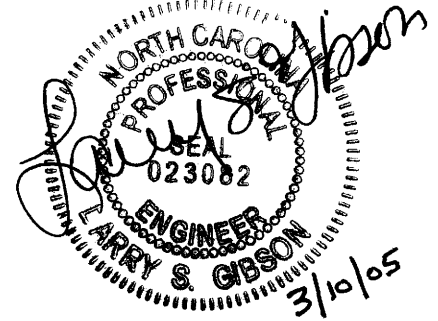


PROJECT SPECIAL PROVISIONS  
Utility Construction

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

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 water main and force main sewers and tie in sections of existing waterline and force main sewers, the method of anchoring pipe bends, valves, and related appurtenances will be the responsibility of the Contractor. Tying in to existing waterlines and force main sewers 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 water line or force main sewer construction. Such approval will not relieve the Contractor of his responsibility of properly anchoring water lines and force main sewers.

Pipe joint deflections shall not exceed 75% of the manufacturer's recommended maximum deflection.

Contractor's attention is brought to the work associated with parcels 178, 180, 182, 185, 186, and 187. These parcels currently are serviced by sanitary sewer septic tanks. The proposed 4" PVC sewer laterals and cleanouts as shown on the plans at these parcels is to prepare these parcels for connection to the proposed 8" public gravity sewer line at a future date. The exact location of these parcel's septic tanks are unknown. It may be necessary to field adjust the locations of the sewer laterals and cleanouts to ensure that the parcel owners may extend the lateral at a future date.

The proposed 4" PVC sewer lateral service pipe and fittings shall conform to the requirements of ASTM D 2665 Sch-40 (Type I) with solvent cemented joints.

**Owner and Owner's Requirements:**

The existing water lines belong to Stanly County Utilities, except as noted on the plans. The existing force main and gravity sewer lines belong to the City of Albemarle. 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. 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.

**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 IV". 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. \_\_\_\_ MM PE WATER TUBING, SDR 9, 1.38 MPA WP

All meters installed to serve customers of Stanly County Utilities 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. A 14-gauge stranded copper tracer wire with blue insulation shall be attached to all polyethylene water service tubing. Necessary tees, fittings, and reducers shall be incidental the work.

The quantity of PE water tubing to be installed as provided above will be paid for at the contract unit price per meter for " \_\_\_\_ 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 and copper tracer wire, tees, fittings, reducers, labor, equipment, compaction and incidentals necessary to complete the work as required.

3. 400MM AIR RELEASE VALVE & MANHOLE

Air release valve for use on water mains shall conform to ANSI/AWWA C512.

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 "400mm Air Release Valve and Manhole". Such prices and payments shall be full compensation for all labor, materials, excavation, backfilling, equipment, approved air release valve, pipe, fittings, 1500mm diameter manhole construction, ring and cover (Type 2), and incidentals necessary to complete the work as required.

#### 4. \_\_\_\_ MM PVC ENCASEMENT PIPE

All PVC encasement pipe shall be schedule 80 pipe and shall be manufactured from a Type I, Grade I Polyvinyl Chloride (PVC) compound with a Cell Classification of 12454 per ASTM D1784. The pipe shall be manufactured in strict compliance to ASTM D1785, consistently meeting and/or exceeding the Quality Assurance test requirements of this standard with regard to material, workmanship, burst pressure, flattening, and extrusion quality. All pipe shall be stored indoors after production at the manufacturing site until shipped from factory.

PVC encasement 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, and paid for at the contract unit price per linear meter for "\_\_\_\_ mm PVC Encasement Pipe". Such prices and payments will be full compensation for furnishing all labor, equipment, material, fittings, excavation, installation, backfilling, and incidentals necessary to complete the work as required.

#### 5. 500MM HDPE WATER PIPE, DR 9, 1.38 MPA WP

500mm High Density Polyethylene (HDPE) Water Pipe to be installed by directional boring in the location shown on the plans. Install water pipe in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

HDPE Water Pipe to be 500mm, 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. Polyethylene plastic water pipe shall meet the requirements of the National Sanitation Foundation Seal of Approval for potable water.

Furnish fittings to connect to ductile iron water pipe and fuse onto each end of the HDPE water pipe.

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

HDPE water 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 water pipe into the pipe string.

HDPE water 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 water 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 500mm HDPE water 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 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 "500mm HDPE Water 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.

