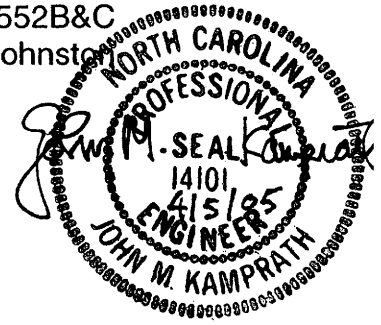


PROJECT SPECIAL PROVISIONS

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 details as shown on the plans, as outlined in the following provisions, or as directed by the Engineer.

Water mains shall be laid at least 3.0m laterally from existing or proposed sanitary sewers. Water mains shall have a minimum of 0.46m vertical separation over sewer mains. Where this separation is not possible or the water main is laid under the sewer main, both the water and sewer pipe shall be ductile iron pipe. Center pipe spans at point of intersection in order to have 3.0m from water line joint to point of intersection.

The Contractor is herein forewarned as to the possibility of having to vary the depth of 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, and storm drainage are shown on the plans or not). The normal minimum cover for water mains and sanitary sewer force mains shall be 0.91m for pipe up to 200mm in diameter and 1.06m for pipe 250mm and greater in diameter

The Contractor shall submit his proposed method of anchoring to the Engineer for review and approval prior to any applicable water main construction. Such approval will not relieve the Contractor of his responsibility of properly anchoring the water mains.

Owner and Owner's Requirements:

The existing water and sewer utilities are owned by Johnston County. 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. Only authorized personnel of the owner shall operate valves in the existing distribution or collection system.

Electronic Marker Balls:

Electronic location markers will be required with Ductile Iron pipe, PVC pipe or HDPE pipe main installations. These markers shall consist of 100mm marker balls having a passive device capable of reflecting a specifically designated

repulse frequency, unique to the utility being installed. The marker ball will contain a passive-tuned antenna, molded inside a plastic disk, which is free-floating inside a water resistant polyethylene shell. The shell shall be impervious to minerals, chemicals and temperature extremes. Marker balls shall be color coded in accordance with the American Public Works Association's utility location and coordinating council standards. Marker balls shall be installed approximately 150mm over the point to be located, and a minimum of 150mm from any metal objects. However, burial shall not be less than 450mm nor more than 600mm. Marker balls shall be installed concurrently with water or sewer force mains. Marker balls to be hand backfilled to 300 millimeters above marker ball as to prevent movement or damage. Marker balls shall be installed at a minimum of one every 30.5 linear meters directly over main line; at bends 22 ½ degrees and larger; at capped or plugged ends if no blow-off assembly; and at tees over main line.

Valve Markers:

Valve markers shall be as shown on the construction detail sheets and be of concrete, reinforced as shown. Concrete shall be of a mix design to produce a 20.68 Mpa compressive strength at 28 days. They shall be marked with recessed letters, either MV, AV, or BO. In subdivisions or residential areas the valve markers must be less than or equal to 150 millimeters above grade.

Encasement Markers:

Steel encasement pipes installed for future service as shown on the plans shall be marked with wooden or concrete encasement markers as shown on the construction details.

Ductile Iron Force Main Sewer Pipe Coating:

All Ductile Iron Pipe and Ductile Iron fittings to be used for sanitary sewer force main shall have the interior coated with ceramic epoxy to produce a minimum dry film thickness of 40 mils. Calcium aluminate mortar lining of the ductile iron pipe and fittings shall also be acceptable.

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.

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 metric 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. 500MM DUCTILE IRON RESTRAINED JOINT WATER PIPE, PC 2.41 Mpa, BY TRENCHLESS METHOD

Ductile iron restrained joint 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

Ductile Iron Restrained Joint Water Pipe shall be of the thickness class or pressure rating shown on the utility plans and shall conform to ANSI A21.51 (AWWA C151). All joints for such pipe shall be in accordance with ANSI A21.11 (AWWA C111). Pipe thickness shall be in accordance with ANSI A21.50 (AWWA C150) and based on laying conditions and internal pressures noted on the plans.

