removal of cap. Baskets for strainers 6" and larger shall have stainless steel reinforcing bands at ends to prevent collapsing.
			2. TEMPERATURE GAUGES:
				1. Thermometers shall be vapor or liquid actuated, direct-mounted, universal adjustable angle dial type with stainless steel or cured polyester powder coated cast aluminum case, stainless steel friction ring and glass window. Dial face shall be white with black figures; pointer shall be friction adjustable type. Movement shall be brass with bronze bushings. Bourdon tube shall be phosphor bronze with a brass socket.
				2. Thermometer range shall be 30 - 240° Fahrenheit and have an accuracy of ±1 scale division.
				3. Dial face shall be 4½” diameter where installed within eight feet of floor level and 6” diameter where installed higher than six feet above floor level. Provide remote read-out gauges for isolated or hard to access monitoring points.
				4. Provide a brass or stainless steel separable thermowell for each thermometer.
				5. Thermometers shall have a sensing bulb with an insertion length of roughly half of the pipe diameter; minimum insertion length shall be 2". Thermometers installed on tanks shall have a minimum insertion length of 5".
				6. Where insulation thickness exceeds 2", provide proper bulb length and an extension neck separable thermowell. The extension neck shall be at least 2" long.
			3. PRESSURE GAUGES:
				1. Gauges shall comply with ASME B40.1, Grade 2A, and have ±0.5 percent of full scale accuracy, with type 304 stainless steel or aluminum case, bronze wetted parts and brass socket. Dial face shall be 3½” diameter where installed within six feet of floor level and 6” diameter where installed higher than eight feet above floor level. Dial face shall be aluminum with white background, black graduations and black markings. Pointer shall be adjustable with black finish. Provide remote read-out gauges for isolated or hard to access monitoring points.
				2. Units of measure shall be in pounds per square inch (psi). The proper range shall be selected so that the average operating pressure falls approximately in the middle of the scale selected.
				3. All pressure gauges shall be equipped with brass or stainless steel needle valves and pressure snubbers.
1. EXECUTION
	* + 1. PREPARATION
				1. Coordinate cutting and forming of roof and floor construction to receive drains with General Contractor.
				2. Verify location of equipment and housekeeping pads prior to installation of floor drains. Relocation due to misplacement shall be at Contractor’s expense.
			2. INSTALLATION
				1. General

Installation shall meet or exceed all applicable federal, state and local requirements, referenced standards and conform to codes and ordinances of authorities having jurisdiction.

Install plumbing specialties in accordance with manufacturer’s published instructions.

* + - * 1. Drains and Cleanouts

Extreme care shall be used to set the top elevation of floor drains and floor sinks to meet the low point elevation of the finished floor.

Pipe connections to roof drains, above grade floor drains and floor sinks shall not directly contact or be encased in concrete.

Final mounting of interior cleanout top or access cover shall be set flush with the finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil.

Encase exterior cleanouts within 14” x 14” x 6” thick reinforced concrete pad. Set top flush with finished grade surface.

Locate cleanouts with required clearance for rodding of drainage system.

* + - * 1. Backflow Preventers and Vacuum Breakers

Isolate all non-potable water requirements from the building domestic water system with backflow prevention device manufactured and certified for the particular application.

Pipe relief from backflow preventer indirectly to drain of sufficient size to evacuate maximum flow discharge.

Backflow preventers shall be duplexed full-size where located within domestic water lines serving in-patient areas, critical research areas, and/or any area or equipment where un-interruptible (24 hour) water service is required.

Test ports shall not be located more than 72 inches above finished floor or permanent platform.

Do not install vacuum breakers or backflow preventers above equipment, above ceilings, concealed within walls, or areas where water leakage can cause damage.

Install a strainer immediately upstream of each vacuum breaker and backflow preventer.

* + - * 1. Water Hammer Arrestors (Hydraulic Shock Absorbers)-

Provide hydraulic shock absorbers in cold and hot water supply lines to each fixture branch, battery of fixtures and at each automatic, solenoid-operated or quick-closing valve serving equipment.

Locate and size hydraulic shock absorbers in accordance with PDI-WH-201 Standard and manufacturer’s published recommendations.

* + - * 1. Water Pressure Regulating Valves

Provide isolation valve, strainer and pressure gauge immediately upstream of each pressure regulating valve.

Provide pressure gauge and isolation valve immediately downstream of each pressure regulating valve.

Installation shall allow sufficient access to and space around components for adjustments and servicing.

Provide services of a direct factory representative for start-up service, inspection and necessary adjustments for all large demand regulators.

END OF SECTION 22 10 30