

CITY OF SHELBY PUBLIC UTILITIES

CHESTNUT NEIGHBORHOOD SANITARY SEWER INFRASTRUCTURE PROJECT

March 2011

- 1) The current City of Shelby water rates are attached for your information.
- 2) In the Bid Form:
  - a) On Page 15, in the Item Description for Item 22b, change text “24a” to “22a”.
  - b) On Page 15, in the Item Description for Item 19, replace the text with the following:

“For guaranteed trenchless crossing installation of 20-inch DIP sanitary sewer carrier and 36-inch diameter steel casing pipe as specified, complete in place.”
  - c) On Page 16, in the Item Description for Item 22d, change text “24c” to “22c”.
  - d) On Page 16, in the Item Description for Item 22e, change “24a” to “22a”, and “24c” to “22c”).
- 3) In the Pay Item Descriptions
  - a) On Page 25, replace Item 19 with the following:

Item 19 – Guaranteed Trenchless Crossing: The unit price bid shall include furnishing all labor, materials, tools, equipment, fittings, jointing materials, pipe to install the casing, and carrier pipes including all costs in connection with excavation and backfilling, shoring installation of smooth steel casing pipe or tunnel liner plates, the installation of DIP carrier pipe, including all skids, blocking, spiders, steel straps, jointing materials, end closures, pits, and grouting of the outside annular space, associated appurtenances; and furnishing and maintaining any safety barriers and/or traffic control devices as may be required by State and/or local permit requirements and/or ordinances required for the installation of the Guaranteed Trenchless Crossing complete, tested, and placed into satisfactory service, in accordance with the Contract Documents and plans; and all other costs not included under other bid items. Included in the new materials are the specified casing pipe and the carrier pipe.

Payment will be made on the basis of the unit price bid in the Proposal.
- 4) In the Technical Specifications:
  - a) Add the attached Section 02250, “TUNNEL EXCAVATION”, in its entirety to the Technical Specifications section of the Project Manual.

- b) On Page 02290-6, Paragraph 2.1 B 2, change the minimum thickness of the casing steel from “0.5 inches” to “0.375 inches”.

- i) On Page 02765-5, Paragraph 2.01 M, delete the entire sentence and replace with:

“All 6-inch diameter pipe shall have a minimum liner thickness of 4 mm, and all other pipe from 8-inches in diameter and larger shall have a minimum liner thickness of 6 mm, regardless of the thickness indicated by design calculations.”

- c) On Page 02765-5, Paragraph 2.01 N, delete the reference to tensile strength testing (ASTM 638).

- d) Delete the sentence on Page 02765-6, Paragraph 3.01 H, which states, “Tensile strength shall be determined by ASTM D638.”

- e) On Page 02765-6, Paragraph 3.01 I, delete the entire paragraph, and replace it with the following:

“Any lining that does not meet the specified installed strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the Contractor in a manner approved by the Engineer at no additional cost to the Owner. The Engineer’s decision on how to correct deficient CIPP installations shall be final. Options for correcting deficient liner that will be considered by the Engineer include (1) removing the liner and re-lining the sewer, (2) excavating and replacing the sewer from manhole to manhole, (3) re-lining sewers completely from manhole to manhole, or (4) providing the Owner with a substantial credit. The primary option that will be considered is to re-line the sewers. Credits will only be considered for lining that does not meet the required thickness. If a credit is acceptable to the Engineer and Owner, the credit shall be calculated by multiplying the bid price by the percent that the liner thickness is below the minimum required installed thickness as follows:

$$\text{Credit} = (1 - (\text{installed CIPP thickness} / \text{min. required thickness})) \times \text{Bid Price}$$

The Contractor shall not assume that a credit will be acceptable to the Engineer or Owner.”

- f) On Page 02765-6, Paragraph 3.01 J, delete the entire paragraph, and replace it with the following:

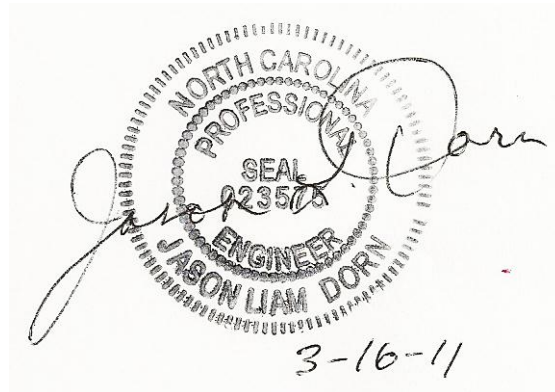
“CIPP shall be installed in strict accordance with ASTM F1216.”

- 5) On the Drawings:

- a) On Sheet 5, Detail C, Note 2: Delete and replace note 2 with the following:

“NEW PIPE MATERIAL FOR TYPICAL POINT REPAIRS SHALL BE PVC IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.”

