



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 July 2006 and the following provisions.

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 drains are shown on the plans or not).

On new or relocated force main sewers and water lines, and tie in sections of existing force main sewers and water lines, the method of anchoring pipe bends, valves, and related appurtenances will be the responsibility of the Contractor. Tying in to existing force main sewers and water lines may alter such lines to the extent that these pipelines with existing pipe bends, valves and related appurtenances may also require reaction backing; this work shall also be the responsibility of the Contractor.

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

Owner and Owner's Requirements:

The existing water lines belong to the Town of Morrisville. The contact person for the Town of Morrisville is Mr. Blake Mills, PE, Town Engineer. Mr. Mills can be reached by telephone at (919) 463-6191. 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 Contractor shall contact the Town of Morrisville prior to relocating any water services within the limits of this project and request the Town of Morrisville to provide size and location of the services.

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. Cross connection and blowoff piping shall be 2 inches in diameter for mains 8 inches in diameter and smaller, and 4 inches in diameter for mains greater than 8 inches but less than 16 inches in diameter. 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.

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 the Contractor in approved containers and submitted to a certified testing laboratory for bacterial and chlorine content. The Contractor will provide written test results to the Town of Morrisville within 24 hours after completion of the bacterial and chlorine tests.

The Town of Morrisville will, at their option, provide new fire hydrants as replacements for "Relocated Fire Hydrant(s)" shown on the Utility Construction plans.

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.

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.

NOTE: The Contractor is advised that extreme caution must be exercised when working around the existing gravity sanitary sewer located near the reinforced concrete box culvert at approximate Station 35+50 -L-. The existing gravity line shall be bedded to the top of the pipe before construction of the culvert begins. The existing sanitary sewer must stay in service during the life of the project.

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. RELOCATE EXISTING WATER METER:

All existing water meters that are to be permanently relocated shall be relocated as shown on the utility construction plans or as directed by the Engineer.

Relocation of existing water meters shall consist of removing the existing water meter and associated piping, to include the existing vault or meter box/vault, and reinstalling the water meter at the new location shown on the Utility Construction Plans. The relocated water meter shall be installed in a new meter box, and connected to new piping from the water main. The new piping shall include necessary fittings, corporation stop (if required), and associated service piping (PVC or copper), all of which will be paid for elsewhere in the contract.

The quantity of water meters relocated and accepted will be measured and paid for at the contract unit price each for "Relocate Existing Water Meter". Such price and payment will be full compensation for all labor and materials, new box/vault, excavation, removal and relocation of the assembly, removal and disposal of the existing box/vault, backfilling, and incidentals necessary to complete the work as required.

2. RELOCATE EXISTING FIRE HYDRANT:

All existing fire hydrants that are impacted by construction and are to be permanently relocated, shall be relocated as shown on the utility construction plans or as directed by the Engineer.

Where necessary, the hydrant shoe shall be removed and replaced with the appropriate type to connect the relocated hydrant to the new pipe. Hydrant extension pieces shall be furnished and installed or removed to provide the proper bury depth of the pipe and the hydrant. New piping shall include

necessary fittings (if required), restraint and associated appurtenances, all of which will be paid for elsewhere in the contract. The owner shall have the option of providing a new or refurbished hydrant for the contractor to install and take possession of the existing hydrant.

The quantity of existing fire hydrants to be relocated and accepted will be measured and paid for at the contract unit price each for "Relocate Existing Fire Hydrant". Such price and payment will be full compensation for all labor and materials, excavation, removal and relocation of the existing hydrant, backfilling, and incidentals necessary to complete the work as required.

3. DOUBLE DETECTOR CHECK VALVE ASSEMBLY & VAULT:

Double detector check valve assembly and vault shall be installed in accordance with the applicable utility provision herein, as shown in the utility plans, and/or as directed by the Engineer.

Double detector check valve assembly shall consist of the following: flange adapters, 2-8" Gate Valves, 1-8" double detector check valve with bypass assembly and necessary fittings as noted on the details, utility construction plan sheet UC-5..

Flange adapters shall conform to ASTM A536, Grade 65-45-12, and the flange joint ends shall conform to ANSI B16.1, Class 125.

Gate valves shall conform to ANSI/AWWA C500 for iron body, bronze mounted, double disc, parallel seat type valves. Gate valves shall have outside screw and yoke with a hand wheel and shall open counterclockwise. Gate valves shall have flanged joint ends conforming to ANSI B16.1, Class 125.

Double detector check valve shall conform to AWWA C506 for iron body, flange joints conforming to ANSI B16.1 Class 125, bronze seats with two independent spring load pop-type check valves assemblies mounted in a common body.

The size and general configuration of the double detector check valve shall match the existing assembly and is considered a "replacement in kind".

