PART 1 - GENERAL

1-1. **SCOPE.** This section covers furnishing all eccentric plug valves as required by the Work. Plug valves shall be furnished complete with actuators and accessories as specified herein and as specified in the Valve Actuators section.

1-2. **GENERAL.** Equipment provided under this section shall be fabricated and assembled in full conformity with Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless otherwise noted by the Engineer.

Valves shall be furnished with all necessary parts and accessories indicated on the Drawings, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves.

1-2.01. **General Equipment Stipulations.** The General Equipment Stipulations shall apply to all equipment and materials furnished under this section. If the requirements in this section are different from those in the General Equipment Stipulations, the requirements in the section shall take precedence.

1.2.02. **Governing Standard.** Except as modified or supplemented herein, all eccentric plug valves and manual actuators shall conform to the applicable requirements of ANSI/AWWA C517.

1-2.03. **Marking.** Each valve shall be marked with the manufacturer’s name, valve size, and pressure rating, and the country of origin of the body casting. All markings shall be cast on the exterior surface of the valve body. An identifying serial number shall be stamped on a corrosion-resistant plate attached to the valve body.

1-2.04. **Temporary Number Plates.** Each eccentric plug valve with an identifying number listed on the Drawings shall be tagged or marked in the factory with the identifying number.

1-2.05. **Identification.** Eccentric plug valves shall be identified in accordance with the Equipment and Valve Identification section.

1-3. **SUBMITTALS.** Complete drawings, details, and specifications covering the valves and their appurtenances shall be submitted in accordance with the Submittals Procedures section.
Drawings shall include separate wiring diagrams for each electrically operated or controlled valve and the electrical control equipment. Each drawing shall be identified with the valve number or name as specified in this section.

Certified copies of test reports for tests described in Section 5. of governing standard, with an affidavit of compliance as indicated in Section 6.3 of governing standard, shall be submitted to the Engineer before the valves are shipped.

PART 2 - PRODUCTS

2-1. ACCEPTABLE PRODUCTS. Eccentric plug valves furnished under this section shall be manufactured by DeZurik, Pratt, Milliken, Val-Matic, Clow, or Victaulic, without exception.

2-2. MATERIALS. Materials used in the manufacture of eccentric plug valves shall be as indicated:

<table>
<thead>
<tr>
<th>Component</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Cast iron, ASTM A126, Class B; or ductile iron, ASTM A536, Grade 65-45-12.</td>
</tr>
<tr>
<td>Plug</td>
<td>Cast iron, ASTM A126, Class B; or ductile iron, ASTM A536, Grade 65-45-12.</td>
</tr>
<tr>
<td>Plug Facing</td>
<td>Chloroprene, Neoprene or Buna-N, 70 Type A durometer hardness in accordance with ASTM D2240.</td>
</tr>
<tr>
<td>Body Seat</td>
<td>Welded nickel overlay.</td>
</tr>
<tr>
<td>Upper and Lower Trunnion Bearings</td>
<td>Sleeve type; stainless steel or bronze.</td>
</tr>
<tr>
<td>Upper Thrust Bearing</td>
<td>TFE, Nylatron, or Delrin.</td>
</tr>
<tr>
<td>Stem Seal</td>
<td>V-type packing or U-cups, Buna-N or TFE.</td>
</tr>
</tbody>
</table>

The following are acceptable shop coatings.

| Coal Tar Epoxy | High-build coal tar epoxy; PPG Amercoat "Amercoat 78HB Coal Tar Epoxy", Carboline "Bitumastic 300 M", Tnemec "46H-413 Hi-Build Tneme-Tar", or Sherwin-Williams "Hi-Mil Sher-Tar Epoxy". |
Epoxy
For Liquid Service other than in potable water facilities

Universal primer
Manufacturer’s standard.

Rust-Preventive Compound
As recommended by manufacturer.

2-3. VALVE CONSTRUCTION.

2-3.01. Valve Body. The valve port area of each valve shall be at least 80 percent of the cross section of the connecting piping for 20 inch and smaller valves and 70 percent for 24 inch and larger valves. Valves shall provide tight shutoff at the rated pressure from either direction. An adjustable closed position plug stop shall be provided.

Each valve body shall be plainly marked to indicate the seat end. The actual length of 10 inch and smaller valves shall be within plus or minus 1/16 inch of the theoretical length. The actual length of 12 inch and larger valves shall be within plus or minus 1/8 inch of the theoretical length.