## 6. SEWAGE LIFT STATION

### A. General

The work of this provision includes the furnishing and installing of a sanitary sewer lift station at the location shown on the plans or directed by the Engineer. The lift station shall be a complete operational system consisting of pumps, motors, pump removal system, wet well, valve vault, concrete slabs, valves, piping, automatic control system, and 4-channel automatic voice dialer furnished and installed as required herein or as directed by the Engineer.

All work shall be permitted and approved by the City of Albemarle and Stanly County.

The owner of the lift station will be City of Albemarle Public Utilities Department. The Contractor shall allow inspection by the owner or their representatives for all phases of construction. The owners shall be notified two weeks prior to commencement of work.

The Contractor shall stockpile all items removed from the existing pump station including pumps, valves and associated items, and then contact the City of Albemarle at (704-984-9608). The Contractor will remove the existing pump station at the appropriate phase of construction. The existing pump station shall remain operational until the new pump station is installed and fully operational, as determined by the Engineer. Please note: The installation of the existing radio telemetry system in the new pump station shall be incidental to the "Sewage Lift Station" pay item.

All work shall be coordinated with the owner to avoid damage to existing facilities and to minimize inconvenience to the owner's facilities.

The terms "lift station" and "pump station" as used in these project special provisions are synonymous.

These Special Provisions are for materials and equipment to construct and put in working order the proposed system; however, every fitting, minor detail, or feature may not be shown or described. The Contractor and his subcontractors are assumed to be expert in the trade, capable of understanding the intent of the plans and special provisions and constructing the project in accordance with the best practice of the trade. The plans show typically the intended functions and layout of components and should be used as a guide for a minimum acceptable installation.

### Operational Characteristics:

The sewage pump station; which consists of a wet well, valve vault, dual pumps, piping, valves, and controls; shall be capable of automatic, unattended and reliable operation.

The pump station shall be a duplex 10 HP solids handling pump system that automatically starts. The individual pumps shall be capable of discharging 11 liters per second at a total discharge head of 26.8 meters. The system shall operate in a pump down mode where sewage flows into the wet well for temporary storage until a predetermined quantity or level has been attained (approximately 1998 liters), at which time the pumps are activated and allowed to run until the quantity of sewage within the wet well is pumped down to a predetermined level (approximately 1200 liters).

The quantity of sewage within the wet well shall be "sensed" by the use of floats at the following levels:

1. High Water
2. Lag Pump On
3. Lead Pump On
4. Pump(s) Off

When the sewage reaches the "pump on" level, the pump shall be activated. If the sewage continues to rise the lag pump is activated and both pumps operate together. If the sewage rises to the "high water" level, the alarm shall also be activated. The pump(s) shall operate until the sewage is at the "pump off" level.

The control system shall also incorporate a switch that allows for the manual operation of the pump.

The lift station shall be equipped with an automatic alarm system consisting of a flashing red light and audible alarm as shown on the utility construction detail sheet. The alarm shall operate if one of the alarm conditions arise, and shall continue until the condition has been corrected and the alarm reset. The following are alarm conditions:

1. High Water
2. Motor Overload

Of these alarm conditions, the following shall shut down the pump:

1. Motor Overload

Motor overload alarm conditions shall require manual resetting of motor starter overload relay.

The lift station shall be equipped with indicator lights that describe the system's operating status, alarm conditions, and moisture detection in the motor seals.

B. Submittals

General

The Contractor shall submit for the Engineers approval eight (8) copies of a submittal package for the pump station and controls. Forty (40) days shall be allowed for the Engineer's review. Materials that have not been approved shall not be delivered to the project.

The submittal package shall be complete, organized and bound and shall be presented in letter size folders. Piecemeal, partial, or incomplete submittal packages will be returned without being reviewed.

Submittal packages shall include sufficient information to determine compliance with these specifications and the plans for quality, reliability, and operation.

Submittal packages shall include, but are not limited to the following:

1. Warranty
2. Authorized Service Centers
3. Manufacturers Qualifications
4. Operating Instructions
5. Shop Drawings - Mechanical and Electrical
6. Mechanical and Electrical Parts Lists
7. Catalog Cuts
8. Operation and Maintenance Manuals

1) Warranty

All equipment shall be guaranteed by the manufacturer against defects in material and workmanship for a minimum period of one year from date of Owner's final inspection and acceptance to the effect that any defective equipment shall be repaired or replaced without cost or obligation to the Owner.



