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SECTION 40 XX XX  
AWWA METAL SEATED BALL VALVES

**PART 1 GENERAL**

**1.01 SUMMARY**

**A. Section Includes:**

1. AWWA Metal Seated Ball Valves, 6-60" (150-1500mm), with 100% full port construction, built especially for pump stop and check, pressure regulating, flow control and critical shut-off service as indicated.

**B. Related Sections:**

1. (provided by the engineer)

**1.02 REFERENCES**

- A. ASME B16.1 "Pipe Flanges and Flanged Fittings"
- B. AWWA C507 "Ball Valves"
- C. NSF/ANSI 61 "Drinking Water – Health Effects"
- D. NSF/ANSI 372 "Drinking Water – Lead Content"

**1.03 SUBMITTALS**

- A. Submit detailed product data and descriptive literature to include dimensions and materials of construction.
- B. Provide shop drawings to show installation arrangement of major component assemblies.

**1.04 QUALITY ASSURANCE**

- A. Supplier shall have been manufacturing AWWA metal seated ball valves of the type and size required for this project for a period of at least ten years. At the engineer's request, supplier shall provide a list of installations involving equipment of similar size and application.
- B. Valves and Actuators shall be warranted by the manufacturer for defects in materials and workmanship for a period of two years (24 months) from date of shipment.
- C. Each valve and actuator shall be assembled, adjusted and tested as a unit by the valve manufacturer.

**PART 2 PRODUCTS**

**2.01 ACCEPTABLE MANUFACTURERS**

- A. DeZURIK, Inc
  1. Willamette Ball Valves – Valve Style VBL

## 2.02 AWWA METAL SEATED BALL VALVES

- A. Ball valve shall consist of four main elements: A pressure vessel (body), a rotatable closing element (ball), a torque unit, and an operator. Standard ball valves shall be furnished in ductile iron ASTM A536 GR65-45-12 (125/150 class), (250/300 class).
- B. Ball valve construction shall be in complete accordance with AWWA standard C507 for ball valves.
- C. Standard valve body shall have ASME B16.1 Class 125/150 or Class 250/300 flanges and shall house the ball.
- D. Ball valve body shall have integrally cast, bronze-bushed trunnions. It shall provide rigid means for supporting the torque unit without the necessity of additional supports.
- E. Ball valve body seat(s) shall be rigidly attached corrosion resistant metal made of 400 series Monel. Maximum seat bearing pressure shall not exceed 1,000 lbs./sq. inch.
- F. An extension of one trunnion, called the operating shaft, shall pass through a sealing device (O-ring retainer) and connect to the torque unit. There shall be two pipe connections, one for an air vent and the other for drain.
- G. Valve ball seat(s) shall be corrosion resistant metal of 300 series stainless steel rigidly attached and fully adjustable to provide sealing per AWWA C507 standards.
- H. Ball valve operating shaft shall be 17-4 PH high strength stainless steel, chrome plated carbon steel or 316 stainless steel.
- I. Ball shaft shall be so designed that the factor of safety for all combined stresses shall be at least five to one.
- J. Shaft seal shall be capable of being removed and replaced without removing the valve from the line.
- K. Maximum torsional deflection shall not exceed 1/6 degree per foot of unsupported length using a seat coefficient of friction of 0.5 and a bearing coefficient of friction of 0.3.
- L. Torque unit shall employ a traveling crosshead to impart positive rotary movement to the ball by means of a link and lever connected to the ball shaft. A ball shaft support bearing shall be connected to the ball shaft.
  - 1. Torque unit shall be designed so that during the first 50 percent of stroke in closing, the flow area is reduced by approximately 81 percent. The remaining flow area shall be gradually reduced to a complete shutoff throughout the last 50 percent of closing stroke.
  - 2. Torque unit shall be capable of being inspected, lubricated, removed and repaired without removing the valve proper from the line.
  - 3. Torque unit shall also be designed so that the O-ring seals on the main shaft can be replaced without removing the torque unit housing and while the valve is in the line.
  - 4. All materials of the torque unit subject to rubbing shall be of different hardness.

- M. Bearing loading: for prolonged bearing life, bearing loading shall not exceed 900 psi (6205 kPa) at 150 psig (1034 kPa) differential pressure, nor 1,500 psi (10342 kPa) at 250 psig (1724 kPa) differential pressure, shall be long life bronze, of low zinc content, of dissimilar hardness to prevent galling, and shall not be constructed of synthetic materials. Bronze bushing for body is ASTM B271-C95400; bronze journal for ball is ASTM B584-C93200.
- N. Types of ball valve operation shall be either manual operator (handwheel or AWWA square nut), electric motor (local or remote controls), or cylinder per AWWA C540 standard for hydraulic or pneumatic control.
- O. Testing:
  - a. Each valve and actuator assembly shall be shop tested in conformance with AWWA C507.
  - b. Certified test reports shall be available upon request.

## **PART 3      EXECUTION**

### **3.01    INSTALLATION**

- A. Specification by engineer

### **3.02    COMMISSIONING**

- A. Field testing (specification by engineer)