Cement mortar lining and seal coating for pipe shall be in accordance with ANSI A21.4 (AWWA C104). Bituminous outside coating shall be in accordance with ANSI A21.51 (AWWA C151).

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

Ductile iron water line shall be flexible restrained joint, which allows lateral but not longitudinal movement of the pipe at the mechanical joint. Ductile iron

restrained joint pipe shall be of the pressure class noted on the utility construction plans.

After installation, the water pipe string shall be tested under the stream to a hydrostatic pressure of 1.38 MPa in accordance with the testing procedures outlined in Section 1520 of the Standard Specifications.

Ductile iron restrained joint water pipe shall be installed beneath the stream by boring or drilling a small pilot hole along a parabolic arc beneath the stream as indicated on the water line profile shown on the utility construction plans. A minimum cover of one meter shall be maintained over the water pipe at all times. The profile referenced on the plans is from the best available information. The pilot hole shall be enlarged by use of a reamer or reamers of the desired diameter. When the bored hole is of the diameter recommended by the pipe manufacturer for the diameter of water line shown on the utility construction plans, the Contractor shall pull the pipe string through the hole by the drill string. The end of the pipe shall be capped 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 damage.

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 shall re-circulate through the use of a solid control system to remove spoil from drilling fluid surface returns. After cleaning, return the drilling fluid to the system.

Ductile iron restrained joint water pipe, 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 couplings, and paid for at the contract unit price per linear meter for “____mm DI Restrained Joint Water Pipe, PC _____ MPa by Trenchless Method”. Such prices and payments will be full compensation for furnishing all labor, equipment, material, couplings and fittings, excavation, installation, chlorination, testing, backfilling, and incidentals necessary to complete the work as required.

3. 20MM PE WATER TUBING, SDR 9, 1.38 MPA WP

All meters installed to serve customers of Johnston County as identified in the construction plans shall be connected to the water mains with standard polyethylene water tubing manufactured from high density molecular polyethylene resin designated PE 3408. Tubing shall be manufactured according to ASTM D2737 with outside diameter equal to copper tubing (CTS). Tubing shall have a wall thickness as computed by SDR 9. Pressure rating shall be 1.38 MPA minimum.

The quantity of PE water tubing to be installed as provided above will be paid for at the contract unit price per meter for "20 MM PE Water Tubing, SDR 9, 1.38 MPA WP." Such prices and payments shall be full compensation for all materials, including but not limited to, tubing, labor, equipment, compaction and incidentals necessary to complete the work as required.

4. _____MM BUTTERFLY VALVE & VALVE BOX

Butterfly valves and valve boxes shall be installed as shown on the plans, as required by the provisions herein, and/or as directed by the Engineer.

Butterfly valves shall conform to ANSI/AWWA C504 for Class 150B valves with O-ring shaft seals. Such valves shall have mechanical joint ends, an extension stem with a manual actuator with 50mm operating nut and shall be designed for buried installation. Butterfly valves shall be shop painted for buried service in accordance with AWWA C504.

The valve shall be installed with an approved valve box, normally flush with the ground or pavement. Valve boxes shall be of the screw or slip type, with a base to fit the valve yoke and a removable plug cap with the word "WATER" cast therein. Valve boxes shall be cast iron conforming to ASTM A48, Class 30, unless otherwise shown on the utility plans and/or as directed by the Engineer.

Prior to installation of butterfly valves, the manufacturer shall submit certified drawings showing the principal dimensions, general construction, and materials used for all parts of the valves and operators. The valves shall be furnished in accordance with these drawings after they have been approved by the Engineer. In addition to the certified drawings, the manufacturer must submit written certification that the valves furnished comply with all applicable provisions of AWWA C504. Each valve must be identifiable through a separate serial number attached to the valve.

