

**San Antonio Water System Standard Specifications for Construction**

**ITEM NO. 110**

**Recycled Water System**

**110.1 DESCRIPTION:** Any work done on the existing or proposed recycled water distribution system shall be accomplished with the SAWS Standard Specifications for Water, except as otherwise noted. All proposed contract documents must be reviewed and approved by SAWS Backflow Prevention personnel prior to the start of any work.

**110.2 REFERENCE STANDARDS:** Reference standards cited in this Specification Item No. 110 refer to the current reference standard published at the time of the latest revision date logged.

1. San Antonio Water System (SAWS):
  - a. Specifications for Water and Sanitary Sewer Construction
  - b. SAWS Materials Specifications
2. City of San Antonio (COSA) Standard Specification for Construction
3. Texas Commission of Environmental Quality (TCEQ)
  - a. Chapter 210 Use of Reclaim Water and TCEQ 290 Rules and Regulations for Public Regulations for Public Water Systems and
  - b. 217 Design Criteria for Domestic Wastewater Systems
  - c. 213 Edwards Aquifer.
4. American National Standards Institute (ANSI)/American Water Works Association (AWWA)
  - a. ANSI†/AWWA C105/A21.5—Polyethylene Encasement for Ductile-Iron Pipe Systems.
  - b. ANSI A 21.11/AWWA C111 - Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
  - c. ANSI/AWWA C150/A21.50—Thickness Design of Ductile-Iron Pipe.
  - d. ANSI/AWWA C151/A21.51—Ductile-Iron Pipe, Centrifugally Cast.

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- e. ANSI/AWWA C500—Metal-Seated Gate Valves for Water Supply Service.
  - f. ANSI/AWWA C515—Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service.
  - g. ANSI/NSF Standard 61 - Drinking Water System - Health Components
  - h. AWWA C 206 - Standard for Field Welding of Steel Water Pipe.
  - i. AWWA C 207 - Standard for Steel Pipe Flanges for Waterworks Service - Sizes 4 Inches through 144 Inches.
  - j. ANSI/AWWA C509—Resilient-Seated Gate Valves for Water Supply Service.
  - k. AWWA C605, “Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
  - l. AWWA C651 Disinfecting Water Mains
  - m. AWWA C900, “Polyvinyl Chloride (pvc) Pressure Pipe And Fabricated Fittings, 4 In. Through 60 In. (100 Mm Through 1,500 Mmfor Water Distribution”
  - n. AWWA C907, “Polyvinyl Chloride (PVC) Pressure Fittings for Water —4 in. through 8 In (100 mm Through 200 mm)
  - o. AWWA Manual M27, External Corrosion: Introduction to Chemistry and Control.
  - p. AWWA M28 Rehabilitation of Water Mains
  - q. AWWA Manual M41—Ductile-Iron Pipe and Fittings
5. American Society for Testing and Materials (ASTM) International:
- a. ASTM A 36 - Standard Specification for Carbon Structural Steel.
  - b. ASTM A 536 - Standard Specification for Ductile Iron Castings.
  - c. ASTM A 126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and
  - d. Pipe Fittings.
  - e. ASTM B 21 - Standard Specification for Naval Brass Rod, Bar, and Shapes.
  - f. ASTM B 98 - Standard Specification for Copper-Silicon Alloy Rod, Bar, and Shapes.

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- g. ASTM B 301 - Standard Specification for Free-Cutting Copper Rod and Bar.
  - h. ASTM B 584 - Standard Specification for Copper Alloy Sand Casting for General Application.
  - i. ASTM E 165 - Standard Test Method for Liquid Penetrant Examination.
  - j. ASTM E 709 - Standard Guide for Magnetic Particle Examination.
  - k. ASTM F 1674 - Standard Test Method for Joint Restraint Products for Use with PVC Pipe.
6. International Organization of Standardization (ISO)
- a. ISO9001

**110.3 SUBMITTALS:** All submittals shall be in accordance with most recent version of SAWS's General Conditions requirements. Contractor shall submit manufacturer's product data, instructions, recommendations, shop drawing, and certifications. All submittals shall be in accordance with Engineer's requirements and submittals shall be approved prior to delivery.

