

**SECTION 33 1416  
SITE WATER UTILITY DISTRIBUTION PIPING**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Water pipe for site conveyance lines.
- B. Pipe valves.
- C. Fire hydrants.
- D. Backflow preventers - reduced pressure principle assemblies.
- E. Backflow preventers - double check-valve assemblies.

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**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete for thrust restraints.
- B. Section 09 9113 - Exterior Painting.
- C. Section 21 1100 - Facility Fire-Suppression Water-Service Piping.
- D. Section 33 0110.58 - Disinfection of Water Utility Piping Systems: Disinfection of site service utility water piping.
- E. SBMWD Standard Specifications and Drawings for Construction of Domestic Water Systems

**1.03 REFERENCE STANDARDS**

- A. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Prevention Assemblies; 2021.
- B. ASSE 1015 - Performance Requirements for Double Check Backflow Prevention Assemblies; 2021.
- C. ASSE 1047 - Performance Requirements for Reduced Pressure Detector Backflow Prevention Assemblies; 2021.
- D. ASSE 1048 - Performance Requirements for Double Check Detector Backflow Prevention Assemblies; 2021e.
- E. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric); 2021a.
- F. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2015, with Editorial Revision (2018).
- G. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40; 2024.
- H. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2020 (Reapproved 2024).
- I. NSF 61 - Drinking Water System Components - Health Effects; 2017.
- J. UL 246 - Hydrants for Fire-Protection Service; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

**1.05 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Certify products meet or exceed specified requirements and SBMWD standards and specifications.
- C. See Section 01 3000 - Administrative Requirements, for submittal procedures.

**1.06 QUALITY ASSURANCE**

- A. Perform Work in accordance with the SBMWD requirements.

## PART 2 PRODUCTS

### 2.01 WATER PIPE

- A. PVC Pipe: ASTM D1785 Schedule 40.
1. Fittings: ASTM D2466, PVC.
  2. Joints: ASTM D2855, solvent weld.
- B. Copper tubing: This specification shall cover the requirements for 1-inch thru 2-inch seamless, annealed, Type "K", copper water tube. Copper tubing shall meet the requirements of ASTM B-88, "Specifications for Seamless Copper Water Tube". The 1½-inch and 2-inch copper water tube shall be of the rigid type.

### 2.02 GATE VALVES

- A. Gate Valves: Shall conform to the requirements of AWWA Standard C509, "Resilient-Seated Gate Valves for Water Supply Service", with fully encapsulated disc and as supplemented herein.

All gate valves shall be equipped with double O-ring stem seals.

1. Approved Gate Valve Manufacturers:
  - a. ACIPCO American Flow Control Series 500 & Series 2500
  - b. American R/D Series 2000 & Series 2500
  - c. Clow Resilient Wedge Valve Series 6100
  - d. Mueller A-2360
  - e. American AVK Series 25
  - f. Or Approved Equal

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- B. Manufacturer's name and pressure rating marked on valve body.

### 2.03 FIRE HYDRANTS

- A. Fire Hydrants: Shall be wet-barrel type, conforming to AWWA C503, and as supplemented herein.
- B. Fire hydrants used in commercial/industrial areas shall have two 2 1/2-inch hose outlets and one 4-inch pumper outlet. Outlet threads shall conform to ANSI-B26 "National Standard Fire-Hose Coupling Screw Threads".

Fire hydrants shall be furnished with a pentagon shaped operating nut 1-1/8 inch per side, and opening shall be counterclockwise. Fire hydrants shall be furnished with hollow break off bolts or an equivalent grounded break off spool at the ground level flange.

Fire hydrants shall be equipped with plastic outlet nozzle caps attached to the body of the fire hydrant with non-kinking electro-galvanized steel chains and fitted with appropriate neoprene rubber gaskets.

All fire hydrant burys shall be cast iron, asphalt coated and cement lined. Fire hydrant burys shall be provided with a Mechanical Joint-end at the shoe.

Wet barrel type fire hydrants shall have a nominal six-inch (6") base flange with a six-hole bolt pattern. All internal working parts, including stem, shall be bronze containing no more than seven percent (7%) zinc or two percent (2%) aluminum or 316 stainless steel. The inside of the Cast Iron or Ductile Iron body shall be epoxy lined.

