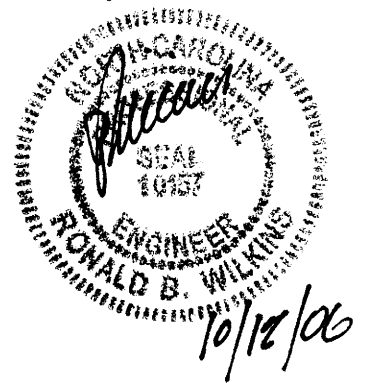


PROJECT SPECIAL PROVISIONS
Utility Construction



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.

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).

On new force main sewers or water lines, and tie in sections of existing force main sewers or 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 or 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 construction. Such approval will not relieve the Contractor of his responsibility of properly anchoring the force main sewers. Concrete thrust blocking and/or thrust collars shall be installed as noted on the utility construction plans and details, and as directed by the Engineer, and shall be incidental to the pipe being anchored.

Owner and Owner's Requirements:

The existing water and sewer lines belong to the Cities of High Point and Archdale. The contact person for the City of High Point is Mr. Joey D. Mooney. Mr. Mooney can be reached by telephone at (336) 883-3466. The contact person for the City of Archdale is Mr. Mike Shuler. Mr. Shuler can be reached by telephone at (336) 431-9141. 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.

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 1.38 MPa (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 50mm (2 inches) in diameter for mains 200mm (8 inches) in diameter and smaller, and 100mm (4 inches) in diameter for mains greater than 200mm (8 inches) but less than 400mm (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 1.38 MPa (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 by the City of High Point representatives points along the pipeline in approved containers and submitted to a certified testing laboratory for bacterial and chlorine content. The City of High Point will provide copies of the certified test reports to the Engineer who will in turn provide certified copies to the Contractor for his records.

Water meters that require relocation shall be relocated as shown on the utility construction plans. Relocation of the water meters shall be paid for as noted in the Standard Specifications. Should backflow prevention devices be present on the existing water meters, relocation of such devices shall be incidental.

The owners shall be notified in advance of any interruptions of water or sewer 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.

NOTE: Water line tie-ins for the relocation along -Y1- (Allegany Road) shall be scheduled after normal business hours for the commercial business entities

along Allegany Road. Shutdown times shall be kept to four hours or less and shall be minimized when possible.

NOTE: The Contractor shall not purchase materials or have material delivered to the project site for the sewer line work at the I-85/US-311 interchange unless specifically authorized by the Engineer. Work on the sewer line relocation at the I-85/US-311 interchange shall not begin until after August 15, 2007 and then only as directed in writing by the Engineer.

Utilities and 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.

Proposed water lines shown on the Utility Construction Plans shall be installed as noted, as close to the right-of-way line as possible. Lines have been shown on the plans as being nominally 1.5 meters inside the right-of-way. This dimension may vary according to field conditions. However, changes from locations noted on the plans must be specifically approved by the Engineer prior to construction.

Existing Fire Hydrants:

Fire hydrants that are to be relocated may be replaced with new or reconditioned fire hydrants provided by the City of High Point. The Contractor shall notify the City of High Point three days prior to relocation of the fire hydrants in order to allow the city sufficient time to provide replacement fire hydrants to the Contractor. After the existing fire hydrant is removed but prior to relocation, the Contractor shall make arrangements for the City of High Point to take possession of the removed hydrant and to provide the replacement hydrant. Should the City of High Point elect not to provide the replacement hydrant in a timely manner, the Contractor may, with prior approval of the engineer, provide a replacement hydrant or relocate the existing hydrant being removed.

Gate Valves and Butterfly Valves:

All butterfly valves and gate valves shall conform to the requirements of ANSI/AWWA C504 and/or ANSI/AWWA C509. The direction of rotation of the handwheel or wrench nut to open the valve shall be counterclockwise or to the left. The direction of operation of the valves shall be clearly indicated in the product submittals provided by the Contractor for the Engineer's review.