Galvanized steel pipe shall conform to the requirements of ASTM A53. The pipe shall be Schedule 40, with wall thickness specified for size in Table X2.2 of ASTM A53, and shall be furnished butt-welded. Both ends of the pipe shall be marked as specified in ASTM A53. This type f pipe shall be assembled with galvanized malleable iron fittings made from cupola malleable iron conforming to

ASTM A197. Threads for galvanized pipe and female threads on fittings shall conform to American Standard Taper Pipe Threads, ANSI B2.1.

Ball valves shall be all bronze construction, with tee head operator and having a removable disc. The valve shall be equipped with testcock, packing nut, gland, and packing material. Ball valves shall be of approved materials conforming to ASTM Specifications and shall also meet the approval of the Engineer. The turn required to travel from fully closed to fully open on the ball valves shall be a quarter turn.

Reduce pressure backflow prevention assembly shall be all bronze construction consisting of testcocks, two independent spring loaded pop-type check valve assemblies, and a relief valve. The relief valve is a diaphragm actuated, spring loaded, double seat valve assembly.

Positive displacement meters consist of three basic components: maincase, measuring chamber, and seal register. Maincase, measuring chambers, and bottom plate shall be of bronze construction with externally thread spuds. Seal register shall be air tight sealed with tamperproof magnetic drive register that records the oscillations of the piston. Pistons shall be vulcanized hard rubber. The register shall have a straight reading dial and full sweep test circle, registering in liter.

The vault shall be precast concrete and shall meet the requirements of Section 1077 of the Standard Specifications. The vault shall be provided with a double leaf access door. The access door shall be aluminum with anchor flange, drain channels, and neoprene gasket, the door leaf shall be ¼" thick diamond plate, open to 90° and lock automatically in this position, and the door shall be equipped with recessed locking capability. The vault shall be installed above grade as noted on the referenced detail, utility construction plan sheet UC-5.

The quantity of double detector check valve assemblies and vaults, furnished and 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 "___" Double Detector Check Valve Assembly & Vault". Such prices and payments will be full compensation for all materials, labor, installation, excavation, backfilling, and incidentals necessary to complete the work required.

4. WATER METER ASSEMBLY & VAULT:

Water meter assemblies and vaults are to be installed at the locations shown on the plans and/or as directed by the Engineer.

Water meter assemblies shall consist of an gate valves, expansion connector, backflow preventers and vaults. The water meter assembly does not include the water meter.

This is a "replacement in kind" of the existing water meter assembly and vault and the configuration and arrangement shall be as noted on the referenced detail shown on utility construction plan sheet UC-5.

Vaults shall be placed with the top flush with finished grade of the project.

Water meters shall be furnished and installed by the Town of Morrisville.

The quantity of new water meter assemblies and vaults installed and accepted will be measured and paid for at the contract unit price per each for "_____ " Water Meter Assembly & Vault". Such price and payment will be full compensation for all labor, materials, equipment, excavation, installing, backfilling, and incidentals

5. GATE VALVE AND VALVE BOX:

Resilient seat gate valves and valve boxes shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

Resilient seat gate valves shall conform to ANSI/AWWA C509. Gate valves shall have non-rising stems with a 2 inch square operating nut and O-ring seals and shall open by turning counter clockwise. Gate valves shall have mechanical joint ends conforming to ANSI/AWWA C111/A21.11 unless otherwise shown on the plans or directed by the Engineer. Gate valves shall have a design working water pressure of 200 PSI.

All gate valves 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 removable plug cap with the word "WATER" cast therein. Valve boxes shall be made of cast iron conforming to ASTM A48, Class 25, unless otherwise shown on the utility plans and/or as directed by the Engineer.

The quantity of resilient seat gate valves and valve boxes, installed in accordance with the plans and provisions herein or as required and accepted, will be measured and paid for at the contract unit price per each for "_____ " Gate Valve and Valve Box, 200# WP". Such prices and payments will be compensation in full for all materials, labor, installation, sterilization, pressure testing, valve box installation with necessary extension pieces, excavation and backfill, and incidentals necessary to complete the work as required.

6. DUCTILE IRON WATER PIPE:

Ductile iron 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 water pipe shall be of the thickness and pressure rating class shown on the utility plans and shall conform to ANSI A21.51 (AWWA C151). Pipe shall be either mechanical joint or push-on-joint and installed with rubber gaskets in accordance with ANSI A21.11 (AWWA C111). All water pipe shall be provided and installed in accordance with Articles 1036 and 1510 of the Standard Specifications.

All ductile iron water 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 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 valves, and paid for at the contract unit price per linear foot for "_____" DI Water Pipe, PC _____. Such prices and payments will be full compensation for all materials, including pipe accessories, gaskets, excavation, labor, anchoring pipe fittings, pressure testing, sterilization, backfilling, and incidentals necessary to complete the work as required.

