SECTION 15103 - PLUG VALVES

PART 1 - GENERAL

1.1 SCOPE

This section specifies PEC eccentric plug valves.

1.2 RELATED SECTIONS

A. The Work of the following Sections applies to the Work of this Section. Work of other Sections of the Specification, not referenced below, shall also apply to the extent required for proper performance of this Work.

1. Section 01010, Summary of Work.
2. Section 01300, Submittals.
3. Section 09800, Painting and Coating
4. Section 15000, General Piping Requirements
5. Section 15040, Testing and Flushing

1.3 QUALITY ASSURANCE

A. References

The publications referred to hereinafter form a part of these specifications to the extent referenced. The publications are referred to in the text by the basic designation only. The latest edition of referenced publications in effect at the time of the bid shall govern. In case of conflict between the requirements of this section and the listed standards, the requirements of this section shall prevail.

American National Standards Institute (ANSI) Publications:

ANSI B16.1 *Cast Iron Pipe Flanges and Flanged Fittings*

American Society for Testing and Materials (ASTM) Publications:

ASTM A126 *Gray Iron Castings for Valves, Flanges and Pipe Fittings*

ASTM A536 *Ductile Iron Castings*

ASTM A743 *Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant for General Application.*

American Water Works Association (AWWA) Publications:

ANSI/AWWA C110/A21.10-08 *Ductile-Iron and Gray-Iron Fittings*

ANSI/AWWA C517 *Resilient-Seated Cast-Iron Eccentric Plug Valves*

B. Tests

The Contractor shall furnish three certified copies of a report from an independent testing laboratory certifying successful completion of proof-of-design testing conducted in accordance with AWWA C504, Section 5.5, except that where the word "disc" appears in the standard, it is understood to mean "plug." In lieu of testing the valves at an independent testing laboratory, proof-of-design testing may be performed at the valve manufacturer's laboratory, but must be witnessed by a representative of a qualified independent testing laboratory, and all test reports must be certified by the laboratory representative. All plug valves shall be tested in accordance with AWWA C504, Section 5. Each valve shall be performance tested in accordance with Section 5.2 and shall be given a leakage test and hydrostatic test as described in Sections 5.3 and 5.4, AWWA C504. The leakage test shall be applied to the face of the plug tending to unseat the valve.

1.4 SUBMITTALS

A. The Contractor shall submit information in accordance with the standard specifications to substantiate compliance with this specification. In addition, the following specific information shall be submitted:

1. Manufacturer's Data

Manufacturer’s product data with highlighting to show compliance with specified features.

2. Certificates

Proof-of-design tests as specified in Part 1.02 of this section. Provide certification that all linings and coatings were tested for TDFT and were holiday free per Part 2.02 of this section.

3. Operations and Maintenance Instructions

4. Specification Compliance

A copy of this specification section, with addenda updates, and all referenced sections, with addenda updates, with each paragraph check marked to show specification compliance or marked to show deviation.

A copy of the portion of the standard specifications, SUBMITTALS that applies to this submittal shall be neatly and clearly marked by a check mark or circled indicating it has been reviewed and, as a minimum, complies with each requirement outlined or marked to show any deviation.

PART 2 - PRODUCTS

2.1 PLUG VALVES

A. Requirements

1. General: Valves shall be of the non-lubricated eccentric type with resilient plug facings as described below. Valves of 12-inches and smaller shall have a working pressure rating of 175 psi, and valves larger than 12 inches shall have a pressure rating of 150 psi. Each valve shall be given a certified hydrostatic and seat test. Valves shall be full bi-direction, rated to the fully rated working pressure of each sized valve. A certificate of testing to this standard shall be provided by the manufacturer.

2. Body: The body shall solid one-piece castings constructed from ASTM A536, Ductile Iron with flanges conforming to ANSI/AWWA C110/A21.10 with ANSI B16.1 Class 125 drilling.

3. Plug: The plug shall be one-piece casting of ASTM A536, Grade 65-45-12 ductile iron. Two piece plug designs are not acceptable. The plug shall provide full bi-directional shutoff capability. The CLOSED position travel stop for the plug shall be externally adjustable, with the valve in the line under pressure. The plug shall have resilient facing material that is suitable for sewage. The plug shall be fully encapsulated with NBR material.