## 2) Authorized Service Centers

A listing of service centers authorized by the manufacturer to perform warranty work is required. This list shall include names, addresses, and telephone numbers.

## 3) Manufacturers Qualifications

To ensure availability of spare parts for renewal purposes, the equipment shall be of readily manufactured components and the lift station shall be the product of a manufacturer with a minimum of 10 years experience in the production of similar sewage lift stations capable of automatic, unattended operation.

## 4) Operating Instructions

Instructions shall be submitted describing the method of operation for the sewage lift station. Such instructions shall describe how the station works, how to operate the controls in both the automatic and manual mode, and what to do in the event of an alarm condition.

## 5) Shop Drawings - Mechanical and Electrical

Mechanical shop drawings shall be submitted detailing the layout and dimensions of the overall station and the individual parts. The drawings shall be labeled to correspond with the parts list.

Electrical drawings shall be submitted including a schematic and a component layout drawing. The schematic shall show the complete electrical operation of the system with all components identified, wires numbered, and terminals labeled for field connections. The layout drawing shall show the location and identification of all components cross-referenced with the schematic and parts list.

## 6) Mechanical and Electrical Parts Lists

A list of mechanical and electrical parts for the pump station shall be submitted listing the part's name, basic function, brand, and stock number.

## 7) Catalog Cuts

Those parts which are not manufactured by the pump station manufacturer shall have catalog cuts submitted with sufficient detail to determine compliance with the specifications and performance of their intended function.

## 8) Operation and Maintenance Manuals

Operation and maintenance manuals shall be submitted and approved prior to acceptance of the pump station. Eight (8) copies shall be submitted, and bound in letter size folders. After installation of the station, one copy of the approved manual shall be provided to the owner.

The manuals shall list routine maintenance and shall describe the frequency of maintenance along with the methods. A troubleshooting guide shall be included along with the procedures and methods of repair of all user serviceable parts. Copies of the warranty, authorized service centers, operating instructions, "as-built" shop drawings, parts lists, and catalog cuts as described above shall be included.

## C. Testing

### 1) Manufacturer's Tests

The pump shall be given an operational test at the factory in accordance with the standards of the Hydraulic Institute. All data shall be recorded, certified and submitted to the Engineer for review and acceptance. Upon request from the Engineer, the Engineer or his representative shall be invited to witness the operational test at the manufacturer's facility or other location designated by the manufacturer and approved by the Engineer.

The tests shall substantiate the actual performance and efficiency of the equipment at the specified head, capacity, speed and horsepower.

### 2) On-Site Tests

After the pump station has been installed the following tests shall be performed to the satisfaction of the Engineer.

#### a. High Water Alarm

With the pump in the off position, the wet well shall be filled with liquid till the high water alarm light activates. This level shall be verified as the correct elevation and satisfactory operation of the alarm circuitry shall be verified.

#### b. Wet Well Watertightness

With the liquid at the "High Water Alarm" level and the pumps in the off position, there should be no loss of liquid from the wet well for 2 hours.

c. Pump On

With the system on automatic, the wet well shall be filled with liquid to the "PUMP ON" level, at a rate not to exceed 0.94 liters per second, and the pump shall operate until the liquid reaches the "PUMP OFF" level.

During performance of these tests, all lights, controls, equipment, and operations shall be observed for proper operation.

Any and/or all tests that the Engineer deems necessary shall be repeated until the Engineer is satisfied that the station is properly operating. Failure of any test requires the defective component or operation to be repaired or replaced and any or all tests repeated as required by the Engineer.

d. Insulation Resistance Testing

The Engineer may require testing of all field-installed wiring for insulation resistance. A licensed electrician shall perform the required testing. The Contractor will be responsible for the cost of all testing required to make the system operational. The insulation resistance for each conductor shall exceed five megohms (5,000,000 ohms) after charging for 30 seconds at 500 VAC or 1000 VDC. If the insulation resistance test indicates a value less than 5 megohms the conductor shall be replaced or repaired as directed by the Engineer.

e. Alarm Circuitry

The alarm light shall be tested by simulating alarm conditions. This may be done by disconnecting conductors or using jumpers at the point nearest the actual alarm detection sensor/contact that is readily accessible.