- 1. Certifications:
  - a. Per General Conditions section 5.12.2 all Contractor submittals for all pipe and other products or materials furnished under this specification shall be marked as reviewed and approved by Contractor for compliance with Contract Documents and the referenced standards.
  - b. The Manufacturer shall provide ISO 9001 Certificate by a third party.
  - c. Submit written verification that the pipe Manufacturer has been manufacturing pipe per required ASTM with similar design pressure and size as this Project.
  - d. Submit written verification from the pipe Manufacturer demonstrating compliance with the production and delivery schedule of the pipe as indicated in the Contractor's preliminary Critical Path Method schedule.
  - e. Submit written verification from mechanical fitting Manufacturer that fittings are compatible with proposed pipe and meets the requirements of this section.
- 2. Contractor shall submit Manufacturer's product data, installation recommendations, shop drawings, and certifications.
- 3. Shop Drawings:

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- a. Catalog Data Sheets for all materials confirming pipe, fittings, and other materials conform to requirements of this specification.
  - b. Pipe Supplier Information. Submit company name, contact name, and contact number.
  - c. Details of all piping systems components confirming that the pipe and fittings conform to the specified requirements.
  - d. The Contractor shall submit shop drawings of pipe, fittings, gaskets, hardware, flanges, appurtenances, special details sufficient to demonstrate compliance with these Specifications and applicable pipe installation Specification.
  - e. Fabrication drawings showing:
    - 1) Wall thickness.
    - 2) Pipe length.
    - 3) Pipe joint (i.e. mechanical, flanged. fused)
4. Testing Plan: See SAWS Specification Item No. 812 Water Main Installation

**110.4 MATERIALS:** All material used in the improvement, adjustment, removal and/or construction of the recycled water system shall meet SAWS Standard Specifications for Water requirements and standards (i.e., uses of CSC pipe, trenching and excavation, etc.), except as otherwise noted, and must be wrapped or painted with pantone 512 color.

1. For PVC pipe: Tracer wire shall be utilized for location and taped directly to the pipe. #14 UF rated tracer wire shall be used for direct burial conditions.
  - a. Tracer wire shall be properly spliced at each end connection and each service connection.
  - b. Tracer wire shall be adequately wrapped utilizing 3M Waterproof tape or heat shrink wrap and protected at each splice location in accordance with manufacturer recommendations.
  - c. No bare tracer wire shall be accepted.
  - d. Wire shall also come up to the top of valve extensions and fire hydrant stems, as directed by the Inspector.
  - e. Tracer wire shall be utilized for location purposes and taped directly to the top of pipe.
  - f. Tracer wire shall be of solid core (14 gauge insulated), and shall

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be taped to the main in minimum of 10 inch increments.

- g. Detection tape shall not be used in lieu of tracer wire.

**110.5 CONSTRUCTION:** The construction and installation of any recycle water system components shall be done in accordance with the SAWS Standard Specifications for Water, except as otherwise noted. Recycled Water mains shall also be installed at the TCEQ required separation distance between sewer and/or water mains as required by Texas Administrative Code (TAC) rules to include: The latest provision of 30 TAC § chapters 290, and 217, or most applicable approved equal provision.

