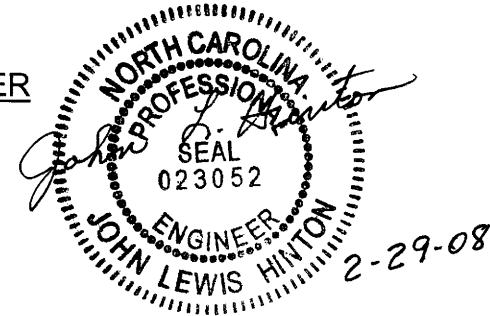


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Project: U-4733 County: NEW HANOVER

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 July 2006, and the City of Wilmington's specifications, and the following provisions. If any conflicts arise between specifications the Engineer shall be contacted so they can be resolved.

The Contractor shall be responsible for field verifying location, size, type and elevation of all underground utilities, as well as reconnecting any water and/or sanitary sewer services disturbed during construction, even if they are not shown on the plans. The water line shall be installed as to provide a minimum of 3 feet of coverage above the top of pipe from finished grade, unless shown differently on plans. The Contractor shall verify that all new water and sanitary sewer lines have ten (10') feet horizontal clearance between each other.

The Contractor is herein forewarned as to the possibility of having to vary the depth of the pipeline installation 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, storm drainage are shown on the plans or not).

All gate valves 12" and smaller for the City shall be resilient-seat type valves conforming to ANSI/AWWA C-509. The direction of rotation of the handwheel or wrench nut to open the valve shall be to the left (counterclockwise) and be so marked.

Double strap tapping saddles shall be installed for all new/relocated service lines 2" and smaller in diameter. If any meters larger than 2" are discovered, please contact the City of Wilmington (Meter Maintenance Manager) Keith Gurganus at (910) 470-3780.

A single strand tracer wire shall be used on all water lines with #10 gage coated copper wire. All water lines and sewer lines shall have its location marked by using a detectable marking tape, installed 18" to 24" below finished grade. Such tape shall be approved by the Engineer.

All valve box covers and sanitary sewer manhole covers shall be cast to indicate "WATER" or "SEWER", as the case may be with the appropriate utility owner's special cover verbiage cast into the cover.

The Contractor shall be required to videotape all new sewer mains and sewer laterals. Additionally, all new manholes shall be videotaped by panning the inside. The Contractor shall provide a copy for the City and the Engineer to review. The costs for videotaping shall be incidental to the cost of the installation of the proposed sewer pipe.

The boring and jacking (trenchless installation) located at Independence Boulevard shall be constructed during weekends to allow for minimal disruption to business.

The Contractor shall submit his proposed method of anchoring to the Engineer for review and approval of restraining all pipe, pipe bends, valves and other related appurtenances. Anchoring will be the responsibility of the Contractor. Connecting to existing water mains may alter such lines to the extent that these pipelines with existing pipe bends, valves and other related appurtenances may also require reaction blocking; this is also the responsibility of the Contractor.

Water lines and Valves:

The existing water lines belong to the City of Wilmington. The Contractor shall provide access for the Owner's representatives to all phases of construction. Notify the Owners two weeks before commencement of any work and one week before service interruption. Interruption of water service on main lines shall be limited to a maximum of four (4) hours. Individual service connection interruptions shall be scheduled between regular working hours. Water services shall be restored within the same working day.

All valves shall be Resilient-Seat Gate Valves or Butterfly Valves unless otherwise indicated herein. All valves shall meet the specification as shown in the NCDOT Standard Specifications for Roads and Structures. All service lines shall be PE (Polyethylene), SDR 9.

Disinfecting and pressure testing shall be done in accordance with the current City of Wilmington's requirements and specifications.

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.

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 and be approved by Owners. The tests shall be repeated until test results are satisfactory.

All existing fire hydrants shall be removed and stockpiled on the project site. The Contractor shall contact the City of Wilmington, Gil DuBois (910) 341-7885 and let him know where the fire hydrants are stockpiled on the project site. The City shall furnish new fire hydrants at all locations to the Contractor in a timely manner.

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 150 psi.

The pressure test and leakage test may be performed concurrently.

All valves on the lines being sterilized shall be opened and closed several times during the chlorinating period. The pipeline shall then be flushed with clean water until the residual chlorine is reduced to less than 1.0 ppm or at the same level as in the existing water mains. Samples of water shall be taken at representative points along the pipeline by a certified testing laboratory and tested for chlorine residual and coliform bacteria.