3) Observation Period

After the system has been made operational, and after all "On-site Tests" as described above have been successfully performed, and after the final permanent connections including electrical power, have been made so that sewage is flowing into the wet well, an observation period shall begin. The observation period shall be for thirty (30) days and shall be free of any failures caused by faulty materials, poor workmanship, or negligence on the part of the Contractor. During the observation period, the system shall operate in the unattended full automatic mode. At the end of the successful free of failure, thirty (30) day observation period the sewage pump station will be turned over to others for maintenance and operation.

All failures which occur prior to the end of the observation period shall be repaired by the Contractor without additional cost to the Department.

The Contractor shall notify the Engineer of the anticipated date of completion of the observation period so that others can assume normal operating and maintenance responsibilities. The Contractor's notification to the Engineer shall be in writing and shall be at least thirty (30) days prior to the end of the observation period. At the end of the successful completion of the observation period, the Contractor will be relieved of maintenance and operation responsibilities for the sewage pump station.

#### D. Materials

In these specifications and on accompanying drawings are detailed equipment and materials deemed most suitable for the service intended. The specifications have been written to establish minimum acceptable performance levels for all major components which are considered essential to satisfactory performance of the complete pump station. The Contractor shall prepare his bid on the basis that the equipment and materials included therein will meet or exceed the specified levels of performance. The awarding of the contract shall constitute a contractual obligation to furnish equipment and materials that meet these performance standards.

All materials used in the work are to be new materials. References on the plans or in the special provisions to any proprietary device, product, material, fixture, form, type of construction, etc. by make or catalog number, with or without the words "or equal", is to be taken as establishing a standard of quality, and is not to be construed as limiting competition. In such case, the Contractor may use any material, equipment or type of construction which has the written approval of the Engineer as being an acceptable equal to that named for the particular use intended by the specifications.

All components of the sewage pump station, i.e. the pump, removal system, and the control system shall be furnished from the same supplier. The Contractor is responsible for the delivery, coordination, and compatibility of all equipment and materials.

All materials shall be labeled or listed by an organization acceptable to the Engineer. The organization shall maintain periodic inspection of the production of materials and shall, by the labeling or listing procedure, verify that the materials comply with appropriate standards of performance or are suitable for use in a specified manner.

## 1. Mechanical Equipment

The materials described in this section consists of submersible, non-clog sewage grinder pump complete with submersible electric motor, temperature and moisture sensors, discharge elbows, removal system, valves and piping.

### a. Motors

The submersible sewage pump shall be driven by a completely sealed electric submersible motor of 10 horsepower minimum, 1750 RPM, for operation on 230 volts, 3 phase 60 Hertz power. The motor nameplate horsepower rating shall not be exceeded by the brake horsepower requirements of the pump for the specified head and flow conditions.

The submersible pump motor shall be designed for a Class I Groups C and D, Division I hazardous location as defined by the National Electrical Code. All electrical connections shall be housed in a cast iron, watertight enclosure. The enclosure shall be sealed by the use of "O" rings and shall have rabbet joints with a large overlap. Cable leads shall be epoxy sealed. The motor shaft shall be stainless steel, impervious to the liquid and waste materials being handled. All external hardware including the motor nameplate shall also be made of stainless steel.

Tandem seals, one inside an oil chamber and one outside, shall provide double protection for the electrical parts.

Bearings shall be prelubricated at the factory and designed for B10 life of 50,000 hours. Shaft extension bearings shall be locked to prevent shaft movement and to take high thrust loads.

Motor windings shall have Class H insulation for extended motor life. Automatic reset, normally closed thermal overloads shall be installed in the motor winding to provide over-heat protection.

Lifting eyes shall be cast into the motor housing and shall be of adequate strength to lift the entire pump motor assembly.

Motors are sufficiently cooled by the surrounding environment or pumped media. A water jacket is not required.

The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The outer jacket of the cable shall be oil resistant chloroprene rubber. The motor and cable shall be capable of

continuous submergence underwater without the loss of watertight integrity to a depth of 19.8 meters.

The motor horsepower shall be adequate so the pump is non-overloading throughout the entire operating range.

All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. The thermal switches shall open at 125° C (260° F), stop the motor and activate an alarm.

A leakage sensor shall be used to detect water in the stator chamber. When activated, the sensor will stop the motor and send an alarm both local and/or remote.