Internal Coatings for Sewer Pipe:

All ductile iron sewer pipe shall be provided and installed in accordance with Section 1520 of the Standard Specifications. In addition to the requirements set forth in Section 1520, the interior of the pipe joints shall be coated with ceramic epoxy to produce a minimum dry film thickness of 40 mils. Calcium aluminate mortar lining of the ductile iron pipe shall also be acceptable.

All reinforced concrete sewer pipe shall be provided and installed in accordance with Section 1520 of the Standard Specifications. In addition to the requirements set forth in Section 1520, the interior of the pipe joints shall be coated with a high-build glass-flake epoxy coating specifically designed for use on concrete pipe. The ceramic epoxy coating shall be applied so as to produce a minimum dry film thickness of 40 mils.

All internal coatings to be used on gravity sewer pipe shall be submitted to the Engineer for approval prior to purchasing the pipe. Internal coatings for sewer pipe shall be considered incidental to the sewer pipe and no additional payment shall be made for the coatings.

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 VI". 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

2. FIBERGLASS SEWER PIPE:

Fiberglass sewer pipe shall be furnished and installed as shown on the plans, as described in the provisions herein and in the contract and/or as directed by the Engineer.

Pipe referred to as fiberglass shall be glass fiber reinforced thermosetting resin gravity sewer pipe manufactured in accordance with the latest revision of ASTM D3262. In order to control the outside diameter the pipe shall be manufactured by using a centrifugal casting method.

The composition of the fiberglass sewer pipe shall be as follows:

Polyester resin systems suitable for sanitary sewer applications.
Reinforcing glass fibers of highest quality commercial grade – E glass filaments with binder and sizing compatible with impregnating resins.
Silica sand that is 98% silica with a maximum moisture content of 0.2%.

The corrosion liner shall consist of a minimum thickness of 40 mils (0.04 inches) of non-reinforced polyester resin and sand proportioned and oriented such that the pipe, when tested, shall meet all physical test requirements outlined in the referenced ASTM standard, to include pipe stiffness. The outside pipe coating shall have a minimum thickness of 30 mils (0.03 inches) and shall consist of thermosetting polyester resin and sand.

All joints shall have an exterior coupling consisting of an elastomeric membrane with dual function sealing fins on each side of a center stop with the membrane overwrapped with a filament wound glass fiber reinforcement sleeve. The elastomeric membrane shall meet the requirements of ASTM F477.

The pipe shall be designed for the project burial and service conditions in accordance with Appendix A of AWWA C-950, Glass-Fiber-Reinforced Thermosetting Resin Pressure Pipe where applicable for non-pressure pipe. The design shall be based on a strain analysis, and the corrosion liner shall not be considered as contributing to the overall structural strength of the pipe. The design basis for the pipe shall be as follows:

Service Condition:	Gravity Sanitary Sewer
Nominal Pipe Size:	600 mm (24") Diameter
Pipe Stiffness:	0.5 MPa (72 PSI)
Pressure Class:	1.38 MPa (200 PSI)

Fittings (flanges, elbows, reducers, tees, wyes, laterals and other fittings) when installed, shall be capable of withstanding all operation conditions. Acceptable configurations include contact molded or mitered fiberglass.

The pipe shall be installed in a trench shaped to allow solid bearing of the pipe barrel. All pipe shall be inspected before lowering into the trench to ensure that the outside of the pipe is free of debris and defects. Pipe shall be installed to the

grades shown on the utility construction plans. All trenches shall be kept dry at all times during the laying of the pipe. At the completion of the day's work, the open end of the pipe shall be securely closed to prevent the entrance of water, mud, rodents and vermin.

After the pipe is installed the backfilling shall be performed with approved material. The pipe shall be bedded with #57 stone as noted in the utility construction plan details. Stone shall be placed evenly and carefully around and over the pipe as shown in the details. A geotechnical fabric shall be placed over the top of the bedding stone, and the remainder of the trench backfilled with select material placed in eight-inch layers and compacted. Each layer of backfill material above the geotechnical fabric and #57 stone shall be compacted to a minimum of 95% of the maximum soil density or as directed by the Engineer. When backfilling operations have been completed, all trash, debris, excess soil material shall be immediately removed and disposed of at a location designated by the Engineer.