The Contractor shall use both concrete thrust blocks and restrained retainer glands for restraining purposes. The payment for using concrete thrust blocks and restrained retainer glands shall be considered incidental to the price of the proposed water line. The Contractor shall also use flare fittings for all service lines and not use compression fittings.

Gravity Sewer:

The existing sewer lines belong to the City of Wilmington. The City shall be notified two weeks in advance before the Contractor begins work and one week in advance of any interruptions of sewer service with ample time to make arrangements. Contractor shall be aware that the sewer lines being relocated are active at this time.

All lines and manholes shall be installed at proper grade, alignment and location. All gravity sewer lines regardless of material will be tested by low pressure air test and/or vacuum test. Services will be installed prior to the test and they will be tested along with the line. After stabilization the pressure will be lowered to 3.5psi and the inspector will determine the time it takes for the pressure to drop to 2.5psi. The allowable time of drop for a 12" diameter line is 1.8min/100ft of pipe. If the pressure remains between 3.5psi and 2.5psi for the test time, the lines are acceptable. If the line does not pass, check the installation of the lines and run the test again. All service laterals shall be water dropped tested and videotaped.

All new manholes shall be coated inside with high build Teneme-Tar 46H-413 or equivalent coating. All manholes shall be tested after assembly and prior to backfilling using a vacuum tester. All lift holes shall be plugged with non-shrink grout. All pipes entering the manhole shall be plugged. All plugs shall be braced to keep plug from being drawn into manhole. The inside of the manhole shall be wet down with a soap and water solution which will visibly indicate areas of leakage after the test is performed. Test head shall be placed on or in the cone section and the seal inflated as per the manufacturer's specifications. A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valve closed, the time it takes for the vacuum to drop to 9 inches shall be measured. The manhole shall pass if the time is greater than the values below:

Manhole Depth	Manhole Diameter		
	48"	60"	72"
10' or less	60sec	75sec	90sec
10' – 15'	75sec	90sec	105sec
Over 15'	90sec	105sec	120sec

If the manhole fails, necessary repairs shall be made using non-shrink grout and recovered with epoxy and cured to manufactures specifications before retesting shall be allowed. Then re-test until manhole is acceptable.

All lines shall be inspected for pipe deflection by pulling a mandrel through the lines. Deflection shall not exceed 5%. Mandrel must be 95% of the diameter of the pipe.

Sewer service shall be maintained at all times and shall not be interrupted. Bypass pumping will be necessary and details for bypass pumping shall be provided to the City for review. Details for pumping shall include primary and backup pumps and some method for continuous mointering them. Bypass pumps shall contain critically silenced enclosures around them due to project being located in a residential area. These enclosures should keep noise and sound levels to a minimum.

II. 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.

Owners and Owner's Requirements:

The existing water and sewer utilities belong to the City of Wilmington. The Contractor shall provide access for the owner's representatives to all phases of construction. The owners shall be notified two weeks prior to commencement of any work and one week prior to service interruption.

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

Contacts:

City of Wilmington-Deputy Director of Public Utilities: Frank Styers
(910) 341-7805

City of Wilmington-Public Utilities Maint. Gil DuBois (910) 341-7885

City of Wilmington-Project Manager: Rick Paarfus (910) 341-7805

1. PVC GRAVITY SEWER PIPE, (C-900), DR 18:

Polyvinyl chloride (PVC) gravity sewer pipe (C-900) shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

PVC pipe shall be of the size, dimension ratio (DR), and pressure rating as noted on the utility plans. The pipe shall be circular in shape with no appreciable distortion and shall conform to ANSI/AWWA C900.

The pipe shall have a gasketed joint used in conjunction with an integral bell which shall be a homogeneous part of the pipe. The joints for PVC Gravity Sewer pipe shall conform to ASTM D3139 for push-on-joint type pipe using flexible elastomeric seals conforming to ASTM F477. The PVC pipe bells, made as an integral part of the PVC pipe, shall conform to ASTM D3139. The pipe joints shall be assembled in accordance with the recommendations of the manufacturer and in accordance with the Specifications.

Polyvinyl chloride (PVC) sewer pipe 4" or larger shall require the use of Ductile Iron Sewer Pipe Fittings as noted elsewhere in these provisions.