**USE OF VOLTAGE SENSITIVE SOLID STATE SENSORS AND TRIP TEMPERATURE ABOVE 125° C (260° F) SHALL NOT BE ALLOWED.**

Thermal switches and leakage sensor on each pump shall be connected to a separate control and status monitoring unit. The module shall be installed in the pump control panel.

b. Pump

The pump shall be capable of pumping 11 liters per second at 26.8 meters TDH.

The pumps shall be automatically and firmly connected to the discharge connection, guided by no less than two (2) Schedule 40, T304 stainless steel guide bars extending from the top of the station to the discharge connection. There shall be no need for personnel to enter the wet-well. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal-to-metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. No portion of the pump shall bear directly on the sump floor.

Major pump components shall be of gray cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. All exposed nuts or bolts shall be AISI type 304 stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.

Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is

required shall be machined and fitted with rubber O-rings. Fittings will be the result of controlled compression of the rubber O-rings in two planes and O-ring contact of four sides without the replacement of a specific torque limit.

Rectangular cross-sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

Each pump shall be provided with a tandem mechanical shaft seal system consisting of two totally independent seal assemblies. The seals shall operate in a lubricant reservoir that hydrodynamically lubricates the lapped seal faces at a constant rate. The lower, primary seal unit, located between the pump and the lubricant chamber, shall contain one stationary and one positively driven rotating, corrosion resistant tungsten-carbide ring. The upper, secondary seal unit, located between the lubricant chamber and the motor housing, shall contain one stationary and one positively driven rotating, corrosion resistant tungsten-carbide seal ring. Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment nor depend on direction of rotation for sealing. The position of both mechanical seals shall depend on the shaft. Mounting of the lower mechanical seal on the impeller hub will not be acceptable.

The following seal types shall not be considered acceptable nor equal to the dual independent seal specified: shaft seals without positively driven rotating members, or conventional double mechanical seals containing either a common single or double spring action between the upper and lower seal faces. No system requiring a pressure differential to offset pressure and to effect sealing shall be used.

Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and to provide lubricant expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication. The motor shall be able to operate dry without damage while pumping under load.

Seal lubricant shall be FDA Approved, nontoxic.

The pump volute shall be of A48 Class 35B gray cast iron and shall have (an) integral spiral shaped cast groove(s) at the suction of the volute. The internal volute bottom or insert ring shall provide effective sealing between the pump volute and the multi-vane, semi-open impeller. The

sharp spiral groove(s) shall provide the shearing edge(s) across which each impeller vane leading edge shall cross during its rotation in order to remain unobstructed. The clearance between the internal volute bottom and the impeller leading edges shall be adjustable.

The impellers shall be of gray cast iron, Class 35B, dynamically balanced, semi-open, multi-vane, backswept, non-clog design. The impeller vane leading edges shall be mechanically self-cleaned upon each rotation as they pass across a spiral groove located on the volute suction, which shall keep them clear of debris, maintaining an unobstructed leading edge. The impellers vanes shall have screw-shaped leading edges that are hardened to Rc 45 and shall be capable of handling solids, fibrous materials, heavy sludge and other matter found in waste water. The screw shape of the impeller inlet shall provide an induced effect for the handling of sludge and rag-laden wastewater. Impellers shall be locked to the shaft and shall be coated with alkyd resin primer.

The pump shaft shall rotate on two bearings. Motor bearings shall be permanently grease lubricated. The upper bearing shall be a single deep groove ball bearing. The lower bearing shall be a two row angular contact bearing to compensate for axial thrust and radial forces. Single row lower bearings are not acceptable.

Pump and motor shaft shall be the same unit. The pump shaft is an extension of the motor shaft. Couplings shall not be acceptable. The shaft shall be AISI type 431 stainless steel.

All cast iron parts shall be coated with a corrosion inhibiting finish.

#### c. Pump Removal System

The pump removal system shall be of the type that allows installation and removal of the pumps without personnel entering the wet well.

The system shall consist of a floor-mounted, cast iron, discharge elbow with an automatic coupling device, two stainless steel guiderails, and a stainless steel lifting chain or cable.

The method of sealing the pump discharge to the base elbow shall be self-cleaning in order to facilitate positive sealing under all conditions. If metal-to-metal seals are used, they shall be of dissimilar metals to prevent corrosion seizing or bridging.



