SECTION 221119 - PLUMBING SPECIALTIES

1.0 Water-hammer arrestors shall be provided to control and absorb hydrostatic shock pressure of the piping system. Arrestors shall conform to American Society of Sanitary Engineers (ASSE) 1010 and be sized in accordance with Plumbing and Drainage Institute (PDI) WH-201. Field-manufactured water-hammer arrestors are not acceptable.

2.0 All systems shall be provided with cleanouts at the base of every stack and where the sanitary or waste mains change direction, and in all straight mains on a maximum spacing of 50 ft. Provide access covers in finished areas.

3.0 Provide hose bibs on the exterior of all buildings. A minimum of one (1) bib shall be installed on each building face and the maximum distance between bibs shall not exceed 100 ft. The hose bibs shall be of the non-freeze type housed in a lockable wall box.

4.0 Drain Traps

A. Provide separate traps for drains not fully incorporated with integral traps.

B. Piping materials (fittings) for drain shall be as specified in related Section 15400.

5.0 Trap Primers

A. Provide trap primers conforming to ANSI/ASSE 1018.

1. Single Trap Primers: Cast bronze with 1/2 inch NPT female connections.
2. Multiple Trap Primers: With distribution units.

B. When required provide trap primers with time clock equipped with 24-hour dial with replaceable trippers suitable for 120 V, 60 Hz operation. Interval timer shall be base-mounted. Solenoid valve shall be all-bronze with threaded connections suitable for 120V, 60 Hz operation.

6.0 Fresh Air Inlets

A. Provide wall-type fresh air inlets with protective perforated cover, pipe clamp, set screw and vandal proof cover screw. Exposed parts shall receive statuary bronze finish.

7.0 Washing machine connections shall be wall box assembly containing water supply and drain connections. Include water supply line and single control valve with lever handle.

8.0 Vending Machine Connections shall be provided with valved cold water supply piping with reduced pressure type backflow preventer to vending machines using materials as specified in Section 221116.

9.0 Mechanical equipment connections shall be provided with valved cold water supply piping to applicable mechanical equipment with pressure reducing backflow preventer using materials as specified in Section 221116.

10.0 Interceptors shall be used when waste discharged into a drainage system containing substances which hinder sewage disposal, such as non-soluble, flammable, or hazardous substances.

A. Solids interceptors shall have cast iron body, including bolted and gasketed watertight cover, removable inlet baffle, removable sediment basket with bronze screens, and 2 inch IPS threaded female inlet and outlet connections.

B. Oil interceptors shall have steel body with acid-resistant rubber base coating applied inside and outside including baffle plates, draw-off connections, double wall trap seal, air relief bypass, countersunk clean-out plug, sediment basket, scoriated non-skid neoprene gasketed cover, IPS threaded female inlet and outlet connections, two IPS vent connections and lift rings.

11.0 Grease Interceptors

A. Grease interceptors shall be floor-mounted, semi-recessed or flush-to-finished floor having cast iron body with anchor flange, and acid-resistant rubber base coating or porcelain enamel applied inside and outside.

B. Inceptors shall be installed with monitoring equipment that notifies occupants when the inceptor needs servicing.

C. Inceptors shall be located as close as possible to the source.

D. Serviceability and access by a vacuum truck to the unit shall be considered a top priority by the AE team.

E. A placard in the area must describe the service requirements of the unit.

12.0 Test Tees shall be provided with screwed plug at the base of each soil, waste and vent stack, including interior rainwater conductors, and on every third floor in multi-storied buildings in accordance with local plumbing code requirements.

13.0 Thermostatic Mixing (Temperature Control) Valves.

A. Provide for the Domestic Hot Water System, and any Tempered Water Systems, and for domestic water supply to the Laboratory Purified Water Systems. Manufactures shall be Leonard, Lawler, Powers or approved equal.

1. Provide valve with swivel-action check stops, removable cartridge with strainer, wall-mounted type dial thermometer, and standard rough chrome finish.
2. Provide check valve on cold water inlet to mixing valve when mixing valve is not furnished with integral check valve.

14.0 Hose Stations

A. Wall-Mounted Hose Station for Domestic Hot and Cold Water Service:

1. Unit shall be supplied with a domestic hot and cold water thermostatic mixing valve, bimetal thermostat, temperature-adjusting handle, and color-coded heat- resistant handles. Inlets shall be provided with unions. Outlet shall be provided with dial thermometer having a range of 20 to 180 degrees F, vacuum breaker, and hose connection. Degrees in Celsius and Fahrenheit shall be shown on thermometer. Hose rack shall be stainless steel.

2. Unit shall have concealed cabinet for recessed installation, body of No. 16 gauge stainless steel, door and flange of No. 12 gauge stainless steel, No. 4 finish. Door shall be provided with piano hinge on left side of door, cylinder lock and top inlets. Cabinet shall be factory assembled as a unit.

