



PROJECT SPECIAL PROVISIONS  
Utility Construction

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.

Owner and Owner's Requirements:

The existing water line and force main sewer line belong to the City of Concord. The Contractor shall provide access for the owner's representatives to all phases of construction. The owner shall be notified two weeks prior to commencement of any work and one week prior to service interruption. The contact person for the City of Concord is Mr. Rick A. Blat, PE. Mr. Blat can be reached by telephone at (704) 920-5403.

The owner shall be notified in advance of any interruptions of water service, or force main sewer service with ample time to make arrangements. Interruption of water service or force main sewer service on main lines shall be limited to a maximum of 4 hours unless approved by the Engineer.

Utility Locations Shown on the Plans:

The location, size, and type material of the existing utilities shown on the plans is from the best available information. The Contractor will be responsible for determining the exact location, size, and type material of the existing facilities necessary for the construction of the proposed utilities and to avoid damage to existing facilities.

Waterline Installation:

All water pipe, fittings, and appurtenances shown on the plans shall be installed in accordance with Section 1510 of the Standard Specifications or as otherwise directed by the Engineer.

After the installed pipe, fittings, valves, hydrants, corporation stops and end plugs are inserted and secured, the pipeline shall be subjected to a hydrostatic pressure 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 a 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, backflow prevention devices required for chlorination and testing shall be incidental to the cost of the proposed pipe being tested.

Any cracked, damaged, or defective pipe, fittings, valves, hydrants, or other attachments discovered as a result of the pressure test, shall be removed and replaced with sound material. The tests shall be repeated until test results are satisfactory.

After the pressure test is complete, the Contractor shall make a leakage test. Such leakage test shall last at least 2 hours at a pressure of 200 PSI. The pressure test and leakage test may be performed concurrently.

#### Force Main Sewer Installation:

Prior to initiating any work on the existing force main sewer, the Contractor shall provide the Engineer with a construction work plan which shows how the existing force main will be taken out of service and drained, and how long the existing force main will be out of service. This work plan will be reviewed with the utility owner by the Engineer to ensure that the pump stations which feed the force main can be properly controlled during the period the force main piping is being replaced. The Engineer will advise the Contractor if the work plan is acceptable, or if the work plan will require revisions before work begins on the force main.

All force main sewer pipe, fittings, and appurtenances shown on the plans shall be installed in accordance with Section 1520 of the Standard Specifications or as otherwise directed by the Engineer.

After the installed pipe, fittings, valves, and end plugs are inserted and secured, the pipeline shall be subjected to a hydrostatic pressure of 200 PSI for a period of 2 hours, by pumping the section full of clean water using an approved pressure pump. The proposed force main sewer pipe shall be laid to within one pipe length of the point of final connection prior to flushing and testing. The proposed force main sewer pipe shall be flushed clean of all deleterious material. All fittings, valves, backflow prevention devices and any other equipment/materials required for testing shall be incidental to the cost of the proposed pipe being tested.

Any cracked, damaged, or defective pipe, fittings, valves, or other attachments discovered as a result of the pressure test, shall be removed and replaced with sound material. The tests shall be repeated until test results are satisfactory.

After the pressure test is complete, the Contractor shall make a leakage test. Such leakage test shall last at least 2 hours at a pressure of 200 PSI. The pressure test and leakage test may be performed concurrently.

#### Valves:

All butterfly valves and gate valves shall conform to the requirements of ANSI/AWWA 504 and/or 509. The direction of rotation of the handwheel or wrench nut to open the valve shall be to the left or counterclockwise. Valve boxes shall be slip types with a base to fit the valve yoke and removable plug cap with the word "WATER" cast therein.

NOTE: The existing water line and force main sewer line NE of the bridge in the existing alignment shall be located by the Contractor prior to removal of the existing approach fills. Roadway plans show approximately 770 CY of material to be removed on the North approach and approximately 1580 CY of material to be removed on the South approach. This material shall be removed in such a manner that will leave a minimum of four feet (4') of cover on the existing water line and force main sewer. Any damage to the water line or force main sewer line caused by construction activities shall be repaired to the satisfaction of the Engineer and at no cost to the Department.

## COMPENSATION

No direct payment will be made for utility construction work 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.

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 \_\_\_\_". 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. AIR RELEASE VALVE AND MANHOLE:

Air release valve and manhole shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

The air release valve and manhole shall consist of an air release valve, a corporation cock on the main, brass pipe, brass fittings, two bronze ball valve curb stops, necessary fittings and connecting pieces, and a manhole.

