



PROJECT SPECIAL PROVISIONS
Utility Construction

I. GENERAL CONSTRUCTION REQUIREMENTS:

Specifications:

The proposed utility construction shall meet the applicable requirements of the NC Department of Transportation's "Standard Specifications for Roads and Structures" dated January 2002, and the following provisions.

Lay water mains at least 10 feet laterally from existing or proposed sanitary sewers. See utility plans for installation instructions in areas where 10 feet distance cannot be maintained.

The depth of pipeline installation may vary to achieve minimum clearance of existing or proposed utilities or storm drainage while maintaining minimum cover specified (whether existing or proposed pipelines, conduits, cables, mains and storm drainage are shown on the plans or not).

After the installed pipe, fittings, valves, hydrants, corporation stops and end plugs are inserted and secured, the pipe shall be subjected to a hydrostatic pressure test of 200 psi for a period of 2 hours, by pumping the section full of clean water using an approved pressure pump. Cross connection for flushing and chlorination shall be made by means of temporary connection from the supply pipe with an approved backflow prevention device. Taps for the cross connection piping shall be made to the portion of the existing water main that will be removed from service. The proposed water main shall be laid to within one pipe length of the point of final connection prior to flushing and testing. All flushing and chlorination work shall be performed in accordance with AWWA C651-99. All fittings, valves and backflow prevention devices required for chlorination and testing shall be incidental to the cost of the proposed pipe being tested.

Contractor shall make such arrangements, as the utility owner requires, for measuring and paying for water required to flush and test water mains.

Copies of bacteriological testing reports shall be provided to the utility owner prior to activating new water mains.

Owner and Owner's Requirements:

The existing utilities belong to Cleveland County. The Contractor shall provide access for the owner's representatives to all phases of construction. Notify the owner two weeks before commencement of any work and one week before service interruption.

Utility Locations Shown on the Plans:

The location, size, and type material of the existing utilities shown on the plans are from the best available information. The Contractor will be responsible for determining the exact location, size, and type material of the existing facilities.

II. COMPENSATION

No direct payment will be made for determining existing utility locations required by the preceding provisions, which are general requirements applying to utility construction, and all of the requirements stated will be considered incidental work, paid for at the contract unit prices of the various utility items included in the contract.

1. BEDDING MATERIAL

Bedding material for utility lines shall be installed in accordance with the applicable utility provisions herein, as shown on the utility construction plans, and/or as directed by the Engineer.

Bedding material shall meet the requirements of Article 1016-3 of the Standard Specifications. Bedding material shall be installed in accordance with Articles 300-6 and 300-7 of the Standard Specifications and the detail sheets that are part of the Utility Construction Plans.

Bedding material installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per ton for "Bedding Material, Utilities Class IV". Such prices and payments shall be full compensation for all materials, labor, equipment, compaction, and shaping the bedding material in accordance with Article 300-4 of the Standard Specifications, and incidentals necessary to complete the work as required.

2. HDPE WATER PIPE BY DIRECTIONAL BORE:

High-density polyethylene (HDPE) Water Pipe shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

HDPE Water Pipe shall be 8" SDR 9, 200# WP, manufactured in accordance with ANSI/AWWA C906 (Polyethylene Pressure Pipe and Fittings, 4" through 64", For Water Distribution, Ductile Iron Pipe Size (DIPS)). HDPE pipe materials shall be made from materials conforming to standard PE code designation PE 3408.

The Contractor shall furnish fittings necessary to connect the PVC Water Pipe to the HDPE, and fuse fittings onto each end of the HDPE section of the Water line.

Concrete for thrust restraint shall be Class A concrete meeting the requirements of Section 1000 of the Standard Specification. The concrete shall be placed around the pipe as shown on the plans and/or as directed by the Engineer. The proposed HDPE water pipe shall have a thrust collar fused into the pipe string adjacent to the proposed adapter from the HDPE to the PVC fitting. The thrust collars shall be designed to withstand the pull back force in the HDPE and the internal thrust forces that can separate the pipe where the HDPE pipe transition to PVC pipe. The concrete thrust block shall be poured around the thrust collar to restrain the HDPE pipe. The proposed DI Reducer shall be restrained with $\frac{3}{4}$ " threaded steel rods formed into the concrete thrust block.

The reinforcing steel shall meet the requirements of Section 1070 of the Standard Specifications. Reinforcing steel shall be placed in the center of the thrust block and shall be tied to the threaded rods.

Threaded rods shall be A-36 steel and shall match the diameter of the bolts in the coupling and/or ductile iron water pipe fitting, but shall be no less than $\frac{3}{4}$ " diameter. The proposed transition coupling and/or nearest ductile iron pipe fitting shall be tied to the thrust block. A minimum of four threaded rods shall be used, located as shown on the plans.

Drilling fluid shall consist of a bentonite slurry. Admixtures may be added which are suitable to the site conditions encountered.

HDPE Water line shall be fused prior to placement beneath the stream noted on the plans. Join pipe segments by cutting ends square, heating and fusing under sufficient pressure to create a single length of pipe sufficient to complete installation in one continuous pulling operation. The pipe manufacturer's listing of fusing parameters, validated by appropriate testing, and the parameters of the Contractor's fusion systems, shall be submitted to the Resident Engineer prior to fusing segments of HDPE Water pipe into the pipe string.

After installation, the HDPE Water Pipe string shall be tested under the stream to a hydrostatic pressure of 200# in accordance with the testing procedures outlined in Section 1520 of the Standard Specifications.

HDPE Water Pipe shall be installed beneath the stream by boring or drilling a small pilot hole along a parabolic arc beneath the stream. A minimum cover of 3' shall be maintained over the HDPE Water Pipe at all times. Enlarge the pilot hole by use of a reamer or reamers to the desired diameter. When the bored hole is of the diameter recommended by the pipe manufacturer for 8" HDPE Water line, the Contractor shall pull the pipe string through the hole by the drill string. Cap the pipe string during the pulling operation. The pulling operation shall incorporate a swivel connection to minimize torsional stresses imposed upon the pipe string. Fully support the pipe string before and during pull back so that the pipe string will move freely without any damage.

HDPE Water Pipe installed by directional bore shall not be connected to existing pipe or fittings for one week from the time of installation to allow tensional stresses to relax.

The Contractor may elect to conduct reaming and pulling of the pipe string in one operation at the discretion of the Engineer. The reamer head shall be fitted with a sleeve to prevent possible spalling that may become lodged and prohibit the pull back of the pipe string.

Drilling fluid that does not remain in the bore hole shall be collected and disposed of properly. No drilling fluid shall enter the stream.

HDPE Water Pipe, installed in accordance with the plans and provisions herein accepted, will be measured along the pipe from end to end, with no deductions for fittings and couplings, and paid for at the contract unit price per linear foot for "8" HDPE Water Pipe, SDR 9, 200# WP by Directional Bore". Such priced and payments will be full compensation for furnishing all labor, equipment, material, couplings and fittings, excavation, installation, testing, backfilling, and incidentals necessary to complete the work as required.