PVC pipe shall have its location marked by using a detectable marking tape, installed 457 to 610MM below finished grade. Such tape shall be as approved by the Engineer.

Polyvinyl chloride (PVC) gravity sewer pipe (C-900), installed in accordance with the plans and provisions herein and accepted, will be measured along the pipe from end to end with no deductions for fittings, and paid for at the contract unit price per linear foot for "8" PVC Gravity Sewer Pipe, (C-900), DR 18". Such price and payments will be full compensation for furnishing all labor, equipment,

materials, pipe accessories, PVC fittings, gaskets, detectable marking tape, seals, excavation, backfilling, anchoring, pressure testing, and incidentals necessary to complete the work as required.

2. DUCTILE IRON SEWER PIPE:

Ductile iron sewer 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

Joints for Ductile Iron Gravity Sewer Pipe shall either be mechanical joint or push-on joint in accordance with ANSI A21.11 (AWWA C111).

All push-on joint ductile iron pipe, 24" and smaller, shall be PC 350. The pipe shall be centrifugal cast and shall be made of ductile cast iron 60-42-10 grade . The pipe shall be furnished in nominal 18' to 20' laying lengths. The pipe's exterior shall be carefully bituminous coated in accordance with ANSI/AWWA C104/A21.4. Overspray on the pipe's exterior shall not be allowed. Pipe shall be furnished completely with lubricants and gaskets, per ANSI/AWWA C104/A21.4.

- A. The pipe interior and fittings shall be coated to a nominal dry thickness of 40 mils with an amine cured novalac epoxy lining. The following properties of this lining must be confirmed by certified tests submitted with the proposal from an independent laboratory:
1. When tested to a duration of 30 days, a permeability rating of 0.00 shall be achieved when tested according to ASTM E-96-66, Method A.
 2. The lining material shall have at least 20% by volume a ceramic quartz pigment and a statement from the manufacturer attesting to this fact.
 3. A report showing that after two years, when tested according to Immersion in Acids, Bases, and Deionized Water at temperatures using ASTM-D 714-87, no effect on the lining was indicated.
 4. The manufacturer shall provide a report stating that the results in the ASTM B-117 Salt Spray on a scribed panel equal 0.0 undercutting after two years.
 5. The manufacturer shall provide a report stating that the results in ASTM G-95 Cathodic Disbondment 1.5 volts @ 77 F equal no more than ¼" undercutting after 30 days.
- B. Application shall be in accordance with the lining manufacturer's recommendations. This shall include a qualified applicator, surface preparations, actual lining procedure, coating of bell sockets and spigot ends, and handling after coating including touch-up and repair. After field cuts, the pipe manufacturer shall provide compound to repair the linings.
- C. Inspection using a magnetic film thickness gauge in accordance with SSPC-PA-2 and non-destructive 2500 volt test, respectively, shall be made for thickness and pinholes.

- D. The pipe supplier must certify that the lining material and application meets the requirements of these specifications and the lining manufacturer.

Ductile iron sewer pipe, installed in accordance with the plans and provisions herein and accepted, will be measured along the pipe from centerline of manhole to centerline of manhole and paid for at the contract unit price per linear foot for "8" DI Sewer Pipe, PC 350". Such prices and payments will be full compensation for all materials, excavation, labor, leakage tests, fittings, saddles, backfilling, and incidentals necessary to complete the work as required.

3. POLYVINYL CHLORIDE (PVC) WATER PIPE (C-905):

Polyvinyl chloride (PVC) 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.

PVC pipe shall be of the size, dimension ratio (DR) pressure rating as noted on the utility plans. PVC pipe shall conform to ANSI/AWWA C-905 and shall have a cast iron outside dimension base. The pipe, when used for conveying drinking water, shall meet the requirements of the National Sanitation Foundation Seal of Approval.

The pipe shall have a gasketed joint used in conjunction with an integral bell which shall be a homogeneous part of the pipe. The joints shall conform to ASTM D3139 for push-on-joint type pipe using flexible elastomeric seals conforming to ASTM F477. The pipe joints shall be assembled in accordance with the recommendations of the manufacturer and in accordance with the specifications.

Polyvinyl chloride (PVC) water pipe 4" or larger shall require the use of Ductile Iron Water Pipe Fittings as noted elsewhere in these provisions.