#### d. Pump Station Pipe and Fittings

Pump station piping and fittings shall include all associated 100mm and 150mm piping and fittings from pump discharge through the valve vault. The remaining force main after the 150mm plug valve shall be paid under a separate pay item. All piping within the pump station and valve box shall be Class 50 DIP flanged joints with a minimum working pressure of 1.03MPa unless otherwise noted. All ductile iron fittings shall have a minimum working pressure of 1.72MPa. Flange gaskets shall be 3mm full face serrated rubber material. All valves shall comply with AWWA Standards.

#### e. Check Valves

Each pump shall be equipped with a full flow type check valve, capable of passing a 75mm spherical solid, with flanged ends and be fitted with an external level and spring. The valve seat shall be constructed of stainless steel and shall be replaceable. The valve body shall be cast iron and incorporate a 75mm cleanout port. Valve clapper shall have double o-rings. O-rings shall be easily replaceable without requiring access to interior of valve body. Valve shall be rated at 1.20 MPa water working pressure, 2.41 MPa hydrostatic test pressure. Valves other than full flow type or valves mounted in such a manner that prevents the passage of a 75mm spherical solid shall not be acceptable.

#### f. Plug Valve

Each discharge line shall be equipped with a 2-way plug valve to permit isolation of the pumps from the common discharge header. The plug valve shall be non-lubricated, tapered type. Valve body shall be semi-steel with flanged end connections drilled to 56.7 kg standard. Valve shall be furnished with a drip-tight shutoff plug mounted in stainless steel or Teflon over phenolic bearings, and shall have a resilient facing bonded to the sealing surface. Valves shall have ports designed to pass 75mm spherical solids.

### 2. Pump Station Wet Well

The materials described in this section consist of a precast concrete wet well with cover, vent pipe, concrete base slab, and top slab.

#### a. Wet Well

The wet well shall be 1800 mm inside diameter and shall be precast concrete with a total depth of approximately 4.5 meters. The wet well shall be of ample thickness to withstand buckling, cracking, and distortion during shipping and due to outside earth loads produced during and after installation at the depth required. The interior surface shall be smooth and shall be impervious to micro-organisms, mold, mildew, and fungus. The bottom of the wet well shall have a ring or collar as an integral part for attachment to the anti-floatation base slab. The top of the wet well shall be flanged for attachment of the cover. The base shall extend 300 mm around the outside diameter of the wet well to prevent buoyancy. Alternative designs may be submitted with the appropriate buoyancy calculations. Concrete shall be a minimum of 28 MPa at 28 days. All reinforcing shall comply with ASTM C-478. Reinforced plastic steps shall be provided every 300 mm on center. Sections of the wet well shall be joined in accordance with AASHTO M-198B Preformed Plastic or ASTM C-443 Rubber Gasket Joints. All openings shall be precast and supplied with a flexible rubber pipe wall penetrations and/or connections shall be in accordance with ASTM C-923. The wet well shall be watertight. Backfill around the wet well and valve box shall be compacted to 95% of standard or modified Proctor Density.

Watertight aluminum double access doors shall be provided for the pump station wet well. Hatches and frames shall be H-20 loading condition rated cast into the concrete top. The hatch shall provide for a latch with a locking device. Access doors must open to a full 180 degrees.

#### b. Concrete

The concrete base slab, and top slab shall be Class A concrete in accordance with Section 1000 of the Standard Specifications, with reinforcing steel conforming to Section 1070.

### 3. Pump Station Control System

#### a. Description

The materials covered by this section shall include a duplex pump control system complete with float level sensor switches, and an alarm light and audible alarm as shown on the plans and described herein.

The same company that furnishes the pumps shall provide the control panel.

**b. Control Cabinet****i. Enclosure**

All of the described equipment shall be housed in a weatherproof NEMA 4X stainless steel enclosure with hinged door and aluminum back panel. It shall meet NEC and UL standards, and shall be labeled.

It shall have a gasketed, hinged, front weather door with locking capability. The outer door shall have a schematic of the system attached to the inside surface.

**ii. Wire and Hardware**

All wire shall be stranded copper and color-coded with not less than 600-volt insulation.

All hardware, such as nuts, bolts, screws, hinges and latches shall be resistant to corrosion and shall be consistent as to size and type. Components mounted in the back panel shall utilize drilled and tapped holes. Nuts on the backside or self-drilling/tapping screws are not acceptable.

**iii. Labels**

Components and subassemblies shall be identified. All labels shall be consistent as to color, size of letters and overall dimensions.