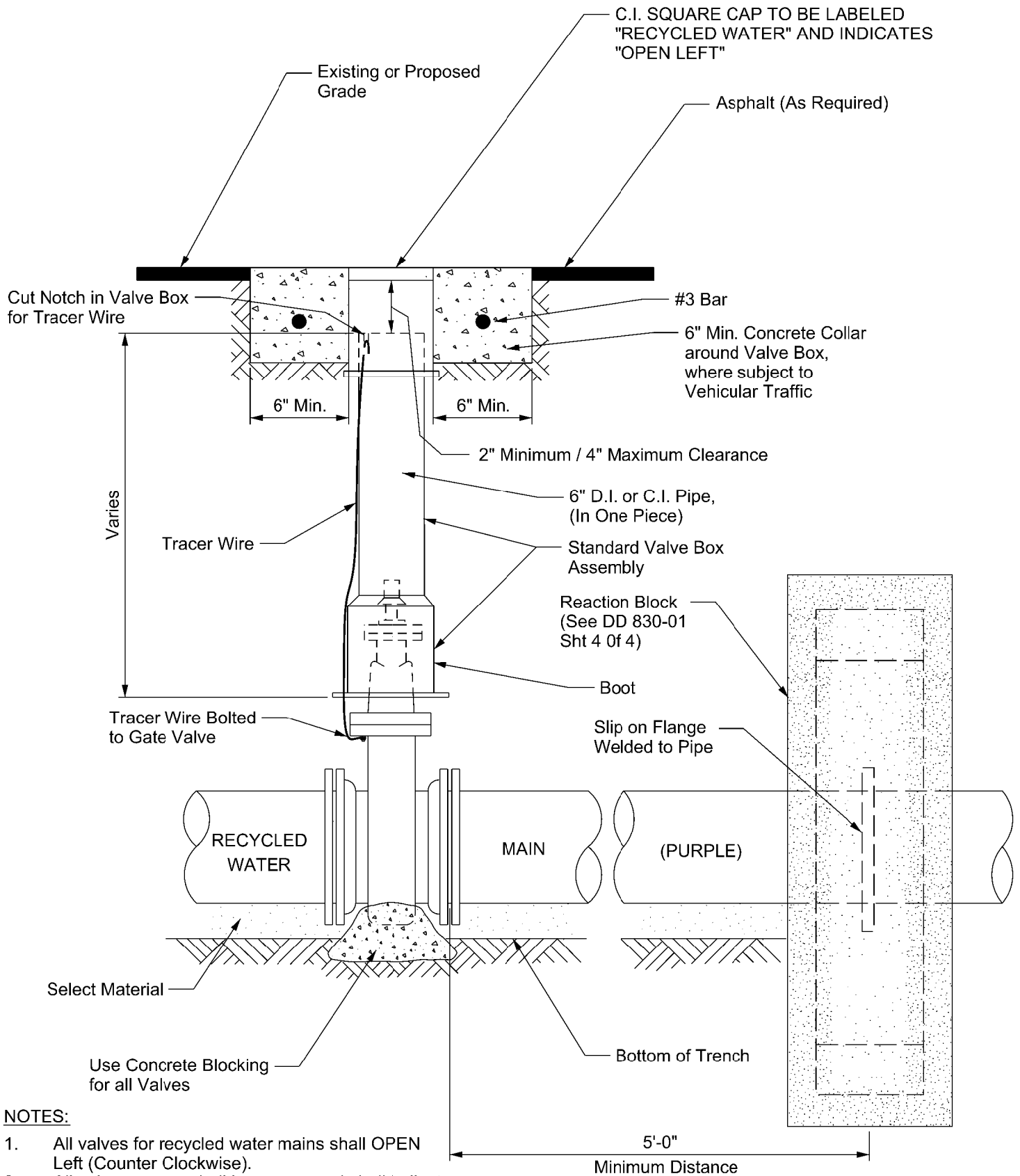
**110.6 TESTING:** See SAWS Specification Item No. 841 Water Hydrostatic Testing.

**110.7 MEASUREMENTS:** All work shall be measured in accordance with applicable specifications.

**110.8 PAYMENT:** All work shall be paid in accordance with applicable SAWS Construction specifications.

- 1. Materials paid on site will be in accordance with Table 1 of Specification Item No. 100 Mobilization.

**-End of Specification-**



**NOTES:**

1. All valves for recycled water mains shall OPEN Left (Counter Clockwise).
2. All valve covers shall be square and shall indicate OPEN LEFT.
3. Tracer wire for PVC (Typ. for PVC only)
4. All concrete to be 3,000 psi

PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	RECYCLED WATER VALVE DETAIL	APPROVED	REVISED
		MARCH 2008	AUG 2019
DD 110-01			SHEET 1 OF 1