Fiberglass sewer pipe shall be tested for water tightness by the Contractor in accordance with Section 1520-4 of the Standard Specifications. Allowable infiltration shall not exceed that amount stated in 1520-4(B)(1). Leakage testing shall be conducted as directed by the Engineer.

Leak tests shall be made when the ground water table is above the top of the pipe and after all visible leaks have been stopped. Should the leakage exceed the maximum allowable as noted above, the line will not be accepted until such repairs are made to reduce the infiltration within the required limits.

Air tests will be required in areas where the sewer main is above the ground water table or where the ground water table is low and the infiltration test would not give realistic results.

Fiberglass sanitary sewer pipe shall be furnished and installed in accordance with the utility construction plans and these specifications; accepted, measured and paid for at the contract unit price per linear meter for "_____ mm Fiberglass Sewer Pipe", such price and payments will be compensation in full for all materials, fittings, labor, equipment and incidentals necessary to complete the work.

3. DUCTILE IRON RESTRAINED JOINT SEWER PIPE:

Ductile iron restrained joint 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 restrained joint sewer pipe shall meet the requirements of the latest edition ANSI A21.51/AWWA C151. Nominal pipe laying length shall be twenty feet (six meters). Joints shall be mechanical joint or rubber ring gasket slip joint,

each conforming to ANSI A21.11/AWWA C111. The pipe and fittings shall have an asphaltic exterior coating as specified in AWWA C151. Interior of the pipe joints shall be coated with ceramic epoxy to produce a minimum dry film thickness of 40 mils. Calcium aluminate mortar lining of the ductile iron pipe shall also be acceptable.

All ductile iron restrained joint 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 restrained joint sewer pipe shall be furnished and installed as required and accepted will be measured and paid for at the contract unit price per linear meter (foot) for “____ mm (inch) DIRJ Sewer Pipe, Class ____” or “____ mm (inch) DIRJ Sewer Pipe, PC ____” Such price and payments will be compensation in full for all materials, labor, equipment and incidentals necessary to complete the work.

4. STEEL PILE PIERS:

Steel pile piers shall be furnished and installed as shown on the plans, as described in the provisions herein and in the contract and/or as directed by the Engineer.

Pier locations as shown on the plans shall be considered a guide only, with the final determination made at the time of construction by the Engineer. Pier spacing center to center will be shown on the plans, but the Engineer may adjust all pier locations based on actual field conditions.

Piers will be placed as noted on the utility construction plans unless otherwise directed by the Engineer.

The work covered by this section consists of furnishing and driving piles, as indicated on the plans, the standard details, and as approved by the Engineer, in conformity with the specifications and to the bearing and penetration required.

Installation: General - The pilings shall be driven to obtain a bearing capacity of 10 tons based on the Standard Specifications and to a minimum depth of 3 meters (10 feet) in undisturbed earth below the bottom of the creek channel or existing ground when not adjacent to the creek. Steel pile piers shall be HP310 x 79 (HP12 x 53) unless otherwise noted on the utility construction plan sheets.

Piles Lengths: Full length piles shall be used where practicable and not more than 2 pieces (1 splice) of steel pile will be permitted in making up one full length pile unless approved by the Engineer. Splices, where necessary and approved by the Engineer, shall be made as to maintain the true alignment and position of the pile sections. Both pieces of a spliced pile shall be the same shape.

Splices should develop not less than 100 percent of the bending strength of the pile and not less than 100 percent of the axial load strength of the pile. All welded splices will be of butt weld type with back-up plates welded to the flanges and web of the steel piles. All welding of structural steel in the shop or in the field shall meet the requirements of the AWS and be done by qualified welders. Certification of welders and welds will be required by the Engineer in accordance with the AWS Code.

Painting Steel Piers: Unless otherwise directed, all steel in the piers shall have a coal tar epoxy coating consisting of two coats of coal tar epoxy as specified. All surfaces of the steel to one foot below the disturbed ground shall receive the coating system and shall be thoroughly sand blasted prior to application to remove rust, dirt, grease, and other foreign material and to provide a clean surface to receive the coating. Each coat of paint shall be approved by the Engineer prior to application of the next coat. The total dry film thickness shall be at least 16 mils. Areas with coatings less than 16 mils shall be recoated as required to provide the specified film thickness.

