ITEM NO. 821
HIGH PRESSURE ZONE DISTRIBUTION SYSTEM

821.1 DESCRIPTION: This item shall govern all construction work performed in SAWS' high pressure water distribution system, including water mains, services, fire hydrants, and all related appurtenances, and shall be performed in accordance with current SAWS standard specifications. This specification shall apply solely to the construction of high pressure water systems and shall govern when in conflict with other sections of the SAWS standard specifications.

1. High Pressure Systems: Each of the water distribution systems that furnish water in Pressure Zone 9 through Pressure Zone 16 shall be designed as a high pressure system. The static water pressure in each of these Service Levels shall be not less than 35 psi nor exceed 175 psi with no fire hydrants in use.

2. Locations of High Pressure Levels: Geographically, the boundaries of Pressure Zones 9 through 16 conform to the surface contour tabulation shown in Table HP-1, High Pressure Levels. Most of the area within Pressure Zones 9 through 16 is located north of Loop 1604 between IH 35 North and Bandera Road.

821.2 MATERIAL AND SUPPLIES:

1. General: Construction materials and supplies shall be furnished in accordance with all applicable provisions outlined in the SAWS' Material Specifications and as supplemented or revised by conditions noted in this specification.

2. Pipe Materials: Ductile Iron, Concrete Steel Cylinder, PVC class 200 (DR14), and Steel pipe shall be used for water main construction in the High Pressure Distribution System.

821.3 TRENCH EXCAVATION: All excavation shall be performed in accordance with Item No. 804, "Excavations, Trenching and Backfill."

821.4 PIPE LAYING: Pipe installation shall be performed in accordance with Item No. 812, "Water Main Installation."
821.5 SETTING VALVES, FITTINGS, AND FIRE HYDRANTS:

1. General: Valves, fittings, fire hydrants, plugs, and caps shall be set in accordance with Item Nos. 826, 830, 832, and 836 of these specifications.

2. Valves: All valves shall be supported on a concrete pad in accordance with Standard Drawing Nos. DD-828-01 through DD-828-03.

3. Fire Hydrants: All fittings for fire hydrant installations such as ties, bends, nipples, valves, and hydrants shall have anchored or flange type joints. The bowl of each hydrant and valve shall rest on a concrete pad as shown on Standard Drawing DD-834-01. The main line fire hydrant tee shall be an anchored tee that is properly blocked.

4. Thrust Blocking: All thrust blocking placed in conjunction with mains and appurtenances constructed in Pressure Zones 9 through 16 shall be in accordance with Standard Drawings DD-839-01 and DD-839-02. In all cases, the design of thrust blocking shall be of sufficient size, based upon an assumed soil lateral load bearing capacity of 3,000 psi unless specified otherwise in the contract documents. The maximum soil pressure value that will be allowed for the design of thrust blocking shall be 5,000 psi when specifically requested by the Contractor and approved by the Engineer. When soil pressure bearing values of 4,000 psi or 5,000 psi are recorded for design of thrust blocks, copies of soil test made for determining the bearing value of the subject soil in question shall be submitted to the Engineer for approval.

821.6 TRENCH BACKFILL: All backfill material shall be placed in accordance with item No. 804, "Excavation, Trenching, and Backfill" of these specifications.

821.7 CLEANUP: Cleanup of the area of the construction operations shall be in accordance with these specifications.

821.8 FLUSHING AND TESTING MAINS: All flushing and hydrostatic testing shall be conducted in accordance with Item No. 841, "Hydrostatic Testing Operations" of these specifications, with the exception that the maximum test pressure shall be established at 200 psi.

821.9 DISINFECTION OF NEW MAINS UTILIZING MACHINE CHLORINATION: Disinfection of new mains by machine chlorination shall be accomplished in accordance with Item No. 847, "Disinfection" of these
San Antonio Water System Standard Specifications for Construction

specifications.

821.10 DISINFECTION OF NEW MAINS UTILIZING CALCIUM HYPOCHLORITE: Disinfection of new mains with calcium hypochlorite shall be accomplished in accordance with Item No. 847 "Disinfection" of these specifications.

821.11 SERVICE SUPPLY LINES:

1. General: Service lines and fittings, meter boxes, and appurtenances shall be installed in accordance with Item No. 824, "Service Supply Line (Water)," and item No. 833, "Meter and Meter Box Installation" of these specifications.

2. Service Line Installation: All service lines shall be installed in accordance with SAWS Standard Drawing 824 Series, with the exception that two strap service saddle clamps shall be installed for all tap connections made on water mains located within boundaries of Pressure Zones 9 through 16.

Copper tubing shall be installed for service lines ¾ through 2 inches in size.

Ductile iron pipe shall be installed for service lines 4 inches and larger in size.

<table>
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<th>Static Gradient Service Level</th>
<th>Maximum Ground Elevation (feet)</th>
<th>Ground Elevation (feet)</th>
<th>Ground Elevation 110 psi (feet)</th>
<th>Ground Elevation 150 psi (feet)</th>
<th>Ground Elevation 175 psi (feet)</th>
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TABLE HP-1

HIGH PRESSURE ZONE SYSTEM INFORMATION

821-3 April 2014
821.12 MEASUREMENT: High pressure zone distribution system will not be measured for payment.

821.13 PAYMENT: No direct payment shall be made for incidental costs of material or effort associated with this specification.

- End of Specification -