

SECTION 05100 - VALVES, GENERAL

PART 1 - GENERAL

1.1 WORK INCLUDED IN THIS SECTION

- A. The WORK of this Section includes providing general requirements for valves including epoxy coating, installing, adjusting, and testing of valves and where buried valves are indicated, valve boxes to grade, with covers, stem extensions, and position indicators.

1.2 REFERENCE SPECIFICATIONS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section.
 - 1. ANSI B16.1 Pipe Flanges and Flanged Fittings, Class 25, 125, and 250
 - 2. AWWA C213 Fusion Bonded Epoxy Coating
 - 3. AWWA C500 Gate Valves for Water and Sewerage Systems
 - 4. AWWA C503 Wet-Barrel Fire Hydrants
 - 5. AWWA C504 Rubber Seated Butterfly Valves
 - 6. AWWA C506 Backflow Prevention Devices-Reduced Pressure Principle and Double Check Valve Types
 - 7. AWWA C509 Resilient-Seated Gate Valves for Water and Sewerage Systems
 - 8. AWWA C550 Protective Interior Coatings for Valves and Hydrants

1.3 SUBMITTALS

- A. The following shall be submitted in compliance with Section 01300.
 - 1. Shop Drawings
 - a. Manufacturer's catalog data showing all valve parts.
 - b. Manufacturer's installation instructions.
 - c. Schedule of valves indicating valve identification and location.
 - d. Detail drawings showing laying lengths, valve dimensions and orientation, pressure rating, valve actuators, and materials of construction.
 - e. Manufacturer's certification that products comply with the indicated requirements.
 - f. Manufacturer's certification that epoxy coatings have been factory tested and comply with the indicated requirements.
 - g. Manufacturer's certification that valves were manufactured within the last 5 years.

2. OWNER's Manual
 - a. Manufacturer's catalog data.
 - b. Manufacturer's installation and operations instructions.
 - c. Manufacturer's maintenance procedures.
 - d. List of special tools.

1.5 TESTING

- A. Except as modified herein, valves shall be tested in accordance with the requirements of this Section and AWWA standards indicated.
 1. Except as otherwise indicated, each valve body shall be tested under a test pressure equal to twice its design water-working pressure.
 2. The CONTRACTOR shall furnish the OWNER three (3) certified copies of a report from an independent testing laboratory certifying successful completion of proof-of-design testing on all valves of sizes 10-inch and larger unless indicated otherwise in the specific valve Section.
 3. In lieu of testing the valves at an independent testing laboratory, proof-of-design testing may be performed at the valve manufacturer's laboratory, but must be witnessed by a representative of a qualified independent testing laboratory representative.
 4. Proof-of-design testing shall have been performed on not less than three valves, with all three units demonstrating full compliance with the test standards. Failure to satisfactorily complete the test shall be deemed sufficient evidence to reject all valves of the proposed make or manufacturer's model number.
- B. Valves shall be field-tested for compliance with the indicated requirements.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Valves shall be provided complete with operating extension stems, gear actuators, operating nuts, handwheels, and all equipment required for operation.
- B. Shut-off valves, 6-inch and larger, shall have operators with position indicators.
- C. Buried valves shall be provided with valve boxes and covers containing position indicators, and valve extensions.

2.2 VALVE OPERATORS

- A. Where indicated, valves shall include electric operators recommended by the manufacturer.
- B. Operators of the same type shall be furnished by the same manufacturer.
- C. Valve operators, regardless of type, shall be installed, adjusted, and tested by the valve manufacturer at the place of manufacture.

2.3 EXTENSION STEMS FOR BURIED VALVES

- A. Where the depth of the valve is such that the operating nut is more than 5 feet below grade, operating extension stems shall be provided to bring the operating nut to a point 18 inches below the surface of the ground and/or valve box cover in accordance with the DISTRICT's Standard Drawings, Section 09000.
- B. Valve stem extensions shall be of a solid design (no pinned couplings permitted) with guides.

2.4 VALVE WELLS

- A. Provide a valve box for each buried valve and construct in accordance with the DISTRICT's Standard Drawings, Section 09000. Construct lid of cast iron and design for traffic loading. Castings shall be smooth, clean, and free from blisters, blowholes, and shrinkage. Cast on the lid the words "VID" and "WATER." Lids shall be South Bay Foundry B 52 or equal. Construct valve can inserts of 20 gauge galvanized steel sheets as manufactured by R.K. Industries or equal. Pipe sleeves shall be 8-inch Class 150 PVC pressure pipe conforming to AWWA C900. The valve well shall rest on two 2"x2"x12' long redwood blocks or the concrete valve blocking. Pipe shall be sawn or machine cut on each end. No beveled section or bell will be allowed in the well.
- B. When the cover is placed in the well, there shall be sufficient clearance around the cover, without cutting or damaging the pipe, such that the cover can be lifted by hand. The maximum clearance allowable shall be 3/16 inch.
- C. Final adjustment to finish grade may be made with an 8" PVC Class 150 ring of 1-inch minimum thickness or other means acceptable to the DISTRICT. The pavement shall be finished around the cover so that the cover can easily be removed without damaging the pavement.

2.5 BLOWOFF ASSEMBLIES

- A. Blowoff assemblies shall be furnished and installed at the locations shown on the plans and at all low points or locations required by the DISTRICT in accordance with the DISTRICT's Standard Drawings for removing water or sediment from the pipeline.
- B. The assembly shall be installed in a level section of the pipe.

- C. The tap for the blowoff in the line shall be no closer than 18-inches to a valve, coupling, joint, or fitting unless it is at the end of the main.
- D. Blowoffs shall not be connected to any sewer, submerged in any stream, or installed in any manner that will permit back siphoning into the distribution system. Blowoffs shall not be placed along curbs, gutters or other areas where water surface runoff may submerge the assembly.

2.6 PROTECTIVE COATING

- A. Except where otherwise indicated, ferrous surfaces, exclusive of stainless steel surfaces, in the water passages of all valves 4 inch and larger, and exterior surfaces of submerged valves, shall be epoxy coated conforming to Section 04100.
- B. Flange faces of valves shall not be epoxy coated.

2.7 VALVE IDENTIFICATION

- A. Except as otherwise indicated, a label shall be provided on all valves.
- B. Valves shall have the name of the manufacturer, the valve pressure rating, year valve was manufactured, and the size of the valve cast or molded onto the valve body or bonnet, or shown on a permanently attached plate.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Valves, operating units, stem extensions, valve boxes and accessories shall be installed in accordance with the manufacturer's installation instructions.
- B. Valves shall be independently supported to prevent stresses on the pipe.
- C. Valves shall be installed to provide easy access for operation, removal, and maintenance and to prevent interference between valve operators and structural members or handrails.
- D. Where combinations of valves, sensors, switches, and controls are indicated, the combinations shall be properly assembled and installed to ensure that systems are compatible and operating properly.

END OF SECTION