

SECTION 17

ENCASEMENT PIPE

17.01 SCOPE:

These Specifications form a part of the Contract Documents and shall govern the encasement pipe requirements for water mains, sanitary sewers and sewage pumping stations.

17.02 GENERAL:

Encasement pipe shall conform to AASHTO Standards and State Highway Department standards where placed under highways and to AREA I-5-B where placed under railroads. Except where noted on the Plans, encasement pipe shall be installed by a dry boring method in which the casing pipe is placed simultaneously with the boring action.

The Contractor shall inspect the roadway or track directly above the Work before, during, and after the placing of the encasement for settlement. If settlement occurs, the Contractor shall, at no additional expense to the Owner, bring the roadway surface to its original grade by means approved by the State Highway Department or realign the track to its proper grade by means approved by the railway owner.

17.03 MATERIAL:

A. **Welded Steel Encasement Pipe** shall be of the size and wall thickness shown on the Plans and shall conform to ASTM Designation A252, Grade 2. The pipe shall be coated on the outside only with a coal tar primer coat followed by a single application of hot coal-tar enamel 3/32 inches thick $\pm 1/32$ inches and a bonded 15 pound composition felt wrap or approved equal. At the option of the Contractor, uncoated pipe may be used subject to approval of the State Highway Department or railway company provided the wall thickness is at least 0.063 inch greater than shown on the Plans or in the Proposal.

B. **Tunnel Liner Plate** shall conform to the requirements of the State Highway Department or the railway company under whose facilities the tunnel will be constructed. The completed tunnel shall have a circular cross-section and shall be constructed of a series of corrugated steel liner plates with staggered longitudinal joints. Thickness of plates and section modulus shall be as shown on Plans. The plates shall be fabricated so that the tunnel can be completely erected from inside. The plates shall be galvanized in accordance with ASTM A123, and then bituminous coated. Bolts, nuts, and washers shall be galvanized in accordance with ASTM A153. The void between the liner plates and the tunnel wall shall be pressure grouted as the tunnel progresses. A sufficient number of two inch diameter grouting holes with plugs shall be provided in the liner plates for this purpose.

17.04 FILLING ENCASEMENT:

After the carrier pipe has been installed in the encasement pipe, the space between the encasement pipe and the carrier pipe shall be filled with sand to at least 90 percent of the full encasement pipe diameter. The sand shall be placed by flooding, pumping, or other approved methods. In no case will blocking between the encasement pipe and the carrier pipe be permitted. The Contractor shall not permit the encasement pipe to fill with water after the carrier pipe is installed and prior to placing of sand fill, except at his own risk. If the carrier pipe is displaced by flotation, it shall be reinstalled to line and grade at the Contractor's expense. The ends of the encasement pipe shall be sealed with open-joint concrete block or brick masonry.

17.05 ENCASEMENT SPACERS:

Encasement pipe spacers and their accessories may be used in lieu of sand filling the space between the encasement pipe and the carrier pipe. The

installation and spacing from center to center or encasement spaces shall be in accordance with the manufacturer's requirements.

END OF SECTION