Polyvinyl chloride (PVC) water pipe (C-905), installed in accordance with the plans and provisions herein and accepted, will be measured along the pipe from end to end, with no deductions for fittings or valves, and paid for at the contract unit price per linear foot for "16" PVC Water Pipe (C-905), DR 18". Such prices and payments will be full compensation for furnishing all labor, equipment, material, pipe accessories, gaskets, detectable marking tape, seals, excavation, backfilling, anchoring, pressure testing, sterilization, and incidentals necessary to complete the work as required.

4. RELOCATE SANITARY SEWER CLEANOUT:

Relocated sanitary sewer cleanouts shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer. Cleanouts shall have screw type PVC covers installed flush with the ground as approved by the Engineer.

PVC sewer pipe and fittings shall conform to the requirements of ASTM D2241 & ASTM D3139 SDR 21.

The existing sanitary sewer cleanout shall be cut, plugged, and removed just above the existing wye.

Relocated sanitary sewer cleanouts, installed in accordance with the plans and utility provisions herein and accepted, will be measured and paid for at the contract unit price per each for "Relocate Sanitary Sewer Cleanout". Such price and payment will be full compensation for all labor, excavation, Class B concrete, pipe, water tight plugs, sewer pipe fittings, backfilling, and incidentals necessary to complete the work as required.

City of WILMINGTON
Wilmington Water Resources Department
Approved Products Manufacturers
Water System Relocations for
The City of Wilmington
Water System

1. **Resilient Seat Gate Valves (6" through 12")**
200 PSI Rating, AWWA C-500 and AWWA C-509:
 - Mueller 2360 Series
 - Or an approved equal

2. **Butterfly Valves (16")**
 - Mueller
 - Or an approved equal

3. **Fire Hydrants:**
 - Mueller
 - Or an approved equal

4. **Corporation Stops:**
 - Mueller
 - Or an approved equal

5. **PE Service Pipe:**
 - Polyethylene Pipe (PE) Water Tubing SDR 9 (CTS)
 - Or an approved equal

6. **Water Meter (in Vault):**
 - Hersey
 - Or an approved equal



Project: U-4733 County: NEW HANOVER

PROJECT SPECIAL PROVISIONS

Utilities by Others

GENERAL:

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

- A) **Progress Energy - Power (Distribution)**
J.B. Jones (919) 206-1966
- B) **A.T. & T. – Telephone**
Lance Laliberte (910) 620-3901
- C) **BTI Delta Com. Telephone – Telephone**
Brian Whitford (910) 988-5794
- D) **Piedmont Natural Gas - Gas**
Joyce Barnes (910) 251-2805
- E) **Time Warner Cable - CATV**
George Courey (910) 332-7828

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. All utility work listed herein will be done by the utility owner. All utilities are shown on the plans from the best available information.

The Contractor's attention is directed to Article 105-8 of the NCDOT "Standard Specifications For Roads and Structures" dated January 2006.

Utilities Requiring Adjustments:

- A) Progress Energy - Power (Distribution)
 1. All Progress Energy work within the limits of this project shall be adjusted by August 1, 2008. See Utilities By Others Plans for details.
- B) A.T. & T. – Telephone
 1. All A.T. & T. Telephone line work located within the limits of this project shall be adjusted by August 1, 2008. See Utilities By Others Plans for details.
- C) BTI Delta Com Telephone - Telephone
 1. All BTI Delta Com Telephone lines located work within the limits of this project shall remain in place and be adjusted if necessary. The Contractor shall give BTI 21 (twenty one) days prior notice before beginning work and 7 (seven) days to complete construction at each location in conflict. See Utilities By Others Plans for details.

D) Piedmont Natural Gas - Natural Gas

1. All Piedmont Natural Gas buried gas lines located within the limits of this project shall remain in place and be adjusted at the following locations.

Station 19+15 Rt. Line -L-

Station 22+90 Rt. Line -L-

Station 25+70 Lt. Line -L-

Station 26+00 Rt. & Lt. Line -L-

Station 27+60 Rt. Line -L-

Station 29+65 Lt. Line -L- (Wilshire Blvd.)

Station 29+95 Lt. Line -L- (Wilshire Blvd.)

The Contractor shall give PNG 30 (thirty) days prior notice before beginning work and 2 (two) days to complete construction at each location in conflict. See Utilities By Others Plans for details.

E) Time Warner Cable - CATV

1. All Time Warner CATV work within the limits of this project shall be adjusted by the date of availability. See Utilities By Others Plans for details.