Testing and Inspection: The Engineer will provide inspection and will determine bearing capacity of the driven piles. The Contractor shall submit the required hammer information as specified in the Standard Specifications to the Engineer.

Test piles which are not to be incorporated in the completed structure shall be removed to at least 0.6 meters (2 feet) below the surface of the ground or the stream bed, and the remaining hole backfilled with earth or other suitable material.

Pipe cradle shall be welded to steel plate as noted on the utility construction plan sheet details; spacing shall be sufficient to cradle pipe without lifting pipe from steel plate. Pipe cradle shall be welded to the steel piles. All welds shall be fillet welds and in conformance with the applicable AWS Structural Welding Code.

Straps and bolts shall be galvanized steel and straps shall be hot asphalt dipped. Straps shall be a 50mm (1/2") wide and 12.5mm (1/2") thick. Radius shall be 12.5mm (1/2") outside diameter of pipe.

Holes shall be drilled in strap and shall be 1.5mm (1/16") larger than bolt diameter. Bolts shall be 19mm (3/4") diameter, 100mm (4") long, fully threaded, with flat washers top and bottom, and 19mm (3/4") nuts. All steel shall be ASTM A36 steel.

Pipe cradles, straps, bolts, nuts and washers shall be considered incidental to steel pile piers.

Steel pile piers furnished and installed as required and accepted will be measured and paid for at the contract unit price per each for "Steel Pile Piers",

such price and payments will be compensation in full for all materials, labor, equipment and incidentals necessary to complete the work.

5. INSTALL AND REMOVE FIRE HYDRANT:

The existing water line located along Allegany Road, -Y1- will require relocation in order to construct the detour and facilitate realignment of -Y1-. In order to maintain water service along -Y1- during construction of the bridge along -Y-. Fire hydrants shall be temporarily installed 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. 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 "Install and Remove 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.

6. REMOVE EXISTING WATER METER:

The existing water meters to 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 utility owner and arrange for utility maintenance forces to receive and remove the water meters from the jobsite.

The quantity of existing 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.

7. REMOVE ABANDONED SEWER PIPE:

Existing sewer pipe that is to be abandoned and removed as shown on the utility construction plans shall be removed and disposed of as described in these provisions and/or as directed by the Engineer.

Abandoned sewer pipe that is not filled or removed in accordance with Section 1530 of the Standard Specifications shall be removed and disposed of by the Contractor. The pipe to be removed and not filled is identified on the utility construction plans or will be identified by the Engineer. Removal of the pipe shall consist of excavation, pipe removal and disposal, and backfilling of the existing trench with select backfill material. The pipe shall be removed from the job site and disposed of in a manner meeting the requirements of Section 107 of the Standard Specifications.

The quantity of existing sewer pipe removed in accordance with the utility construction plans and provisions herein and accepted, will be measured and paid for at the contract unit price per linear meter (foot) for "Remove Abandoned _____ mm (inch) Pipe". Such price and payments will be compensation in full for all labor and materials to include excavation, proper disposal, backfilling, miscellaneous equipment and incidentals necessary to complete the work.

8. REMOVE EXISTING STEEL PIER:

Existing steel pile piers that support existing sewer pipe that is to be abandoned shall be removed in accordance with the applicable utility construction plans and/or as directed by the Engineer. All components of the removed piers shall become the property of the Contractor and shall be properly disposed of by the Contractor.

The existing ductile iron sewer pipe that makes an aerial crossing shall be removed from the piers to a point 3 meters back into the existing embankment on both ends. Once the sewer pipe is removed, the steel piers shall be completely removed and disposed of. Cutting of the steel piers at the ground line will not be permitted unless specifically authorized by the Engineer.

Steel piers removed and accepted, will be measured and paid for at the contract unit price per each for "Remove Existing Steel Pier". Such price and payments will be compensation in full for all labor, pipe removal and disposal, excavation, backfilling, and incidentals necessary to complete the work.