Wire terminals shall be labeled with industry standard numbers in agreement with approved drawings.

**iv. Terminal Strips**

All terminal strips and power distribution blocks shall have solderless box lugs with insulating barriers. Marking strips shall be adhesive backed with permanent legible numbers.

**v. Lightning Arrestor**

The arrestor shall be a sealed unit rated for 120/240 secondary volts. It shall be 2 pole, 3 wire.

## vi. Circuit Breakers

All circuit breakers shall be thermal magnetic molded case. They shall have a minimum ampere interrupting capacity of 10,000 symmetrical amps.

## vii. Motor Starters and Overload Relays

The starters shall be a full voltage across the line magnetic type. The overload relay shall be manual reset melting alloy, ambient compensated, with accurately sized replaceable heater elements in each phase. The manual reset shall have an external reset mechanism located in the dead front inner doors.

## viii. Alarm Light

The alarm light shall be a weatherproof strobe with high-impact red polycarbonate lens. Both the red lens and the flash tube shall be replaceable.

## c. Float Level Sensors

The floats shall be heavy-wall molded polyethylene with internal foam plastic fill and sealed mercury switch construction. The floats shall be attached to a stainless steel float switch mounting tree. The assembly shall provide reliable level-sensing, drift-free performance, and easy adjustment and removal.

## d. Cables and Grips

All cables shall be supported in the wet well with stainless steel wire mesh cable grips. The grips shall have a wire bail or loop which can be hung from a "J" hook for accessibility from the entrance hatch. The grips shall also have a removable stainless steel pin for securing the wire mesh so that the grip can be installed/removed without disconnecting the electrical cable terminals.

E. LIFT STATION POWER

1. Description

The work covered by this section consists of furnishing and installing all materials necessary to provide electrical service to the proposed sewage lift station from the power source currently supplying the existing lift station.

2. Materials

All material shall be new and shall be labeled or listed by an organization acceptable to the Engineer. The organization shall maintain periodic inspection of the production of materials and shall, by the labeling or listing procedure, verify that the materials comply with appropriate standards of performance or are suitable for use in a specified manner.

Conduit shall be rigid galvanized steel conduit per UL 6 "Rigid Metallic Conduit" with rigid full weight galvanized threaded fittings and bodies.

Conductors shall be copper and shall conform to IPCEA specifications and shall have marks for identification (manufacturer's name, type insulation, and gauge of conductor) and the UL Label. All wire insulation shall be rated at 600 VAC or greater. Types and sizes of conductors shall be as noted on the plans.

The ground rods shall be 20 mm x 2.7 m copper clad steel and the clamp shall be one piece silicone bronze with a socket or hex head screw.

The service circuit breaker shall be a thermal magnetic unit in conformance with Federal specifications and shall have an interrupting rating of 22,000 RMS symmetrical amperes minimum. The enclosure shall be NEMA 3R and shall be lockable. The enclosure shall have a bonded neutral bar and shall be suitable for use as service entrance equipment. The ampere and voltage rating shall be as noted on the plans.

The lightning arrester shall be of the thyrite type rated 600 VAC and be 2 pole 3 wire for direct mounting through a knockout hole in the enclosure.

Mounting or attachment hardware including bolts, nuts, washers, straps, clamps, and hangers shall be stainless steel, hot dipped galvanized or of equal corrosion resistance. Bolts shall not be less than 1 nominal size smaller than the opening being utilized and shall be minimum length.

All conduits entering the wet well shall be sealed.

The control panel shall be equipped with a 100 Amp generator receptacle for use in power outages.

F. Pump Station Site Work

At the appropriate phase of construction and in coordination with the installation of the pump station and its components, the Contractor shall grade the site according to the plans and ensure stormwater will leave the site. Approximately 260 cubic meters of fill material will be required to grade the site as indicated on sheet UC-44 of the Utility Construction Plans. The contractor shall place approximately 63 cubic meters of compacted ABC to a depth of 150 mm to the limits shown on plan sheet UC-44. The Contractor shall also place approximately 45 meters of chain link fence around the pump station site with a minimum height of 1.8 meters and shall include 3 strands of barbed wire at the top. The fence will include a 3.6 meter wide double swing gate. The Contractor will also install, or coordinate the installation of, a dusk to dawn area light. The Contractor will be responsible for coordination with the power company and all connection fees associated with the installation of the area light.