The quantity of butterfly valves and valve boxes, 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 "_____MM Butterfly Valve & Valve Box". Such prices and payments will be full compensation for all materials, labor, installation, excavation and backfill, testing and sterilization, reinforced concrete pad, mortar and incidentals necessary to complete the work as required.

5. _____MM AIR RELEASE VALVE & MANHOLE

Combination 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 combination 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 combination 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 water or 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 1.38 MPa.

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 1.38 MPa.

The 1500mm-diameter manhole to house the air release valve shall be pre-cast 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 each for "_____MM Air Release Valve 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, 1500mm diameter manhole construction, ring and cover, and incidentals necessary to complete the work as required.

6. 50MM BLOW OFF ASSEMBLY

Install blow off assemblies in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

Blow off assemblies shall include mechanical joint plug with 50mm tap, 50mm gate valve, 50mm piping, valve boxes, concrete blocking, concrete pads for valve boxes, and the necessary pipe fittings and adapters.

Gate valves shall be of all bronze construction with iron pipe thread, screw ends, wedge gates and non-rising stem. Gate valve shall open by turning to the right or clockwise using a tee head operating nut and shall be in accordance with the most recent edition of AWWA C-500 and such ASTM designations as apply with reference to chemical requirements as set forth in Table I of ASTM B-62. The working pressure of all valves shall be 1.38 MPa.

Valve boxes shall be of the screw or slip type, with a base to fit the valve yoke and a removable plug cap with the word "WATER" cast therein. Valve boxes shall be cast iron conforming to ASTM A48, Class 30, unless otherwise shown on the utility plans and/or as directed by the Engineer.

Blow off assemblies 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 "50MM Blow Off Assembly". Such prices and payments shall be full compensation for all materials, including mechanical joint plug with tap, gate valve, piping, valve boxes, concrete blocking, concrete pads for valve boxes, and the necessary pipe fittings and adapters, labor, equipment, excavation, installation, sterilization, pressure testing, valve box installation with the necessary extension pieces, backfilling, and incidentals necessary to complete the work as required.

7. REMOVE EXISTING WATER METER

The existing water meters shall be removed at the connection to the existing service piping and stockpiled in an area accessible by truck or as directed by the Engineer.

After the water meters are removed and stockpiled, the Contractor shall contact the owner and arrange for maintenance forces to receive and remove the water meters from the jobsite.

The quantity of water meters removed, stockpiled, and accepted, will be measured and paid for at the contract unit price per each for "Remove Existing Water Meter". Such price and payment will be full compensation for all labor, excavation, removal, stockpiling, and incidentals necessary to complete the work as required.

8. REMOVE EXISTING FIRE HYDRANT

The existing fire hydrants shall be removed at the connection to the existing valve and stockpiled in an area accessible by truck or as directed by the Engineer.

After the fire hydrants are removed and stockpiled, the Contractor shall contact the owner and arrange for maintenance forces to receive and remove the fire hydrants from the jobsite.

The quantity of fire hydrants removed, stockpiled, and accepted, will be measured and paid for at the contract unit price per each for "Remove Existing Fire Hydrant". Such price and payment will be full compensation for all labor, excavation, removal, stockpiling, and incidentals necessary to complete the work as required.

9. ____MM HDPE PRESSURE PIPE, DR 9, 1.38 MPa WP

High Density Polyethylene (HDPE) Pressure Pipe to be installed by trenchless method in the location shown on the plans. Install water pipe or force main sewer pipe in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

HDPE Pressure Pipe to be DR 9, 1.38 MPa, manufactured in accordance with ANSI /AWWA C906-90. HDPE Pipe materials shall be either PE 2406, PE 3406 or PE 3408 depending upon the required pressure class and dimension ratio (SDR) specified on the plans

Drilling fluid to be bentonite slurry. Use admixtures suitable to the site conditions.

