

## SECTION 05120 - GATE VALVES

### PART 1 - GENERAL

#### 1.1 WORK INCLUDED IN THIS SECTION

- A. The WORK of this Section includes materials and installation of epoxy coated gate valves.

#### 1.2 REFERENCE SPECIFICATIONS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section.
  - 1. AWWA C213 Fusion Bonded Epoxy Coating
  - 2. AWWA C500 Gate Valves for Water and Sewerage Systems
  - 3. AWWA C509 Resilient-Seated Gate Valves for Water and Sewerage Systems
  - 4. 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.
    - b. Manufacturer's installation instructions.
    - c. Manufacturer's certification that products comply with the indicated requirements.
  - 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.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. Buried valves shall be of the inside screw type and shall be designed for repacking under line pressure.
- B. Valves 14 inch and larger installed in horizontal pipes with horizontal stems shall be fitted with bronze slides, tracks, rollers, and scrapers to assist the travel of the gate assembly.
- C. Quick opening valves shall have quick opening levers and cams in lieu of handwheel operators.
- D. Ferrous surfaces of the valves, 4 inch and larger and in contact with water shall be epoxy coated conforming to Section 04100.
- E. Valves shall have manufacturer's name, year manufactured, and working pressure cast in raised letter on the valve body.
- F. All valves to be installed must have been manufactured within the last five (5) years.

### **2.2 METAL-SEATED GATE VALVES (3 INCH AND LARGER)**

- A. Double-Disc Type
  - 1. Metal seated gate valves for water service shall conform to AWWA C500 as modified herein .
  - 2. Valves shall be of the double disc type with non-rising stem, opening counter clockwise, all bronze internal working parts, either "O" rings or stuffing box stem seals, and provided with a 2 inch square operating nut or handwheel, as indicated, except where operators are shown.
  - 3. Valves shall have flanged or mechanical joint ends designed for use with the connecting pipe.
  - 4. Valves 14-inch and larger shall be designed for horizontal mounting, with by-passes and totally enclosed gear case. Integral or extended gear cases are not acceptable.
  - 5. By-pass connections for all gate valves over 16 inches shall be cast into the valve and not obstruct the water way to the by-pass.

### **2.4 RESILIENT SEATED GATE VALVES (3 INCH AND LARGER)**

- A. Valves shall conform to AWWA C 509 and the requirements listed herein.
  - 1. Resilient seated gate valves conforming to AWWA C509 may be provided, in lieu of metal seated double disc or solid disc gate valves.

2. Resilient seated gate valves shall have a non-rising stem (NRS), opening by turning counter clockwise and provided with a 2-inch square operating nut with arrow cast in metal to indicate direction of opening, cast iron bodies with flanged, bell, or mechanical joint ends, rubber coated cast iron disc, flanged bonnet, bronze stem, O-ring seals.
3. All body bolts shall be Type 304 or 316 stainless steel conforming to ASTM F 593. Stem nuts shall be independent of the wedge and shall be low zinc bronze.
4. Resilient valve seats shall consist of styrene butadiene (SBR) rubber permanently bonded to a high-strength iron wedge gate. The gate shall be totally encapsulated. The bonding process shall meet the requirements of ASTM D429. Mechanically attached seats or seats attached to the valve body shall not be accepted.
5. Each valve shall have a smooth unobstructed waterway free from any sediment pockets.
6. Stuffing boxes shall be O-ring seal type with two rings located in the stem with at least one seal located above the thrust collar. A low friction torque reduction thrust bearing shall be provided in the stuffing box.
7. Valves shall pass a 400 psi hydrostatic shell test and a 200 psi shut-off test in which zero leakage (bubble tight) is allowed.

## 2.5 GATE VALVES (SMALLER THAN 3 INCH)

- A. Gate valves, smaller than 3 inches, shall be heavy duty type for industrial service, with threaded or soldered ends.
- B. The bodies shall have threaded tops or union bonnets, fabricated of bronze conforming to ASTM B62, with bronze stems, solid edges, metal handwheels, and Teflon impregnated packing.
- C. Buried valves shall have non-rising stems.
- D. Exposed valves (above ground) shall have rising stems, where applicable.
- E. Valves shall have a minimum pressure rating of 125 psi, steam, or 200 psi coldwater except as otherwise indicated.

## 2.6 GATE VALVE STEMS

- A. Where dezincification is indicated, gate valve stems shall be fabricated with bronze conforming to ASTM B62, containing not more than 5 percent of zinc nor more than 2 percent of aluminum.
- B. Gate valve stems shall be designed for minimum tensile strength of 60,000 psi, minimum yield strength of 40,000 psi, and an elongation of at least 10

percent in 2 inches, as determined by a test coupon poured from the same ladle from which the valve stems are poured.

- C. Where dezincification is not indicated, bronze conforming to ASTM B584 may be used.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Gate valves shall be installed in accordance with Section 05100.

END OF SECTION