Valve ends shall be compatible with connecting piping. All valves shall have flanged, grooved or mechanical joint ends as indicated on the Drawings. Flange diameter and drilling shall conform to ANSI B16.1, Class 125. Flanges shall be flat faced and finished to true plane surfaces within a tolerance limit of 0.005 inch. The finished face shall be normal to the longitudinal valve axis within a maximum angular variation tolerance of 0.002 inch per foot of flange diameter. Grooved end dimensions shall conform to ANSI/AWWA C606, Table 5, for rigid joints. When grooved end valves are to be installed in flanged piping, two flange adapters compatible with the connecting piping shall be provided with each valve. Mechanical joint ends shall conform to ANSI/AWWA C111/A21.11.

2-3.02. Plug. The plug shall be of one-piece construction and shall have a cylindrical or spherical seating surface eccentrically offset from the center of the plug shaft. The interference between the plug face and the body seat, with the plug in the closed position, shall be externally adjustable in the field with the valve in the line under pressure. Plug surfaces shall be faced with a resilient material.

2-3.03. Seats. Seats shall be cast in the body and shall have raised, welded-in nickel overlay not less than 0.050 inch thick on all surfaces in contact with the plug face. The overlay shall be at least 90 percent nickel and have a Brinell hardness of 200 or greater.
2-3.04. **Stem Seals.** The valve shaft shall be sealed by U-cups or by at least four self-adjusting chevron type packing rings.

2-3.05. **Working Pressure.** Valves shall be rated for a minimum working pressure as specified below, except where otherwise indicated on the Drawings.

<table>
<thead>
<tr>
<th>Size in inches</th>
<th>Pressure Rating in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 to 12</td>
<td>175</td>
</tr>
</tbody>
</table>

2-4. **VALVE ACTUATORS.** Requirements for valve actuators shall be as specified herein and as specified in the Valve Actuators section. Valve actuator types shall be manual or as indicated on the Drawings.

Geared actuators shall be used for manually operated valves in the following applications:

a. For all 4 inch and larger buried valves.

b. For all 8 inch and larger valves.

c. For all chainwheel operated valves

Geared actuators for plug valves unless otherwise specified or indicated on the Drawings shall be rated for a differential pressure across the valve, on the seating side, of 100 psi for 6 to 8 inch valves, 50 psi for 10 inch and larger valves.

2-5. **SHOP PAINTING.** All interior and exterior ferrous metal surfaces, except bearing and finished surfaces and stainless steel components of valves and accessories, shall be shop painted for corrosion protection. The valve manufacturer’s standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field painting.

Surfaces shall be painted as follows:

**Unfinished Surfaces**

**Interior Surfaces**

For Liquid Service: Epoxy.

Exterior Surfaces of Valves to be Buried or Installed in Manholes or Valve Vaults: Coal tar epoxy or Epoxy.

Exterior Surfaces of All Other Valves: Universal primer.

**Polished or Machined Surfaces**

Rust-preventive compound.
Interior epoxy coatings shall comply with ANSI/AWWA C550 and shall be free of holidays.

The total dry film thickness of shop-applied coatings shall be not less than:

<table>
<thead>
<tr>
<th>Type of Coating</th>
<th>Minimum Dry Film Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal Tar Epoxy</td>
<td>15 mils</td>
</tr>
<tr>
<td>Epoxy</td>
<td>10 mils</td>
</tr>
<tr>
<td>Universal Primer</td>
<td>3 mils</td>
</tr>
</tbody>
</table>

2-6. ACCESSORIES. Requirements for extension stems and stem guides, position indicators, floor boxes, operating stands, and valve boxes shall be as indicated as indicated on the Drawings, as specified herein and in the Valve and Gate Actuators section.

2-7. TESTING. Except as modified herein, eccentric plug valves shall be tested in accordance with Section 5 of the governing standard. Each valve shall be performance tested in accordance with Section 5.2 of the governing standard. The leakage test shall be applied to the seating face of the plug (tending to unseat the plug) at the rated pressure of the valve.

Each valve shall be leaktight in both directions when closed by the actuator with the maximum differential pressure applied to the plug as specified herein.

PART 3 - EXECUTION

3-1. INSTALLATION. Valves shall be installed in accordance with Valve Installation section.

End of Section