

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

**ITEM NO. 814  
DUCTILE IRON PIPE**

**814.1 DESCRIPTION:** This item shall consist of Ductile Iron Pipe installation in accordance with these specifications and as directed by the Engineer.

**814.2 MATERIALS:** The materials for Ductile-Iron pipe shall conform to the specifications contained within the latest revision of SAWS Material Specification "Ductile-Iron Pipe", Item No. 05-11, "Gray-Iron and Ductile-Iron Fittings", Item No. 10-10, and "Ductile-Iron Couplings", Item 100-34.

**814.3 CONSTRUCTION METHOD:**

1. Excavations at Bells and Collars: Ductile Iron pipe shall be installed as specified within "Water Main Installation", Item No. 812, of these specifications. Bell holes of sufficient size shall be provided at each joint to permit the joints to be made properly. For mechanical type joints, the minimum clearance between the bell and natural ground shall be 6 inches in all directions. Subject to the above provisions, the length of excavation for bell holes below grade of the trench bottom shall be kept to a minimum.
2. Corrosion Protection for Ferrous Pipe, Fittings, and Valves: Except as otherwise shown on the plans or as directed by the Engineer, anti-corrosion embedment shall be provided for all ductile-iron pipe, fittings, and valves and at all valves, fittings, or outlets for nonferrous or reinforced concrete steel cylinder pipe. The embedding material shall be Modified Grade 5 gravel washed sand which conforms to the requirements as set forth in the Item No. 804, Paragraph 804.4.2.

The preparation of the trench shall be in accordance with applicable provisions of "Excavation, Trenching and Backfilling", Item No. 804. After the subgrade has been prepared, the pipe shall be laid to grade in accordance with "Excavation, Trenching and Backfilling", Item No. 804. The pipe, fitting, or valve shall be firmly embedded in and surrounded by an insulating blanket of the embedding material. The minimum thickness of this blanket shall be 6 inches in every direction.

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### 3. Coating and Wrapping of Underground Pipe:

- a. Ductile-Iron Pipe In Casing: Where ductile-iron pipe is to be installed in a bore, the pipe shall be thoroughly cleaned down to the coal-tar enamel pipe coating by approved methods. Where damaged, a prime coat compatible to the polyvinyl tape to be used shall then be applied to the pipe. Following the application of the prime coat, the pipe shall be wrapped with Scotchrap, Trantex V-10 polyvinyl tape, or an approved equal. The tape shall not be applied until the prime coat is completely dry.

The tape shall be spirally and tightly wrapped on each section of the pipe with a 50% lap. The wrap shall be made to the bell on the bell end and to a point 6 inches from the spigot end. The joint shall be protected with tape 6 inches in width on pipe 12" or less in size and with tape 8 inches in width on pipe greater than 12" in size.

- b. Open Trench: Ductile-iron pipe to be installed in a trench shall be protected in the following manner. Each pipe joint shall be covered with a 4 mil thick polyethylene sleeve that is 2 feet longer than the pipe joint. The sleeve shall cover the full length of the pipe joint, lap over 1 foot on each end of the adjoining pipe joints, and be secured with a minimum of two circumferential turns of pressure sensitive polyvinyl tape. Excess material should be neatly drawn up around the pipe barrel, folded into an overlap on top of the pipe, and held in place by means of pieces of pressure sensitive tape at approximately 5 foot intervals. After assembling the joint, the polywrap tube from the previously installed pipe shall be pulled over the joint and secured by the Contractor. The polywrap tube from the new joint shall be pulled over the first tube and secured by the Contractor to provide a double seal.

Cast-iron and Ductile-iron fittings and valves shall be completely wrapped in 8 mil thick polyethylene film with a minimum of one 1 foot overlap on each end and appropriately taped. Laps shall cover joints with adjoining pipe joints or fittings when installed. Fire Hydrant barrel from the surface to the valve shall be wrapped as specified herein.

Any damaged areas in the polyethylene film shall be repaired by covering the area with a sheet of polyethylene film large enough to

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lap over the damaged area 1 foot minimum in any direction and appropriately taped. Extreme care shall be taken at service tap locations to insure that the tape extends beyond the corporation and onto the service line pipe 1 foot.

Prior to placing pipe in the trench, a cushion of approved materials shall be placed in the trench as required by "Excavation, Trenching and Backfill", Item No. 804. Backfill material shall be carefully placed on the pipe so as to avoid any damage to the polyethylene sleeve.

The Contractor shall use care to protect and preserve the polyethylene wrap around ductile iron water mains when installing service corporations. The required method is to wrap pipe tape around the pipe over the polywrap in the area to be tapped. The tap is to be made through the tape and polywrap. It is not necessary to remove and replace poly wrap. All exposed pipe, the corporation, and the first 3 feet of the service shall be wrapped and taped to achieve a complete seal. In addition, a sand envelope shall extend over and around the connection to a depth of eight inches above the main.

- c. **Protective Coating on Joints:** All bolts and nuts destined for underground service on valves, fire hydrants, cast-iron mechanical joint fittings, pipe joints, and other ferrous metal appurtenances shall be packed in an approved protective coating material after installation. After the joint has been made and bolts drawn to the proper tension, the joint including glands, flanges, bolt heads, and nuts shall be covered with an approved SAWS coating or approved. Such protective coating shall be supplemental to anti-corrosive sand embedment as set forth in "Excavation, Trenching and Backfill", Item No. 804. Coating and wrapping of joints will be considered incidental to the installation, and no separate payment will be made for this item. Asphaltic material such as Talcote shall not be used.
4. **Cutting Ductile-Iron Pipe:** All cuts made on ductile-iron pipe shall be done with a power saw or approved mechanical cutter. The cuts shall be made at right angles to the pipe axis and shall be smooth. The edges of the cut shall be finished smoothly with a hand or machine tool to remove all rough edges.

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The outside edge of pipe should be finished with a small taper at an angle of about 30 degrees.

**814.4**      **MEASUREMENT:** Ductile Iron Pipe will be measured as established under "Water Main Installation", Item No. 812 of these Specifications.

**814.5**      **PAYMENT:** Payment for Ductile Iron Pipe will be made as outlined in "Water Main Installation" Item No. 812 of these Specifications.