- b) On Sheet 7, Plan, the note that reads, “EX. MH 10300706 REHAB PER DETAILS SHEET 14”, should refer to “SHEET 6”.
- c) On Sheet 11, New 20” Main Profile, approximately at Station 2+00, change the specified steel casing pipe thickness from  $t=0.25$ ” to  $t=0.375$ ”.
- d) On Sheet 11, New 20” Main Plan, the note that reads, “20-INCH MJ PLUG W/PROTECTO 401 COATING”, should have a leader pointing to the stub-out coming out of NEW MH 102.
- e) On Sheet 11, New 20” Main Plan, the note that reads, “DEMO  $\pm 5$ ’ EX. 8’ PIPE THIS AREA. PLUG ENDS”, should read, “DEMO  $\pm 5$ ’ EX. 8” PIPE THIS AREA. PLUG ENDS”.



**Section 02250 - TUNNEL EXCAVATION****A. GENERAL**

1. SCOPE: This section covers tunnel excavation, installation of carrier pipe, and all associated items.
2. INSURANCE REQUIREMENTS:
  - a. The Contractor and any of his Subcontractors performing work on the state right-of-way in connection with tunneling operations shall furnish to the Owner, for his approval, a certificate of insurance, in an original and one copy, in the amounts of \$600,000 Bodily Injury and \$200,000/\$600,000 Property Damage as evidence of proper coverage before beginning work at the site. The certificate is to show that explosion, collapse and underground insurance coverage is provided.
  - b. It will be the responsibility of the Contractor and/or his Subcontractor to furnish and keep in force the insurance requirements for a one year period after completion and acceptance of the work by the Owner and the Department of Transportation. The certificate is to be countersigned by an authorized North Carolina Resident Agent with the name and address of the agent denoted thereon. The certificate is to make reference to the project and county. The NCDOT engineer is to be notified of the completion of the installation, with copy to head of the Design Services Unit.

**B. INSTALLATION**

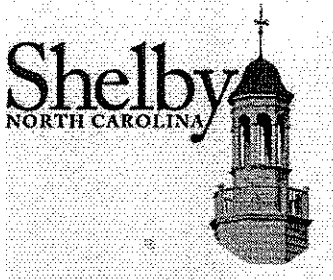
1. When pipelines are shown to be installed in tunnels or when pipelines shown to be bored and jacked cannot be installed due to obstructions, the pipelines shall be constructed in tunnels, in conformity with the requirements which follow. Before starting work on any tunnel, detailed drawings, specifications, and other data covering the liner to be used shall be submitted in accordance with the submittals section.
2. The clear inside diameter of tunnel liners shall be within 4 inches of the nominal diameter indicated on the drawings.
3. The Contractor shall furnish and install tunnel liners suitable for the installation of the interceptor sewer or water main at locations shown on the contract drawings. The tunneling operation shall conform with requirements of Division 1, Section 16, of the interim Standard Specifications for Highway Bridges, published by the American Association of State Highway and Transportation Officials, 341 National Press Building, Washington, D.C. 20004.

4. The tunnel liner plates shall be fabricated from structural quality, hot rolled, carbon steel sheets or plates conforming to ASTM A569. The mechanical properties of the plates and sheets before cold rolling shall be as follows:
  - a. Modulus of elasticity of steel  $E = 29,000,000$  psi
  - b. Ultimate strength of steel  $F_u = 42,000$  psi
  - c. Yield strength of steel  $F_y = 28,000$  psi
5. All liner plates shall be galvanized in accordance with the requirements of AASHTO M167. Bolts, nuts, washers and other accessory hardware shall be hot-dip galvanized in accordance with the requirements of ASTM A153. If additional protection is required, the plate shall be bituminous coated to meet the requirements of AASHTO M190 or M-243-751 (Field Coating).
6. Bolts and nuts shall not be less than 1/2 inch in diameter for plate thickness up to and including 0.179 inch (7 gage) and not less than 5/8 inch for plate thickness equal to or greater than 0.209 inch (5 gage). Bolts and nuts shall be quick acting coarse thread and shall conform to ASTM A307, Grade A.
7. The tunnel shall be installed using plates of the gage (thickness), size, and dimension indicated and shall conform with the line and grade shown on the contract drawings.
8. Liner plates shall be assembled in accordance with manufacturer's instructions. Courses of plates shall be staggered 1/2 plate when the course contains all whole plates. When the course contains a 1/2 plate, the course shall be staggered 1/4 plate with the 1/2 plates being placed on opposite sides of the tunnel in alternate courses.
9. Coated plates shall be handled in such a manner as to prevent bruising, scaling, or breaking of the coating. Any plates that are damaged during handling or placing shall be replaced by the Contractor at his expense, except that small areas with minor damages to the coating may be repaired by the Contractor as directed by the Engineer.
10. The tunneling operation shall proceed only a distance sufficient for placing one section of tunnel liner. The tunnel liner must be placed before proceeding further. At no time will jetting be allowed.
11. Where blasting is required, only small controlled charges of forty percent dynamite or plastic explosives are to be used. The depths of the holes for these charges shall not exceed the depth necessary for clearing an area sufficient for placing one section of tunnel liner. The charges for the initial series of blasting should be placed in the triangle method. The second series shall be placed in the radial method a minimum distance from the desired diameter of the tunnel. The triangular charges shall be set to go off first, with the radial charges to go off in a short interval or using the timelag method.