HDPE pressure pipe to be fused and tested prior to placement. Join pipe segments by cutting the 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 manufacturers listing of fusion parameters validated by appropriate testing and the parameters of the

contractor's fusion system shall be submitted to the Resident Engineer prior to fusing of segments of HDPE pressure pipe into the pipe string.

HDPE pressure pipe string to be tested to a hydrostatic pressure of 1.38 MPa in accordance with testing procedure outlined in section 1510 of the standard specifications prior to being placed.

HDPE pressure pipe to be installed by boring or drilling a small pilot hole along a parabolic arc beneath the installation location. 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 the HDPE pressure pipe, the contractor will pull the pipe string through the hole by the drill string. Cap the pipe string during the pulling operation. Pulling operation to incorporate a swivel connection to minimize torsional stress imposed upon the pipe string. Fully support the pipe string before and during pull back so that the pipe string will move freely without damage.

Contractor may elect to conduct reaming and pulling of the pipe string as one operation at the discretion of the engineer.

Drilling fluid to be re-circulated through use of a solids control system to remove spoil from drilling fluid surface returns. After cleaning, return the drilling fluid surface returns to the active system.

HDPE Pressure Pipe, 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 couplings, and paid for at the contract unit price per linear meter for "_____MM HDPE _____ Pipe, DR 9, 1.38 MPa WP". Such prices and payments will be full compensation for furnishing all labor, equipment, material, couplings, mechanical joint adapters and fittings, excavation, installation, testing, backfilling, 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) Progress Energy – Power (Distribution)
- B) Sprint Carolina Telephone & Telegraph – Telephone
- C) Time Warner Telecommunications - CATV
- D) ITC Telecommunications - Telephone

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 Standard Specifications.

Utilities Requiring Adjustment:

A) Progress Energy – Power (Distribution)

1. See Utilities By Others Plans for Details.

NOTE: Temporary pole line will be installed along proposed detour at -Y7- (Corbett Road) prior to the date of availability. Permanent facilities will be installed after completion of bridge work. Contractor must allow Progress Energy two (2) weeks to perform work.

Temporary pole line crossing -L- at Sta. 98+20 will be installed prior to the date of availability. Permanent facilities will be installed after completion of bridge work. Contractor must allow Progress Energy two (2) weeks to perform work.

Progress Energy will complete all relocation work and remove existing facilities by September 1, 2005.

B) Sprint Carolina Telephone & Telegraph – Telephone

1. See Utilities By Others Plans for Details.

NOTE: Temporary facilities to be attached to power poles along –Y7- (Corbett Road) prior to the date of availability. Permanent facilities will be installed after completion of bridge work and rough grading in areas where Sprint will install buried facilities. Contractor will give Sprint two (2) weeks notice and four (4) weeks to install permanent facilities and remove temporary facilities.

Sprint will attach to temporary power line crossing –L- at Sta. 98+20 prior to the date of availability. Permanent facilities will be installed after completion of bridge work and rough grading for relocated –Y11- (Ranch Road). Contractor will give Sprint two (2) weeks notice and four (4) weeks to install permanent facilities and remove temporary facilities.

Sprint will complete all relocation work and remove existing aerial facilities by March 30, 2006 in the area of the proposed interchange. The existing buried facilities in the vicinity of the proposed –Flyover- bridge can be adjusted temporarily if necessary.

C) Time Warner Telecommunications – CATV

1. See Utilities By Others Plans for Details.

NOTE: Temporary facilities to be attached to power poles along –Y7- (Corbett Road) prior to the date of availability. Permanent facilities will be installed after completion of bridge work and rough grading in areas where Time Warner will install buried facilities. Contractor must allow Time Warner one (1) week to perform work.

Time Warner will complete all relocation work and remove existing facilities by October 1, 2005.

D) ITC Telecommunications – Telephone

1. See Utilities By Others Plans for Details.

NOTE: Existing buried fiber optic cable to remain in place except at –Flyover- bridge. Buried cable in conduit to be adjusted at this location during construction.