

**SECTION 02300
BORING AND/OR JACKING PIPE**

1.0 GENERAL

A. Description

Boring and/or jacking pipe shall include, but not necessarily be limited to, furnishing and installing carrier pipe and/or casing pipe beneath railways, roadways, or other locations indicated on the Plans and in accordance with the Contract Documents.

B. Related Work Included Elsewhere

1. Removal or Abandonment of Existing Utilities
2. Aggregate Backfill: Section 02240
3. Trench Excavation, Backfill, and Compaction: Section 02250
4. Water Main Installation and Chlorination: Section 02551
5. Water Services, Water Meter Settings, and Vaults: Section 02553
6. Gravity Sanitary Sewer and House Connections: Section 02561
7. Sanitary Sewer Force Mains: Section 02563
8. Cast-in-Place Concrete: Section 03300
9. Flowable Fly Ash: Section 03500
10. Mortar: Section 04100
11. Brick Masonry: Section 04200

C. Quality Assurance

The Commission will inspect all materials before, during, and after installation to ensure compliance with the Contract Documents.

2.0 MATERIALS

A. Materials Furnished by the Commission

The Commission will not furnish any materials for boring and/or jacking pipe.

B. Contractor's Options

Directional drilling or micro-tunneling may be used with prior approval from the Commission.

C. Detailed Material Requirements

1. Portland Cement Concrete
Portland cement concrete for inverts or cradles shall be Mix No. 1 as specified in

Section 03300.

2. Mortar for Grout

- a. Mortar used for grouting voids outside the casing pipe shall conform to the requirements of Section 04100 except that it shall be composed of one part Portland cement and three parts sand.
- b. Mortar used for bulkheading sleeve ends shall conform to the requirements of Section 04100.

3. Flowable Fly Ash

Flowable fly ash fill shall be as specified in Section 03500, and used as fill inside the casing pipe to the levels shown on the Contract Drawings.

4. Brick Masonry

Brick Masonry for bulkheading sleeve ends shall conform to the requirements of Section 04200.

5. Steel Casing Pipe

- a. Steel casing pipe shall be smooth walled and have a minimum yield strength of 36,000 psi. Minimum wall thickness shall be as noted herein or as specified in the Contract Documents.

Casing Pipe

Normal Pipe Size <u>(inches)</u>	Wall Thickness <u>(inches)</u>
6	0.375
12	0.375
20	0.375
24	0.375
30	0.500
36	0.500
48	0.500

- b. The pipe shall be fabricated and field connected in accordance with Section 02551. Joints shall be fully welded around the circumference of the pipe.
- c. The exterior of the pipe including field connection shall be bituminous coated before installation. Bituminous coating shall meet the requirements of AWWA C210.

6. Carrier Pipe

Carrier pipe shall be as specified in the Contract Documents and meet the requirements specified in Sections 02551, 02561, or 02563 as appropriate.

7. Skids/Blocking

Skids and/or blocking for securing carrier pipes shall be constructed of pressure treated lumber suitable for exterior use or of a Commission approved molded plastic construction (insulators).

- D. Material Storage Note: Materials shall be stored in order to insure the preservation of their quantity, quality and fitness for Work. The Contractor shall place materials on wooden platforms, or other hard, clean surfaces, not on the ground, and the materials shall be placed under cover when directed by the Owner. Stored materials shall be located in order to facilitate prompt inspection by the Owner. Lawns, grass plots, or other private or public property shall not be used for storage purposes without written permission of the owner or lessee. Unless directed or noted otherwise in the Contract documents, there will be no payment for stored materials.

3.0 EXECUTION

A. Preparation

1. Bored and/or jacked pipe greater than 4 inches in diameter shall receive a casing pipe unless directed otherwise.
2. Preliminary work shall consist of excavating and sheeting a suitable shaft on the lower side of the crossing and installation of a backstop and guide rails. The guide rails shall be long enough to hold at least two lengths of pipe and shall be carefully checked for line and grade before any pipe is placed on them.

B. Boring and/or Jacking

1. When augers or similar devices are used for pipe emplacement, the front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger and cutting head from leading the pipe so that there will be no unsupported excavation ahead of the pipe. The arrangement shall be removable from within the pipe in the event an obstruction is encountered. The excavation by the cutting head shall not exceed the outside diameter of the pipe by more than $\frac{1}{2}$ inch. The face of the cutting head shall be arranged to provide reasonable obstruction to the free flow of soft material.
2. If an obstruction is encountered during installation that stops the forward action of the pipe, and it becomes evident that it is impossible to advance the pipe, operations shall cease and the pipe abandoned in place and filled completely with flowable fly ash.
3. Bored or jacked installations shall have a bored hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1-inch, grouting or other methods approved by the Commission shall be employed to fill such voids.
4. When water is known or expected to be encountered, pumps of sufficient capacity to handle the flow shall be maintained at the site. The pumps shall be in constantly attended operation on a 24 hour basis until their operation can be safely halted. When dewatering, close observation shall occur to detect any settlement or displacement of surface facilities. Should settlement or displacement be detected, the Contractor shall notify the Commission immediately and take such action as necessary to maintain safe conditions and prevent any further damage.

5. All operations shall be conducted so as not to interface with, interrupt, or endanger the operation of traffic, or damage, destroy, or endanger the integrity of any surface facilities.
 6. Carrier pipe shall be tested in accordance with Section 02551, Section 02561 or Section 02563 as applicable, prior to bulkheading the ends of the sleeve.
 7. Each end of the sleeve shall be bulkheaded in accordance with Section 02050.
- C. Installation of Carrier Pipe
1. Carrier pipe installed within the casing pipe shall be restrained with locking gaskets as shown in the Contract Documents and as specified in Sections 02551, 02561, and 02563.
 2. Where shown or specified in the Contract Documents, the annular space between the casing and carrier pipes shall be filled with sand.

4.0 METHOD OF MEASUREMENT

A. Casing Pipe

Measurement for bored and/or jacked casing pipe will be made of the length of casing pipe satisfactorily installed. Measurement will be made horizontally along the centerline of the pipe between the ends of the casing pipe.

B. Carrier Pipe

Carrier pipe will not be measured as it will be incidental to the casing pipe installation.

5.0 BASIS OF PAYMENT

A. General

1. Payment will be made at the unit and/or lump sum prices bid. The prices bid shall include and cover furnishing all labor, tools, equipment, and materials necessary to complete the work as shown and specified in strict accordance with the Contract Documents.
2. Payment will be made for contingent items when approved by the Commission.
3. Should a contractor elect to make a boring and/or jacking pipe under trees, sidewalks, curbs, pipelines, or similar obstructions that are not specifically noted as a boring and/or jacking operation in the Contract Documents it shall be done at no additional cost to the Commission.

B. Casing Pipe

Payment for bored and/or jacked casing pipe will be made per linear foot for the various diameters of casing pipe furnished and installed by boring and/or jacking. The price(s) bid shall include the traffic control, compaction, excavation, support, and restoration of the boring and receiving pits; removal and disposal of excess excavated material; dewatering, settlement monitoring; furnishing and placing flowable fly ash fill within the

casing pipe, carrier pipe, fittings, jointing material, joint restraint, testing, disinfection (if applicable), and incidental items to complete the installation.

C. Carrier Pipe

Payment for bored and/or jacked carrier pipe will not be made as it will be incidental to the casing pipe installation.

****END OF SECTION 02300****

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