7. COPPER WATER PIPE:

Copper 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.

Copper water pipe shall be of the type shown on the utility plans, either annealed or tempered to meet the conditions required. This pipe shall conform to ASTM B88 for Type K. This pipe shall be connected by using flared or compression type fittings, and such work shall meet all local plumbing codes where applicable.

Copper 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 deduction for fittings, and paid for at the contract unit price per linear foot for "_____" Copper Water Pipe, Type _____. Such prices and payments will be full compensation for all materials, excavation, labor, fittings, backfilling, and incidentals necessary to complete the work as required.

8. FOUNDATION CONDITIONING MATERIAL:

Foundation conditioning material for utility lines shall be installed in accordance with the requirements of Section 1505-3 of the Standard Specifications, as shown on the utility construction plans, and/or as directed by the Engineer.

Foundation conditioning material shall meet the requirements of Article 1016-3 of the Standard Specifications. Bedding material shall also meet all the applicable requirements of Section 300 of the Standard Specifications.

Foundation conditioning 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 as provided for in Section 300 of the Standard Specification except as "Foundation Conditioning 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 the Standard Specifications, and incidentals necessary to complete the work as required.

9. 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.

10. DUCTILE IRON WATER PIPE FITTINGS:

Ductile iron 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 valves, and paid for at the contract unit price per linear foot for "____" DI Water Pipe, PC ____". Such prices and payments will be full compensation for all materials, including pipe accessories, gaskets, excavation, labor, anchoring pipe fittings, pressure testing, sterilization, backfilling, and incidentals necessary to complete the work as required.

Ductile iron water pipe fittings 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 bends and tees shall be in accordance with applicable requirements of ANSI A21.10 (AWWA C110). Joints for such bends and tees shall be in accordance with ANSI A21.11 (AWWA C111) and be cement mortar lined with a seal coat in accordance with ANSI A21.4 (AWWA C104). All ductile iron pipe fittings shall have a minimum working pressure of 250 PSI.

The quantity of ductile iron water pipe fittings, installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per pound for "Ductile Iron Water Pipe Fittings, 250#. WP". Such price and payment will be full compensation for all materials, including pipe accessories, labor, installation, backfilling, and incidentals necessary to complete the work as required.

PROJECT SPECIAL PROVISIONS
UtilityUTILITIES BY OTHERS

General:

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

- A) Progress Energy - Distribution
- B) Bell South - Telephone
- C) Progress Telecom - Communications
- D) Public Service NC - Gas
- E) Time Warner - CATV
- F) Town of Cary - Communications
- G) ITC/Deltacom - Communications

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 - Distribution

- 1) See Utilities by Others Plans.

NOTE: Progress Energy will complete relocations of their existing power distribution facilities to the new temporary location as shown on the utilities by others plans by the date of availability. After the project is completed Progress Energy will relocate the temporary power distribution facilities to the new permanent location as shown on the utilities by others plans.

- B) Bell South - Telephone

- 1) See Utilities by Others Plans.

NOTE: All buried telephone cables and fiber optic cables will remain in place to be adjusted as necessary. The existing buried fiber optic cable at the proposed

reinforced concrete box culvert will be adjusted prior to construction of the box culvert and will be coordinated with the contractor.

C) Progress Telecom - Communications

- 1) See Utilities by Others Plans

NOTE: Progress Telecom will complete relocations of their existing communications facilities to the new location in joint use with Progress Energy as shown on the utilities by others plans by the date of availability.

D) Public Service NC - Gas

- 1) See Utilities by Others Plans

NOTE: Public Service will complete relocations of their existing buried gas facilities to the new locations as shown on the utilities by others plans by the date of availability with the exception of the installation at the proposed reinforced concrete box culvert which will be coordinated with the contractor.

The contractor shall give Public Service NC a minimum of two weeks notice prior to beginning construction of the proposed reinforced concrete box culvert at Station 37+45 -L- and then allow PSNC one week to cut and cap the existing gas line on each side of the proposed culvert construction site. After completion of the proposed RCBC, the contractor shall give PSNC a minimum of two weeks notice and then allow PSNC one week to reconnect and install the new gas line section over the proposed RCBC prior to the contractor placing backfill over the proposed RCBC in the location of the new section of gas line.

E) Time Warner - CATV

- 1) See Utilities by Others Plans

F) Town of Cary - Communications

- 1) See Utilities by Others Plans

NOTE: Town of Cary will complete relocations of their existing Communications facilities to the new location in joint use with Progress Energy as shown on the utilities by others plans by the date of availability.

G) ITC/Deltacom - Communications

- 1) See Utilities by Others Plans

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