

# Special Specification 7216

## Insertion Valves



### 1. DESCRIPTION

Furnish labor, materials, and equipment necessary to provide installation of an insert valve in conformance with the plans and specifications, and in compliance with the Department's Utility Accommodations Policy (Title 43, T.A.C., Sections 21.31-21.55). Construct Insertion Valves of the sizes, materials, and dimensions shown on the plans including pipe, and connections to new and existing pipes as many as may be required to complete the work.

The abbreviations AWWA, ASA, ASTM, ANSI, AASHTO, NACE, NSF, SSPC, and TCEQ used in this specification refer to the following organizations or technical societies:

- AWWA American Water Works Association,
- ASA American Standards Association,
- ASTM American Society for Testing and Materials,
- ANSI American National Standards Institute,
- AASHTO American Association of State Highway and Transportation Officials,
- NACE National Association of Corrosion Engineers,
- NSF National Sanitation Foundations,
- SSPC Steel Structural Painting Council, and
- TCEQ Texas Commission on Environmental Quality.

References to specifications of the above organizations mean the latest standard or tentative standard in effect on the date of the proposal.

### 2. MATERIALS

All materials must conform to the requirements of this Item, and the plans.

2.1. **General.** Provide new and unused materials for this project unless otherwise stated in the plans or proposal.

2.2. Insertion Valves will be a resilient wedge gate valve designed for use in potable water, raw water, reclaimed water, sewage, and irrigation. The design will allow the valve to be installed into an existing pressurized pipeline while maintaining constant pressure and service as usual. After closing the wedge and adequately restraining the valve body the downstream pipe can be completely removed and replaced (allowing for upsizing of the pipe if necessary). The host pipe must not be a permanent component of the Insertion Valve.

Insertion Valves must have a stainless steel or ductile iron body with a pressure rating that meets or exceeds the requirements of AWWA C515. The heavy-duty ductile iron construction should meet ASTM A536 Grade 65-45-12. Sizes 12" and smaller must be capable of working on Cast/Grey Iron or Ductile Iron Class A, B, C and D, IPS PVC, C900 and C909 PVC, Steel, AC pipe diameters without changing either top or bottom portion of split valve body.

The Insertion Valves will be fully epoxy coated on the interior and the exterior and the coating must be applied before assembly. The Insert Valve must be coated with a minimum of eight mils epoxy in compliance with AWWA C550 and certified to ANSI/NSF-61.

The construction of the resilient wedge must comply with AWWA C509 requirements. The ductile iron wedge will be fully encapsulated with EPDM rubber by a high pressure and temperature compression or injection mold process. This will assure the ductile gate is fully coated with molded rubber-no exposed iron. The resilient wedge must seat on the valve body and not the pipe to obtain the optimum seating and flow control results. The resilient wedge will be totally independent of the carrier pipe. The resilient wedge must not come into contact with the carrier pipe or depend on the carrier pipe to create a seal. Pressure equalization on the down or upstream side of the closed wedge will not be necessary to open the valve. The wedge must be symmetrical and seal equally well with flow in either direction. The resilient wedge must ride inside the body channels to maintain wedge alignment throughout its travel to achieve maximum fluid control regardless of high or low flow pressure or velocity.

Valves must have a gate valve stem and wedge nut that is stainless steel in accordance with Section 4.4.5.1 of the AWWA C515 Standard and must be capable of being installed under a line pressure of up to 250 psi without service disruption.

The NRS stem must have an integral thrust collar in accordance with Section 4.4.5.3 of AWWA C515 Standard. The valve bolting materials must develop the physical strength requirements of ASTM A307 with dimensions conforming to ANSI B18.2.1.

The stuffing box, operating stem and resilient wedge will be removable, repairable and or replaceable under pressure.

The split restraint device must consist of multiple gripping wedges incorporated into a follower gland meeting ANSI/AWWA C110/A21.10. The devices must have a working pressure rating of 350 psi for 4-12". Gland body wedges and wedge actuating components must be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536. Mechanical joint restraints must require conventional tools and installation procedures per AWWA C600, while retaining full mechanical joint deflection during assembly as well as allowing joint deflection after assembly.

- 2.3. Contractor will submit shop drawings and vendor product information for approval by the engineer.

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### 3. CONSTRUCTION

- 3.1. Contractor to follow vendor specifications for proper installation of Insertion Valve.

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### 4. MEASUREMENT

- 4.1. **Insertion Valves.** Measured by each assembly installed.

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### 5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit prices bid for the items of work described below. These prices are full compensation for furnishing, hauling, placing, and installing the materials; for inspecting and testing; and for other materials, labor, equipment, tools, and incidentals.

- 5.1. **Insertion Valves.** Payment for insert valves will be made at the unit price bid for "Insertion Valve," of the various sizes specified, with the valve box installed.