1. Approved Fire Hydrant Manufacturers:
  - a. Clow F – 860, F-2060, and LB 430
  - b. James Jones Co. J-3765 and J-4060
  - c. American AVK 2490

**2.04 BACKFLOW PREVENTERS - REDUCED PRESSURE PRINCIPLE ASSEMBLIES**

- A. The type of device approved shall be based on the existing or potential degree or hazard which exists, in the opinion of the Utility. All devices shall be approved by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California, Los Angeles, CA 90089-2531.

The developer or his Contractor shall be responsible for the installation, initial test, and certification of all new backflow prevention devices. Thereafter, backflow prevention devices will be maintained and tested annually by the owner or water user.

The backflow prevention device installation shall be above ground, screened from view as approved by the utility, and shall conform with sections 4-08, 4-09 of the SBMWD Standard Specifications and Drawings for Construction of Domestic Water Systems.

- B. Reduced Pressure Backflow Detector Assembly:
1. ASSE 1047; NSF 61; epoxy-coated cast iron body; metered bypass; two independently operating, spring-loaded check valves with stainless steel springs; differential pressure relief valve located between check valves; integral test fittings.
  2. Size: 2-1/2- to 10-inch NPS assembly with flanged OS&Y gate valves.

**2.05 WATER METERS**

- A. Provide water meter approved by the SBMWD Standard Specifications and Drawings for Construction of Domestic Water Systems.

**2.06 ACCESSORIES**

- A. Restrained Joints: All restrained joints shall be in conformance with section 2-12 of the SBMWD Standard Specifications and Drawings for Construction of Domestic Water Systems.

**PART 3 EXECUTION****3.01 EXAMINATION**

- A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

**3.02 SERVICE CONNECTIONS**

- A. Provide fire water service per SBMWD Standard Specifications and Drawings for Construction of Domestic Water Systems section 3-04, with reduced pressure backflow as shown on the construction plans.

**3.03 PREPARATION**

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly. **Enclosure #47**
- C. Prepare pipe connections to equipment with flanges or unions. **Fire Station #227**

**3.04 TRENCHING**

- A. Trench excavation shall be in conformance with section 3-03.03 and 3-08 of the SBMWD Standard Specifications and Drawings for Construction of Domestic Water Systems.
- B. See the sections on excavation and fill for additional requirements.
- C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

**3.05 INSTALLATION - PVC PIPE**

- A. Installation of the Polyvinyl Chloride (PVC) shall be in accordance with AWWA C605 and manufacturer's recommendations.
- B. Make and assemble rubber-gasketed, bell-and-spigot joints in accordance with manufacturer's recommendations.

**3.06 INSTALLATION - VALVES, HYDRANTS, BACKFLOW PREVENTERS**

- A. Set valves on solid bearing.
- B. Center and plumb the valve box directly over the valve operating nut. Adjust the valve box cover so it is flush with the finished grade or paved surface, in accordance with project installation drawings and SBMWD Standard Drawing (or equivalent).
- C. Locate control valve 4 inches away from hydrant.
- D. After all testing and disinfection has passed, but prior to final acceptance by the SBMWD all aboveground installations shall be coated in accordance with section 2-14 of the SBMWD Standard Specifications and Drawings for Construction of Domestic Water Systems.
- E. Install backflow preventers in accordance with requirements of the SBMWD Standard Specifications and Drawings for Construction of Domestic Water Systems.

**3.07 TESTING, DISINFECTION, AND FLUSHING**

- A. Disinfect the new water piping and existing water piping affected by Contractor's operations in accordance with AWWA C651. Exercise caution when mixing chlorine disinfectant solutions. Fill piping systems with solution containing minimum of 50 parts per million of available chlorine and allow solution to stand for minimum of 24 hours. Flush solution from the systems with clean water until maximum residual chlorine content is not greater than 0.2 part per million or residual chlorine content of domestic water supply. Obtain at least two consecutive satisfactory bacteriological samples from new water piping, analyze by a certified laboratory, and submit results prior to new water piping being placed into service. Disinfection of systems supplied by non potable water is not required.
- B. The Contractor shall supply all material, labor, equipment and method necessary to conduct the required hydrostatic tests and flushing. All bacteriological tests shall be made by SBMWD Water Quality only and all bacteriological tests shall be performed at laboratories certified by the California Department of Health Services. All constructed facilities shall be isolated from the existing public system while being tested with the use of a test plate or "physical disconnect" of pipe.

**END OF SECTION**

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