4. Seat: The seat shall be 1/8-inch thick welded overlay of not less than 95 percent pure nickel. Seat area shall be at least ½-inch wide and raised with the raised surface completely covered with weld to insure that the plug face contacts only the nickel. Screwed or sprayed seats are not acceptable.

5. Stem Seal: The stem seal shall be of multiple V-Ring (Chevron) type packing, or a self-adjusting Buna-N U-cup design. Manually adjusted packing gland shall be accessible and adjustable without removing the manual or powered operator or bonnet from the valve, while under pressure. O-rings are not acceptable.

6. Bearings: The bearings shall be replaceable sleeve type, constructed from sintered, oil impregnated ASTM A743, Grade CF8M, type 316 stainless steel. Bearings shall be permanently lubricated. Bronze bearings (bushings) are not acceptable.

7. Grit Excluders: Shall be in the form of PTFE washers at the upper and lower journals and shall be provided to prevent the entry of grit and foreign solids into the bearing area.

8. End Connections: The flanges shall be integrally cast with the body, and shall conform to ANSI/AWWA A21.10/C110 and shall conform to drilling and facing of ANSI B16.1 Class 125 flanges.

9. Flow Way: The flow way shall be rectangular, or round, and shall be able to pass a Girard EPV-3 pig through a properly designed launcher and receiver.

10. Actuator Mounting Adapter: The actuator mounting adapter shall be sized to withstand the maximum operating torque of the electric valve actuator. The actuator housing, adapter valve housing and connections to valve shall be designed with a minimum safety factor of 5 based on yield strength or a minimum safety factor of 3 based on ultimate strength of the materials used. Mounting adapter design calculations and shop drawings shall be included in the submittal. Mounting bolts shall not use bonnet bolts allowing removal of actuator mounting adapter and/or actuator without taking valve out of service.

    All actuators must be factory mounted and tested prior to shipment by the valve manufacturer.

11. Nuts, Bolts, and Washers

    Type 316 Stainless Steel only per the standard specifications.

12. Manufacturer: DeZurik or approved equal.

2.2 LINING AND COATING

The interior of valves shall be lined with 12 mils of Tnemec Series 141 Pota-Pox 80 (Blue) epoxy with surface preparation per SSPC-SP10. The exterior of exposed valves shall be coated with 12 mils of Tnemec Series 141 Pota-Pox 80 (color to be determined by AGENCY) with surface preparation SSPC-10.

All linings and coatings shall be tested and certified for Total Dry Film Thickness and be holiday free.

2.3 MANUAL OPERATORS

Valves shall be provided with Manual GB-6 worm-gear operators suitable for sewer service with a 2-inch operating nut in the vertical position and attached hand wheel, or approved equal. Position indicator is required.

PART 3 - EXECUTION

3.1 PREPARATION FOR SHIPMENT

Insofar as is practical, the equipment specified herein shall be factory assembled. Parts and assemblies that are of necessity shipped disassembled shall be packaged and tagged in a manner that will protect the equipment from damage and facilitate the final assembly in the field. Generally, machined and unpainted parts shall be protected from damage by the elements with the application of strippable, protective coatings. Provide all lubricant required for initial lubrication.

3.2 INSTALLATION

Unless otherwise specified, plug valves shall be installed with the seat upstream. Valves and operators shall be installed in accordance with the manufacturer's recommendations.

Manual operators shall be positioned so that they can readily be operated.

Stainless steel flat washers shall be installed under all nuts nut and bolt heads.

Where wrench nuts are specified, extensions shall be provided if necessary so that the nut will be within 6 inches of the valve box cover.

3.3 FIELD TESTING

Field testing shall demonstrate proper operation of the equipment and compliance with the plans and these specifications. All equipment that fails any test shall be rejected, and complete retesting shall be required at the Contractor's expense after the Contractor makes corrections or modifications to equipment which has previously failed any test. All field tests shall be witnessed by the AGENCY. Installation shall be complete and the units shall be serviced, tested, adjusted, and ready for use before the field tests are scheduled. Written notice of the scheduled dates for the field tests shall be given to the AGENCY at least 10 days prior to the field test dates. The notice shall include a written test schedule listing the tests, the test procedure, the criteria for a satisfactory test, and special measurement equipment to be employed. If minor repairs or adjustments are made during the tests, additional testing shall be performed as required by the AGENCY.

**** END OF SECTION ****