

## 800 WATER SUPPLY & DISTRIBUTION

### ITEM 806 - CASING PIPE

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**806.01 Description.** The Contractor shall furnish and install casing pipe where shown on the plans and as herein specified.

**806.02 Requirements.** The furnishing and laying of the casing pipe shall conform to the requirements and regulations of the appropriate agency, utility and the City of Columbus. The City of Columbus will secure the necessary permit and easement. The Contractor shall prepare necessary shop drawings, working schedule, description of type of materials and methods of construction. This data shall conform to the requirements outlined in the AREA Specifications for Pipe Line Crossing Under Railway Tracks, where applicable.

The Contractor shall before commencing work on the encasement, present evidence to prove to the satisfaction of the Engineer that he has had previous experience in tunneling through ground similar to that found on the project, or shall employ a superintendent able to furnish such evidence and shall keep such a supervisor continuously *on site while the work is being performed* until the tunnel work is completed.

The Contractor shall notify the appropriate agency or utility at least two working days in advance of commencing any construction work on the encasement.

The Contractor shall be responsible for costs which may result due to the agency or utility requirements relative to the furnishing of watchmen, inspectors and supervision by their forces.

Size of casing pipe shall be as per Standard Detail Drawing L-6324.

**806.03 Reinforced Concrete Casing Pipe.** The reinforced concrete casing pipe shall be culvert pipe meeting the requirements of ASTM C-76 of the class shown on the plan.

**806.04 Steel Casing Pipe.** The steel casing pipe shall be steel pipe meeting ASTM Specifications 35,000 PSI (242 MPa) yield strength and 60,000 PSI (415 MPa) tensile strength, or approved equal, to serve as a casing for the water main and shall be installed within the limits and at the location shown on the plans. The casing pipe shall be galvanized with a minimum of 2 ounces per square foot (610 g/m<sup>2</sup>) and conform to ASTM A-120. Steel casing pipe shall have a minimum wall thickness of 0.38 inches (9.6 mm) unless otherwise approved by the Engineer.

**806.05 Tunnel Liner Plates.** The tunnel liner plates shall be steel plates meeting ASTM specification A-569, to serve as a casing for the water main, and shall be installed within the limits, and at the locations shown on the plans. The tunnel liner plates shall be galvanized with a minimum of 2 ounces per square foot (610 g/m<sup>2</sup>) and conform to ASTM A-120. Tunnel liner plates shall have a minimum wall thickness of 0.1046 inches (2.65 mm) (12 gage) unless otherwise approved by the Engineer.

**806.06 Shop Drawings.** The shop drawings referred to above shall be prepared by the Contractor and three copies shall be sent to the Engineer for review, checking and approval. If the shop drawings, methods of construction and work schedule meet with the approval of the Engineer he will forward all three copies to the appropriate agency or utility for its approval. Upon receipt of approval, one set of prints shall be returned to the Contractor while the other sets will be retained by the Engineer and the appropriate agency or utility.

**806.07 Placing of Casing Pipe.** The placing of the casing pipe shall be accomplished by approved driving or tunneling methods.

The granular fill to be used in connection with the laying of the water line in the casing pipe will be furnished and placed to the depth shown on the drawings and paid for under this item.

The masonry header walls shown on the drawings are included under this item for payment of materials and labor required. Concrete header walls shall be Class C concrete per applicable provisions of Items 499 and 511.

**806.08 Pressure Grouting.** Any space existing outside the casing pipe shall be grouted at low pressure through grout holes provided in a sufficient quantity in the casing pipe. These holes shall be installed in suitable locations so that grouting can be done effectively. The pressure grouting shall preferably begin at the lowest middle hole of each grout section, grout holes above being open, and proceed upward progressively and simultaneously on both sides of the tunnel. Grouting shall be done as near the end of the lined tunnel as practicable and, if deemed necessary by the Engineer, grout stops shall be placed behind the sections at or near the end of the erected lining to permit grouting to or near the end.

**806.09 Method of Mining Tunnel.** All shoring, blocking or other special supports required to maintain uninterrupted service together with all watchmen, flaggers

and supervision of work by a representative of the respective company, if required, and all other costs incidental to the work along or across the right-of-way shall be provided by the Contractor at its own expense.

Mining shall be carefully done to avoid loss of ground. In unstable ground the face of the tunnel shall be supported by means of breast boards installed in an approved manner, said breast boards removed individually and advanced as the face of the heading is mined down and the casing pipe installed.

Where the ground will not remain in place long enough to excavate space for a casing pipe, steel poling plates, wood spilling boards, or a shield shall be used to support the ground while installing the casing pipe. Such procedures shall be discussed with and receive the approval of the Engineer.

The actual method of work proposed by the Contractor, shall be subject to approval of the Engineer. Such approval, however, shall not relieve the Contractor of responsibility for the safe and rapid prosecution of the work.

**806.10 Basis of Payment.** Payment shall be made at the unit price bid per linear foot (meter) which price shall include the furnishing and placing of the casing pipe, together with all excavating, pumping, tunnel plugging, grouting compacted granular backfill, concrete supports, pits and openings, furnishing of all signalers and inspectors, together with all labor, tools, material, equipment and appurtenances required to complete the encasement in good and acceptable condition. Payment shall be in addition to the price bid for the laying of the water line (carrier pipe) in ordinary excavation.

Payment will be made at the contract price for:

<b>Item</b>	<b>Unit</b>	<b>Description</b>
806	Linear Foot (Meter)	____ Inch (mm) Casing Pipe