

SECTION 02310

STREAM AND/OR HIGHWAY CROSSINGS

PART ONE - GENERAL

1.1 DESCRIPTION

A. Work included: Perform all labor, material and equipment to install steel casing pipe for stream and/or highway crossings in accordance with the Drawings and as specified herein.

B. Related work specified elsewhere:

1. Erosion and Sediment Control – Section 02270
2. Water Distribution Lines - Section 02665
3. Sanitary Sewer Collector Lines and Force Main - Section 02731
4. Seeding and Mulching - Section 02900

1.2 PROTECTION

Streets, roads, adjacent property and other works to remain shall be protected throughout the work as defined in the General Conditions.

PART TWO - PRODUCTS

2.1 MATERIALS

- A. Steel casing pipe shall be smooth wall steel pipe as indicated with a minimum wall thickness of 0.25 inches conforming to the materials standards of ASTM A 252, grade 2. Joints of steel pipe shall be butt welded, watertight, in accordance with the American Welding Society's recommended procedures. The construction plan indicates the minimum thickness of casing pipe.
- B. Carrier pipe shall be ductile iron, cement lined, bituminous coated AWWA C 151, restrained joint pipe or HDPE pipe as indicated on the plan.
- C. Pressure injected grout shall be a sand and cement grout mixture, consisting of 1.0 part cement, 2 parts sand (100 percent passing the No. 3/8 sieve and 94 to 100 percent passing a No. 4 sieve). Dry grout mix shall be combined with the minimum amount of water to achieve the necessary consistency and containing 3 to 7 percent entrained air. Maximum grouting pressure shall be 30 psi.

PART 3 - EXECUTION

3.1 STREAM CROSSING

Unless directed otherwise by permits issued by applicable Federal and/or State agencies, the following procedure shall be utilized:

- A. Contractor shall construct crossings of streams in the "dry" by providing a temporary cofferdam or bulkhead of non-erodible material. Cofferdam or bulkhead shall not obstruct more than one-half of water surface at any time and shall not extend more than three (3) feet above the normal water surface. Contractor shall not be allowed to operate construction equipment on the native stream bottom, except during removal of the cofferdam. Contractor shall be advised that the level in the stream(s) can increase rapidly due to rainfall in the upstream watershed.
- B. Non-erodible shall be defined as #1 coarse aggregate as defined in the Virginia Department of Transportation "Road and Bridge Specifications" 2002 Edition. An earth core for the cofferdam may be constructed over the proposed excavation; however, the non-erodible material shall be in place prior to placement of the earth, so that the erodible earth does not come in contact with the flowing water.
- C. Contractor shall construct crossings as indicated in the details and shall then completely remove cofferdam, bulkhead, or whatever equipment or material that was used to construct the crossing. Bottom of the stream in the construction area shall be restored to its original cross section. All disturbed areas on the banks of streams shall be seeded and mulched as specified hereinafter in paragraph "Seeding."
- D. River/Stream crossing permits required from Virginia Marine Resource Commission and/or US Army Corps of Engineers have been obtained by the OWNER and are made part of the CONTRACT DOCUMENTS. Requirements of these permits are considered Special Conditions of the CONTRACT DOCUMENTS.

3.2 HIGHWAY CROSSING - BORE & JACK METHOD

- A. Pipeline crossing under highways shall be installed in a steel casing pipe installed by the "drive casing as you go" boring and jacking method unless otherwise indicated. Lengths of steel pipe shall be welded to preceding length installed. Voids between exterior of casing pipe and the ground shall be filled with pressure injected grout. Carrier pipe shall be protected on pipe protection saddles spaced at two (2) per length of pipe. Ends of casing pipe shall be plugged with sacking prior to backfilling. If trench is allowed to be open cut, casing pipe shall be provided unless otherwise directed by the ENGINEER and trench shall be backfilled and pavement

restored within one (1) day of placing casing pipe.

- B. The jacking operation shall be carried on in such a manner that settlement of the ground or the highway above the pipeline will not occur. The use of water or other fluids in connection with the boring and jacking operation shall not be allowed. Excavation shall not precede the jacking operation more than is necessary. The Contractor shall repair or replace, as directed by the Engineer, at the Contractor's expense, casing pipe which is damaged during the jacking operation.
- C. After installation of casing pipe and grout, if required, carrier pipe shall be installed. Carrier pipes shall be supported by steel saddles strapped to the pipe with steel straps, as specified.
- D. All operations of the Contractor shall be subordinate to the free and unobstructed use of the highway right-of-way for passage of traffic without delay or danger to life, equipment or property. Contractor shall provide all necessary flagging, warning devices, flagmen, bracing, bulkheads, and shields to ensure complete safety to all traffic at all times. Contractor shall notify the appropriate Police, Fire and/or Rescue Departments when restricting traffic to one lane.
- E. Any highway crossing permits required for a County project have been obtained by the OWNER. These permits and the requirements of the permit are made a part of the Special Conditions of the CONTRACT DOCUMENTS.

3.3 HIGHWAY CROSSING - OPEN CUT METHOD

- A. Any crossing that is made using the open cut method shall be performed in accordance with Virginia Department of Transportation standards.
- B. Any highway crossing permits required for a County project shall be obtained by the CONTRACTOR unless otherwise indicated in the CONTRACT DOCUMENTS. These permits and the requirements of the permit are made a part of the Special Conditions of the CONTRACT DOCUMENTS.

3.4 MEASUREMENT AND PAYMENT

Measurement and payment for stream and/or highway crossings shall be made per lineal foot of casing pipe installed for each casing size as specified or indicated on the Drawings. Unit Price shall reflect complete installation of respective casing pipe.

- END OF SECTION -

STREAM AND/OR HIGHWAY CROSSINGS

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