B. Hose: 3/4 inch 2-braid heavy-duty hose, SBR high-temperature resistant (290 degrees F at 50 psig) with Nitrile-PVC cover. Length determined on a project by project basis.

C. Hose Nozzle: Provide hose nozzle with adjustable spray, self-closing automatic shut-off, and heavy-duty rubber cover.

D. Wall-Mounted Hose Station and Retractable Hose Reel and Spray for Domestic Hot and Cold Water Service:

1. Unit shall be supplied with a domestic hot and cold water thermostatic mixing valve, bimetal thermostat, temperature-adjusting handle, and color-coded heat- resistant handles. Inlets shall be provided with unions. Outlets shall be provided with a dial thermometer having a range of 20 to 180 degrees F, vacuum breaker, and hose connection. Degrees in Celsius and Fahrenheit shall be shown on thermometer.
2. Retractable hose reel and spray shall be supplied with a heavy-duty, 35 foot hose of 3/8 inch I.D., with adjustable hose bumper, open reel, and no cover, and spray nozzle with heat-resistant handle.

15.0 Backflow Preventers (Reduced-Pressure Zone and Double Check Valve Types)

A. Reduced-Pressure Zone Type shall be used in higher hazard domestic water applications and shall have iron body, stainless steel internal parts, and double-seated first check valve. Backflow preventer shall conform to ASSE 1013 for reduced-pressure zone principle. For sizes up to 2 inches, provide union connections. For sizes 2 1/2 to 6 inches, provide flanged connections. Backflow preventers shall be provided with test cocks. Provisions must be made to accept full drain discharge. If at all possible locate backflow preventer above grade to allow discharge above ground.

B. Double Check Valve Type shall be used in minimum hazard fire protection applications and shall have bronze body, stainless steel internal parts, and double check valve assembly. Backflow preventer shall conform to ASSE 1015. For sizes up to 2 inches, pro- vide union connections. Furnish backflow preventers with test cocks.

C. All backflow preventer installations shall comply with most recent City of Philadelphia cross connection control requirements.

16.0 Backflow Preventers (Atmospheric Type) shall have brass body and a rubber-to-rubber seating design with male threads at one end and female threads on opposite end. Backflow preventers shall be suitable for hose bibbs and wall hydrants, and shall conform to ANSI A112.1.3/ASSE 1011.

17.0 Pressure-relief valves shall have bronze body, carbon steel spring, and shall be set at a maximum of 90 psig and be installed on all equipment for heating or storage of hot water.

18.0 Vacuum-Relief Valves shall be installed on all equipment used for storage and shall have brass body with heating-resisting disc and male inlet connection. Valves shall have a maximum water working pressure of 200 psi and a maximum operating temperature of 250 degrees F. Approved manufactures are Watts or approved equal.

19.0 Water Pressure-Reducing Valves shall be installed when street main pressure exceeds 80 pounds per square inch and shall conform to ASSE 1003.

A. For pipe sizes 1/2 to 2 1/2 inches use a diaphragm-actuated valve with bonze body, stainless steel spring, rubber disc, renewable stainless steel seat, and threaded ends.

B. For pipe sizes 3 to 4 inches use a diaphragm-actuated valve with iron body, stainless steel spring, stainless steel stem, rubber disc, renewable stainless steel seat, and threaded ends.

C. For pipe sizes 6 inches and larger use a diaphragm-actuated, pilot-controlled modulating globe valve with cast iron body and bonnet, stainless steel stem, cast bronze seat ring, cast bronze pilot body, and flanged ends. Valve and pilot shall be factory assembled, including all control line tubing.

20.0 Backwater valves shall be installed where plumbing fixtures are subject to backflow from public sewers and shall have a cast iron body with hub and spigot connections, bronze flapper-type backwater valve, and ferrule and plug threaded access cover.

21.0 Electric Flush Valves and Control Panels for Flushing Drains and Large Animal room Trenches

A. Provide concealed flush valve, rough brass, 1 inch IPS wheel handle back check angle stop, adjustable tailpiece, vacuum breaker, 1 inch female IPS union outlet (no flush connection), with 24 V ac solenoid operator and electric pushbutton (remotely located). Exposed parts shall be chrome-plated.

B. Electric pushbuttons for each room shall be grouped together in a stainless steel control panel. Panel shall be furnished with prewired momentary contacts and 120 V/24 V ac transformers as required. Transformers shall be sized for simultaneous solenoid operation plus 20 percent spare capacity. Panels shall be NEMA 4 and UL rated.

22.0 Drain pans shall be continuous watertight copper construction and installed under piping for the protection of computers, computer components and other electrical equipment. Pans shall be located directly below drainage piping, below hot and cold water supply piping and other piping. The minimum dimensions of the pan shall be 1 foot 6 inches wide with a 6 inch high wall. A drain connection shall be provided and shall be piped to the equipment room floor or to a floor drain.