12. Where rock is encountered before approaching the shoulder or pavement, the first four series of charges will be used in determining the amount of controlled blasting to be used beneath the shoulders or pavement of the highway; however, if rock is encountered after proceeding beneath the pavement, only small charges shall be used until the proper amount of charge is determined. In no case will an overshot be permitted. If a boulder is encountered and is removed by blasting, a bulkhead will be formed immediately after removal of the boulder and the area filled with grout before proceeding with the tunneling operations.
13. If there is any indication of a vertical split in the rock formation, or any indication of settlement of the roadway during the tunneling operations, all operations shall be stopped and the NCDOT engineer shall be notified immediately. If the vertical split is not determined to be of too great a magnitude or too close to the pavement, the split shall be filled with grout at a pressure specified by the NCDOT engineer, allowed to set and tunneling operations may be continued. If it is determined that the vertical split is too great of a magnitude or too close to the pavement, the NCDOT engineer shall advise as to the proper method to be used to correct the vertical split. If settlement of the roadway occurs, the NCDOT engineer will advise the Owner and his Contractor as to the proper steps to be taken to correct this settlement.
14. The space outside the liner plates is to be held to a minimum and shall be grouted with a minimum of 1:3 portland cement grout at not less than 50 psi pressure to completely fill all voids created by excavation for and installation of the liner plates through 2 inch openings on 4 foot 6 inch centers provided in the top of the steel liner plates. This grouting operation will be done with installation of the liner plates so that at no time will the grouting operation be further than 25 feet from the front end or head of tunnel construction. At the end of each day's operations, the space outside the liner plates is to be grouted whether 25 feet or less. Grout will be forced into each grout hole. If the grout from one hole should flow along the liner plate so as to plug the next grout hole, the plugged hole will be opened by punching through the grout layer so that each hole may be used for grouting. The grouting operation will be continued at each hole until all spaces outside the liner plates are filled and no grout will flow.
15. The entire operation shall be subject to inspection by the NCDOT engineer or inspector on the project, who shall have full authority to stop work if, in his opinion, it shall cause any damage to the roadway. All materials shall be subject to inspection by the NCDOT.
16. The method of shoring the pits for tunneling operations shall be approved by the Design Services Unit of the NCDOT prior to any work beginning at the site.
17. All shoring material shall be removed in such a manner so as to avoid collapse and to allow proper backfill. The backfill shall be placed in accordance with the NCDOT specifications.

18. After installation of the tunnel liner plate, a paved invert shall be poured using 2,500 psi grout. The invert shall be poured at grade to facilitate installation of the carrier pipe on line and grade shown on the contract drawings. Support blocks shall be used to restrain lateral movement of the carrier pipe. After the alignment, grade and elevations of the carrier pipe have been checked and approved by the Engineer, both ends of the tunnel shall be bricked up and the void space between the carrier pipe and the tunnel liner shall be filled with 2,500 psi grout.
19. The Contractor shall make all necessary repairs or he shall reimburse the Owner, and subsequently, the Owner shall reimburse the NCDOT for repair costs, should any settlement or damage result to the roadway within a one year period after completion of the tunneling operation.

End of Section



**SCHEDULE C-11-17**  
**EFFECTIVE 07-01-10**  
Replaces Rates Dates 07-10-08

## **CITY OF SHELBY**

### **WATER SERVICE (CITY)**

#### **AVAILABILITY**

Metered water service will be provided to consumers within the City limits of Shelby for residential, commercial and industrial use, where access to existing facilities is feasible.

#### **RATE**

Customer Charge Per Consumption Unit    \$8.39 per billing period

\$2.27 per 1000 gals. for first            15,000 gals. used per billing period

\$1.70 per 1000 gals. for the next        9,985,000 gals. used per billing period

\$1.41 per 1000 gals. for all over        10,000,000 gals. used per billing period

The minimum bill is the Customer Charge.

#### **CONDITIONS**

New service generally requires a separate water meter to serve each dwelling, apartment, store, shop, office, warehouse, storage building or other such consumption unit.

In existing service where one meter serves more than one consumption unit, each unit will be considered to carry one customer charge per billing period, regardless of individual or aggregate consumption.