The air release valve shall be of the type which releases accumulated air from the pipe line when the line is under pressure and releases large quantities of air during filling and emptying of the forced sewer main. Air release valves shall be iron body with bronze or rubber seals and bronze or stainless steel working parts. Air release valve shall have a hydrostatic pressure rating of not less than 200 PSI.

Air release valve for use on water mains shall conform to ANSI/AWWA C512. Air release valves for use on sanitary sewer force mains shall be of the type designed for sanitary sewer service.

All interior iron surfaces of the air valve shall be coated with a minimum of 8 mils of fusion-bonded epoxy or liquid epoxy in accordance with ANSI/AWWA C550.

Bronze ball valve curb stops shall be designed for a working pressure of 200 PSI.

The four-foot diameter manhole to house the air release valve shall be precast concrete conforming to ASTM C478. The manhole ring and cover shall be of an approved type.

The quantity of air release valve and manhole, installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per each for "\_\_\_" Air Release Valve Assembly and Manhole". Such prices and payments shall be full compensation for all labor, materials, excavation, backfilling, equipment, approved air release valve, ball valve curb stops, pipe, fittings, four-foot diameter manhole construction, ring and cover (Type 2), and incidentals necessary to complete the work as required.

### 3. DUCTILE IRON FORCE MAIN SEWER PIPE:

Ductile iron force main sewer pipe shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, or as directed by the Engineer.

Ductile iron force main sewer pipe shall meet the requirements of ANSI A21.51/AWWA C151. Nominal pipe laying length shall be twenty feet. Joints shall be mechanical joint or rubber ring gasket slip joint, each conforming to ANSI A21.11/AWWA C-111. The pipe and fittings shall have an asphaltic exterior coating as specified in AWWA C151. Interior of the pipe joints shall have a 1 mil (min) asphaltic lining.

All ductile iron force main sewer pipe shall be installed in accordance with laying condition Type 2 as stated in ANSI A21.51/AWWA C151, unless otherwise shown on the plans.

Ductile iron force main sewer pipe shall be furnished and installed as required and accepted will be measured and paid for at the contract unit price per foot for "\_\_\_" DI Force Main Sewer Pipe, Class \_\_\_". Such price and payments will be compensation in

full for all materials, labor, trenching, backfilling, equipment and incidentals necessary to complete the work.

#### 4. RESTRAINED RETAINER GLANDS:

Restrained Retainer glands shall be installed in accordance with the applicable provisions herein, as shown on the plans and/or as directed by the Engineer.

Restrained Retainer glands shall be heavy duty ductile iron conforming to ASTM A536. Restrained Retainer glands shall meet the specifications for ANSI A21.11 (AWWA C111). Restrained Retainer glands shall be capable of restraining mechanical joints or push-on joints for a minimum working pressure of 250 PSI with a minimum factor of safety of 2:1 using ductile iron wedges. Twist-off nuts shall be used to insure proper torquing of retaining devices.

Restrained Retainer glands for push-on joints shall have machined serrations on the inside surface. Wedges that bear against pipe wall shall not be used on bell and spigot type installations. The required restrained length shall be restrained by retainer glands. The Contractor shall be responsible for determining the necessary lengths to be restrained. Design of the restrained portion of the new water piping system shall be approved by a registered professional engineer, and submitted to the Utility Section, Design Services Unit for approval prior to installation.

Restrained Retainer glands, installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per each for "\_\_\_\_\_" Restrained Retainer Gland". Such prices and payments will be full compensation for all materials, labor, excavation and backfilling, installation, testing and incidentals necessary to complete the work as required.

PROJECT SPECIAL PROVISIONS

## Utility

UTILITIES BY OTHERS:

## General:

The following utility companies have facilities that will be in conflict with the construction of this project.

- A) Duke Power - Power Distribution
- B) Union Power - Power Distribution
- C) Concord Telephone - Telephone
- D) Time Warner - CATV

The conflicting facilities of these concerns will be adjusted prior to the date of availability, unless otherwise noted and are therefore listed in these special provisions for the benefit of the Contractor. The utility owner will perform all utility work listed herein. All utilities are shown on the plans from the best available information.

The Contractor's attention is directed to Article 105.8 of the Standard Specifications.

## Utilities Requiring Adjustment:

- A) Duke Power - Power Distribution
  - 1) See Utilities by Others Plans.
- B) Union Power - Power Distribution
  - 1) See Utilities by Others Plans.
- C) Concord Telephone - Telephone
  - 1) See Utilities by Others Plans.

NOTE: Concord Telephone will be aerial with Union Power on parts of its relocated facilities.

- D) Time Warner - CATV
  - 1) See Utilities by Others Plans.

NOTE: Time Warner will be in joint use with other utilities on this project.

NOTE: All other utilities shall remain in place and will be adjusted as necessary.