

**SPECIFICATIONS - DETAILED PROVISIONS**  
**Section 15101 - Gate Valves**

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**SECTION 15101  
GATE VALVES**

**PART 1 - GENERAL**

**1.01 REQUIREMENT**

Under this specification the Contractor shall be required to furnish, deliver, and unload within the time specified in the Special Conditions, the gate valves as specified on the bidding sheets and hereinafter described in these specifications.

**1.02 VALVE MANUFACTURER**

The name of the manufacturer of the valves to be furnished by the bidder shall be stated on the bidding sheets.

Inasmuch as valves require an in-service review over an extended period of time for evaluation by the District for acceptance, it is necessary that proposed valves other than those listed on the EMWD approved material list must be submitted for evaluation well in advance of the bid opening, for acceptance prior to the award of the contract. Generally, the 35-day period following issuance of the Acceptance of Proposal will not result in approval of alternate valves.

**1.03 GUARANTEE**

The Contractor shall guarantee all materials and workmanship of items furnished under these specifications shall be free from defects for a period of one (1) year after final completion and acceptance of the entire contract work. The Contractor shall, at his own expense, repair or replace all defective materials or workmanship supplied by him found to be deficient with respect to any provisions of this specification.

**PART 2 - PRODUCTS**

**2.01 VALVES**

All valves shall conform to the standards as set forth in the latest revision of AWWA Standard for Gate Valves for Ordinary Water Works Service, serial designation AWWA C-500, except as hereinafter described in these specifications and quantities as stated on the bidding sheets.

**2.02 TYPE OF VALVES**

All valves shall be iron body, double disc, bottom wedging, and have solid bronze internal parts. All valves shall be designed to work equally well with pressure on either side, have non-rising stems, open left (counterclockwise), have parallel seats with a wedging device to act on each disc alike.

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All valves 18" and smaller shall be vertical gate valves, without by-pass valves or gears in accordance with these specifications, unless otherwise stated in the bidding sheets or in the Special Conditions of these specifications.

All valves 20" and larger shall be horizontal gate valves, with by-pass valves and gears in accordance with these specifications, unless otherwise stated on the bidding sheets or in the Special Conditions of these specifications.

2.03 CAST MARKING

In addition to markings required by AWWA C-500, valves shall have the manufacturer's name, the size of the valve, and the working pressure cast on the side of the valves.

2.04 VALVE ENDS

Shall be as specified on the bidding sheets; either flanged both ends, push-on both ends, or one flanged end and one push-on end, conforming to the following specifications:

- A. Flanged End. Flanged ends shall be designed for the water pressure as specified in AWWA C-500 and drilled to the American Standard for 125# Cast Iron Flanges, and flange face shall not be raised. Flange face shall have standard machine finish.
- B. Push-on End. Push-on ends shall be designed for the water pressure as specified in AWWA C-500 and shall be "Ring-tite", "Fluid-Tite", or approved equal.

2.05 STEM

All valve stems shall be of bronze having a minimum tensile strength of 55,000 psi and a yield point of not less than 40,000 psi, with an elongation of not less than 10% in 2". Heat treatment will be permitted to develop these requirements. All bronze shall contain not more than 7% zinc nor more than 2% aluminum.

2.06 STEM SEAL

Stem seals shall consist of a minimum of two (2) "O"-rings, at least one above the stem collar. Valves shall be so constructed to permit the replacement of the "O"-rings above the stem collar under full working water pressure with the valves in full open position.

2.07 OPERATING MECHANISM

All gate valves, unless otherwise specified, shall be provided with a 2" square operating nut with a cast arrow showing direction in which the nut is to be turned to open the valve.

2.08 NUMBER OF TURNS TO OPEN

AWWA Standard C-500-93, Section 3.11.4, shall be amended by this requirement to limit the number of turns to a maximum of five (5) over the minimum number specified in Table 5.

#### 2.09 BY-PASS VALVES

Where required on the bidding sheets, gate valves shall be equipped with standard by-pass valves in conformance with AWWA C-500.

#### 2.10 GEARS

Where required on the bidding sheets, gate valves shall be equipped with gears of the totally enclosed type in conformance with AWWA C-500, and suitable for installation of the valve underground. All parts requiring lubrication shall be provided with Alemite grease fittings.

#### 2.11 INDICATORS

When required on the bidding sheets, valves shall be equipped with indicators to show the position of the gates. The indicator mechanism shall be made of bronze or other non-corrodible metal throughout, except for the case which may be cast iron.

#### 2.12 HORIZONTAL VALVES

Bronze or stainless steel tracks, bronze rollers, and bronze scrapers shall be provided for horizontal valves. Tracks shall be accurately aligned and securely fastened in the valve body.

#### 2.13 DOUBLE SQUARE BOTTOM CONSTRUCTION

- A. General. Where double square bottom valves are specified they shall have two (2) discs, each supported on tracks during its travel. Valves shall be designed to operate equally well with the pressure on either side of the discs. Each disc shall be provided with three (3) guide shoes, one at the top and one on each side of the bottom of the disc.
- B. Operation. In the operation of the valve, the travel of the disc against the body seat rings shall be a minimum distance before disc shoes contact the track. Disc shall be supported fully by track during further travel. When the valve is in fully opened position there shall be not more than 1/32" play between the surfaces of the bonnet tracks and gate shoes when the discs are fully collapsed. There shall be no tilting or deflection of the disc which will result in damaging of seating surfaces in any portion of the operating cycle.
- C. Disc Shoes. The three (3) guide shoes shall be bronze, cast integrally with the disc.
- D. Tracks for Shoes. Tracks for guide shoes shall be either bronze or stainless steel. They shall be installed accurately in relation to seat rings and shoes and shall be securely fastened to the valve body.

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2.14 COATINGS

- A. All valves shall have internal and external ferrous parts epoxy coated. Wetted surfaces shall have an 8 mil minimum (dry film) thickness, unless otherwise specified. The epoxy shall be approved for potable water, and shall conform to AWWA C-550.
- B. All coated surfaces shall be visually and electrically examined for defects. The coating shall be holiday free as determined by a low voltage wet sponge test per AWWA C-550.

**END OF SECTION 15101**