END OF SECTION

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 Energy - Power Distribution
- B) North State Communications - Telephone
- C) City of High Point - Power Distribution
- D) City of Archdale - Sanitary Sewer
- E) Piedmont Natural Gas Company - Natural Gas
- F) Time Warner Cable - Cable TV

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) Duke Energy – Power Distribution

- 1) Duke Energy will relocate its lines and poles within the project limits at the locations shown on the Utilities by Others Plans prior to date of availability.
- 2) Temporary poles and lines will be located in the -Y2- Jackson Lake Road area. Upon completion of the new -Y2- Jackson Lake Road crossing Duke Energy will relocate its poles and lines to the new locations in the -Y2- Jackson Lake Road area as shown on the Utilities by Others Plans and remove the temporary poles and lines. They are to be notified four (4) weeks prior to completion of the -Y2- Jackson Lake Road and will take four (4) weeks to complete this work.
- 3) In the -Y4- Dresden Road area the new poles and lines will be installed after the completion of the new -Y4- Dresden Road. Duke Power is to be notified four (4)

weeks prior to completion of the -Y4- Dresden Road and will take four (4) weeks to complete this work.

- 4) Contact person for Duke Energy is Mr. Carl Hamilton at 336-854-4736.

B) North State Communications - Telephone

- 1) North State Communications will relocate its lines and poles within the project limits at the locations shown on the Utilities by Others Plans prior to date of availability.
- 2) Contact person for North State Communications is Mr. Mark Gilmore at 336-886-3648.

C) City of High Point - Power Distribution

- 1) City of High Point will relocate its lines and poles within the project limits at the locations shown on the Utilities by Others Plans prior to the date of availability.
- 2) City of High Point's facilities are located in the -Y2- Baker Road and -Y- Alleghany Street areas.
- 3) Contact person for City of High Point is Mr. William Vickers at 919-883-3519.

D) City of Archdale - Sanitary Sewer

- 1) City of Archdale will relocate its Sanitary Sewers lines and manholes within the project limits at the locations shown on the Utilities by Others Plans prior to August 1, 2007.
- 2) Contact person for the City of Archdale is Mr. Mike Shuler at 336-431-9141.

E) Piedmont Natural Gas Company - Natural Gas

- 1) Piedmont Natural Gas Company will relocate the majority of its facilities within the project limits along the -Y6- I-85 and -L- line shown on the Utilities by Others Plans prior to the date of availability.
- 2) In the area of the pond located near station 20+00 of the -Y6- I 85 line Piedmont Natural Gas Company will complete its gas line relocations to the north after the draining of the pond. Contractor shall provide ten (10) days notice to Piedmont Natural Gas Company that the pond is drained. The Contractor shall allow Piedmont Natural Gas Company thirty (30) days to complete their work.

- 3) Contact person for Piedmont Natural Gas Company for these lines is Mr. Jim Adkins 704-309-0039.
 - 4) Piedmont Natural Gas Company will deactivate its line in the -Y1- Baker Road area prior to rough grading of the -L- in that area and prior to the removal of the existing -Y1- Baker Road for the new bridge work.
 - 5) Contractor to provide Piedmont Natural Gas Company with two (2) weeks notice prior to completion of the rough grade in the -L- line area and allow Piedmont Natural Gas Company two (2) weeks to complete relocation and reactivation of the relocated gas line and removal of the existing gas line along Baker Road.
 - 6) The distribution gas line along -Y- (Alleghany Street) shall be lowered in place before the Contractor begins construction of the detour at Baker Road. The Contractor shall give Piedmont Natural Gas (2) two weeks notice prior to beginning rough grading of the detour, and allow Piedmont Natural Gas (1) one week to complete the work.
 - 7) Contact person for Piedmont Natural Gas Company for these lines is Mr. Parrish Reddick at 336-887-5643.
- F) Time Warner Cable - Cable TV
- 1) Time Warner Cable will relocate its lines to poles within the project limits at the locations shown on the Utilities by Others Plans prior to date of availability
 - 2) Contact person for Time Warner Cable is Mr. Ron Holmes at 336-217-6742.