

## 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 all 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. Refer to the specific valve Section for additional requirements.

#### 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 Coatings and Linings  |
| 3. | AWWA | C503  | Wet-Barrel Fire Hydrants  |
| 4. | AWWA | C504  | Rubber Seated Butterfly Valves  |
| 5. | AWWA | C506  | Backflow Prevention Devices-Reduced Pressure Principle and Double Check Valve Types |
| 6. | AWWA | C509  | Resilient-Seated Gate Valves for Water Supply Service                               |
| 7. | AWWA | C515  | Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service                 |
| 8. | AWWA | C550  | Protective Interior Coatings for Valves and Hydrants                                |

#### 1.3 SUBMITTALS

- A. Unless otherwise indicated in the specific valve Section, the following shall be submitted in compliance with Section 01300.
1. Manufacturer's installation, operations, and maintenance instructions.
  2. Schedule of valves indicating valve identification and location.
  3. Detail drawings showing laying lengths, valve dimensions and orientation, pressure rating, valve actuators, all valve parts and materials of construction.
  4. Manufacturer's certification that products comply with the indicated requirements, AWWA standards, and have been manufactured within the last 5 years.
  5. Prior to shipment, manufacturer affidavit of compliance for hydrostatic, epoxy, and actuator testing per the indicated requirements.

#### 1.4 MANUFACTURER TESTING AND FIELD INSPECTION

- A. Prior to shipping, the manufacturer shall test each valve in accordance with the requirements of this Section and the AWWA standards indicated, and provide an affidavit of compliance that each valve supplied has successfully completed the tests.

1. After the actuator has been mounted and adjusted and the valve completely assembled, hydrotest each valve in both directions under the test pressures and differential pressures specified by AWWA.
  2. Dry film thickness and holiday detection test each valve in compliance with Section 04100-3.4.
  3. Operate each valve from the fully closed to fully open to fully closed positions.
- B. Prior to installation, valves shall be field-tested by the OWNER for compliance with the indicated requirements. Valves failing the inspection will be subject to rejection.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. Valve ends shall be compatible with the piping system shown on the Approved Drawings and, unless otherwise shown, valves shall be the same size as the line in which they are installed.
- B. Valves shall be provided complete with operating extension stems, gear actuators, operating nuts, handwheels, and all equipment required for operation.
- C. Shut-off valves, 6-inch and larger, shall have operators with position indicators.
- D. Buried valves shall be provided with valve boxes and covers containing position indicators, and valve extensions.
- E. All valves must have been manufactured within the last five (5) years.
- F. Gasket material and installation shall conform to manufacturer's recommendations.

### **2.2 VALVE ACTUATORS**

- A. Where indicated, valves shall include electric actuators recommended by the manufacturer.
- B. Actuators of the same type shall be furnished by the same manufacturer.
- C. Valve actuators, 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 have a 2-inch square operating nut, be of a solid design (no pinned couplings permitted) with guides, and be at least as large as the valve stem it operates.
- C. Provide intermediate stem guide for extensions more than 7 feet long.

## 2.4 VALVE WELLS

- A. Provide a valve stand 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 305 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. A 2-piece lid (1208-N) are required where concrete or pavers are installed.
- B. Final adjustment to finish grade may be made with an 8-inch Class 305 PVC 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 PROTECTIVE LINING AND COATING

- A. Except where otherwise indicated, ferrous surfaces, exclusive of stainless steel surfaces and flange faces, in the water passages and exterior surfaces of all valves 4 inch and larger, shall be fusion-bonded epoxy lined and coated conforming to Section 04100 and NSF 61 approved, with a minimum dry film thickness of 8 mils.
- B. Coat machined, polished and non-ferrous metal surfaces with corrosion prevention compounds which shall be maintained during storage and until equipment begins operation.

## 2.6 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.

## 2.7 STORAGE AND HANDLING

- A. Valves shall be delivered and stored in accordance with applicable AWWA standards and as specified herein. The port openings shall be covered with plastic, cardboard, or wood while in transit and during storage in the field. These covers shall remain in place until valves are ready to be installed.
- B. Materials shall be stored to permit easy access for identification and inspection purposes. Valves shall be kept off the ground using pallets, platforms, or other supports. Valves shall not be stacked.

- C. Valves and packaged materials shall be protected from corrosion, deterioration, and sun damage.

## 2.8 CONCRETE AND POLYETHYLENE SHEET ENCASUREMENT

- A. Concrete support block and polyethylene sheet encasement for buried valves shall be in accordance with Sections 03000 and 04200, respectively.

## **PART 3 - EXECUTION**

### 3.1 INSTALLATION

- A. Valves, operating units, stem extensions, valve stands and accessories shall be installed in accordance with the manufacturer's installation instructions.
- B. Install valves with the bolt holes straddling the vertical centerline of pipe and the operating nut in the vertical position unless otherwise noted on the Approved Drawings. Exposed 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. 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.
- C. Valves shall be independently supported to prevent stresses on the pipe. Buried valves shall have concrete support blocks installed in accordance with Section 03000 and the DISTRICTS's Standard Drawings, Section 09000. The concrete shall be placed so that valves and valve operators will be accessible for repairs or replacement
- D. Install polyethylene sheet encasement on buried valves in accordance with Section 04200.
- E. Disinfection and flushing of valves shall be in accordance with Section 02600, as part of the process of disinfecting the main pipeline. Valves shall be operated during the disinfection period to completely disinfect all internal parts.
- F. Valves shall be hydrostatically tested in conjunction with the pipeline in which they are installed in accordance with Section 02610.

END OF SECTION