STANDARD SPECIFICATION SECTION 15110 AUTOMATIC CONTROL VALVES

PART 1 - GENERAL

1.01 DESCRIPTION

This section includes materials, installation, and testing of globe pattern, diaphragmactuated control valves for pressure reducing with check feature and pressure relief.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Standard Drawings.
- B. Record Drawings and Submittals: STD SPEC 01300.
- C. Fusion-Bonded Epoxy Lining and Coating: STD SPEC 09961.
- D. General Piping Requirements: STD SPEC 15050.
- E. Disinfection of Piping: STD SPEC 15141.
- F. Pressure Testing of Piping: STD SPEC 15144.

1.03 SUBMITTALS

- A. Submit submittal packages in accordance with Standard Specification Section 01300.
- B. Submit valve manufacturer's catalog data, descriptive literature, and assembly drawings. Show dimensions, materials of construction by specification reference and grade, linings, and coatings.

PART 2 - MATERIALS

2.01 GENERAL

- A. Provide valves complete with pilot controls, linings, coatings, and other specified optional features.
- B. Cast or mold onto the valve body the name of the manufacturer, the valve size, and seat direction. Attach additional product identification plates to the valve body and cover. Do not remove, paint over, or make these identification plates illegible.
- C. Unless otherwise indicated, valves shall be the same size as the pipe in which they are installed.
- D. Unless otherwise indicated, valves shall have the same working pressure rating as the pipe in which they are installed.

2.02 VALVE DESIGN AND OPERATION

- A. Valves shall be hydraulically actuated, diaphragm type. The body shall contain a removable seat insert. A resilient rubber disc shall form a drip-tight seal with the valve seat when pressure is applied above the diaphragm. The diaphragm assembly shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure.
- B. All major components of the pilot control system shall be manufactured by the same company that manufacturers the main valve. The main valve diaphragm shall either be vulcanized at the stem hole to ensure against wicking of the product within the diaphragm or the diaphragm shall utilize an FDA-approved nonwicking material and an elastomeric insert seal at the stem hole. The diaphragm shall not be used as a seating surface.
- C. Provide guides at both ends of the stem or provide a center-guided stem. For design utilizing guides at both ends of the stem, provide a bearing in the valve cover and an integral bearing in the valve seat. Provide valve position indicator. Repairs and modifications other than the replacement of the main valve body shall be possible without removing the main valve from the line.

2.03 MATERIALS OF CONSTRUCTION

Materials of construction shall be as follows:

Component	Material	Specification
Main Valve Body and Cover	Ductile Iron	ASTM A 536, Grade 65-45-12
Disc Retainer and Diaphragm Washer	Stainless Steel	ASTM A 276, A 351, or A 743, Type 303
Main Valve Trim: Seat, Disc Guide, and Cover Bearing	Stainless Steel	ASTM A 276, A 351, or A 743, Type 303
Disc and Diaphragm	Buna-N	
Stem, Nut, and Spring	Stainless Steel	ASTM A 276, A 351, or A 743, Type 303
Cover Bolts and Nuts	Carbon Steel, Zinc Coated	ASTM A 307
Pilot Controls	Bronze and Stainless Steel	ASTM B 62, and Type 303
Piping and Tubing	Brass and Copper	ASTM B 43, ASTM B 42 and B 88

2.04 LINING AND COATING FOR VALVES

Coat interior and exterior ferrous surfaces of the valves with fusion-bonded epoxy per Standard Specification Section 09961. Do not coat bronze, rubber, or stainless steel items. Coating shall be holiday free on interior surfaces.

2.05 VALVE END CONNECTIONS

- A. Globe pattern valves, smaller than 1-1/2 inches, shall have screwed ends. Globe pattern valves, 1-1/2 inches and larger, shall have flanged ends.
- B. Angle pattern valves, smaller than 2 inches, shall have screwed ends. Angle pattern valves, 2 inches and larger, shall have flanged ends.
- C. Screwed ends shall conform to ANSI B1.20.1, NPT.
- D. Flanges for ductile iron valves shall conform to ANSI B16.42, Class 150 or Class 300. Flanges shall be flat faced. Do not provide raised face mating flanges on the connecting piping. Provide flanges that match the flange of the connecting valve or other equipment.
- 2.06 VALVES
 - A. Pressure Reducing and Check Valves:

Valves shall maintain a constant downstream pressure and shall close tight when flow reversals occur. The pressure reducing pilot controls shall be adjustable over a range of 30 to 300 psi. Provide Y-type strainers, isolation valves, check valves, flow stabilizers, opening and closing speed controls in the pilot control piping and tubing. The valves shall be globe pattern and have a valve position indicator. Valves shall be Cla-Val Model 90-01, or District approved equal.

B. Pressure Relief Valves:

Valves shall maintain a maximum upstream pressure by opening to relieve high pressure. The pressure relief pilot controls shall operate such that as excessive line pressure is dissipated the valve slowly closes. Pilot controls shall be adjustable over a range of 20 to 200 psi. Provide "Dura-Kleen" stems, Y-type strainers, isolation valves, and opening speed controls in the pilot control piping and tubing. The valves shall be globe or angle pattern as shown on the Drawings and have a valve position indicator. Valves shall be Cla-Val Model No. 50-01, or District approved equal.

2.07 PACKING, O-RINGS, AND GASKETS

Unless otherwise stated; packing, O-rings, and gaskets shall be one of the following nonasbestos materials.

- A. Teflon.
- B. Kevlar aramid fiber.
- C. Acrylic or aramid fiber bound by nitrile. Provide Garlock "Bluegard," Klinger "Klingersil C4400," or District approved equal.

- D. Buna-N (Nitrile).
- 2.08 BOLTS, NUTS AND GASKETS FOR FLANGES

See Standard Specification Section 15050.

PART 3 - EXECUTION

3.01 INSPECTION BEFORE INSTALLATION

- A. Check for broken, cracked, or missing parts; malfunctioning stem; scored surfaces on interior lining; and damage to pilot control system.
- B. The District's Representative will conduct in the field an independent inspection of the lining and coating for compliance with the criteria in Standard Specification Section 09961. Coated items failing his inspection will be cause for rejection.

3.02 INSTALLATION

- A. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing screwed valves. Joints shall be watertight.
- B. Install control valves in a horizontal position and provide temporary support until the final pipe supports are installed. Install piping per the instructions contained in the appropriate Standard Specification for the material used. Do not damage linings, coatings, or accessory items during the installation. Repair any or all damage to the satisfaction of the District's Representative.
- C. Install flanged joints per the installation instructions in Standard Specification Section 15050.

3.03 PAINTING AND COATING

Do not paint or coat valves located aboveground, or in vaults and structures. Do not paint or coat exterior surfaces of fusion-bonded epoxy valves, bronze, stainless steel, or identification plates.

3.04 PRESSURE TESTING

Test automatic control valves at the same time that the connecting pipelines are pressure tested. See Standard Specification Section 15144 for pressure testing requirements. Repair leaks in the valves and joints of the interconnecting piping and retest.

3.05 DISINFECTION

See Standard Specification Section 15141 for chlorination requirements.

END OF SECTION