G. Pump Station Valve Vault

The Contractor shall provide all labor and equipment necessary install a prefabricated concrete valve vault. The valve vault shall remain independent of the wet well. Pre-cast concrete shall be 28MPA at 28 days. All reinforcing shall comply with ASTM C-478. Sections of the wet well and valve vault shall be joined in accordance with AASHTO M-198B Preformed Plastic or ASTM C-443 Rubber Gasket Joints. All openings shall be precasted and supplied with a flexible rubber pipe wall penetrations and/or connections shall be in accordance with ASTM C-923. The valve vault shall be watertight. Backfill around the valve vault shall be compacted to 95% of standard or modified Proctor Density.

A watertight aluminum access door shall be provided for the valve vault. Hatches and frames shall be H-20 loading condition rated cast into the concrete top. The hatch shall provide for a latch with a locking device. Access door must open to a full 180 degrees.

H. 4-Channel Automatic Voice Dialer

1. PROVISIONS

Furnish and install an automatic dialing alarm system to monitor contact status on various items of equipment, specified in other Sections of the Specifications, and report changes in status via user-recorded voice

messages, to pre-selected telephone numbers through normal telephone company equipment.

## 2. DESCRIPTION

The dialer shall be a microprocessor based system, capable of monitoring up to four (4) input channels in addition to externally-supplied input power.

The system shall be capable of being programmed both locally and remotely via a touch-tone phone. Programming shall be accomplished on-line without interruption of dialer alarm monitoring operation. An access code shall be utilized to protect against unauthorized access to programming functions.

Dialer shall be a Microtel Model DialStat™.

## 3. SYSTEM FEATURES

### a. Real Voice:

The system shall have the ability to digitally store and reproduce user-recorded voice messages and use those messages to articulate the location of the system and status of the monitored channels at that location. All digitized speech message data shall be stored in nonvolatile memory. A battery shall not be required to retain recorded voice messages in the absence of external or AC power.

### b. Call Progress Decoding:

The system shall detect dial tone, busy, ring back, and voice signals allowing the system to quickly detect if a party has answered the call. If the call has not been answered successfully, the system will abort the call and dial the next number, minimizing the time from detection of a fault condition to its acknowledgment.

### c. Status LEDs:

The System shall provide LED status indication of phone line off-hook, call progress, ring detection, AC Power/Charging, and local Ready-to-Program. In addition, each input channel will provide visual indication of both normal and fault (alarm) status.

### d. Watchdog Timer:

The dialer shall have an internal watchdog timer and brownout detection circuit to guarantee reliable operation in electrically noisy environments.

e. 30 Digit Dialing:

Each telephone number programmed may consist of up to 30 digits allowing for easy interface with paging systems, voice mail, and other telephone accessible communications systems. The system shall be capable of both Tone/Pulse dialing on an individual telephone number basis.

f. Access Code:

The dialer shall demand the caller enter the correct access code before granting access to the configuration menus during a call from or a call to the dialer.

g. Tone Interrupt:

The system shall enable the user to interrupt a voice message or program prompt from the dialer with any touch tone key press, allowing the user to quickly program or acknowledge alarms without waiting for the complete status message to complete.

h. Nonvolatile Memory:

All user-entered dialer configuration data and voice messages shall be stored in nonvolatile memory assuring that information is saved in the event of input power loss. A battery shall not be required to maintain user-recorded voice messages, configuration data, or telephone numbers. A checksum shall be computed, stored, and used by the system to maintain and test data integrity of all user-programmed features and telephone numbers.

i. Acknowledgement:

The user shall be able to acknowledge alarms by using one of the following three methods:

- i. Entering the '\*' key on your touch-tone phone during message playback.
- ii. Calling back the dialer immediately after it calls you (Callback Acknowledge). This feature is necessary if the called party does not have a touch-tone phone.
- iii. The dialer shall automatically acknowledge a successful call to a telephone, pager, or answering machine, if that telephone number includes an embedded auto-acknowledge code.

j. AC Power Failure:

The dialer shall include a built-in external power failure detection circuit. None of the four (4) contact input channels will be used to monitor AC Power. In addition, the system shall provide the ability for the user to enable or disable alarm callout on detection of external power fail, and configure its filtering delay.



#### 4. SYSTEM INFORMATION OVERVIEW

a. Voice System Name:

The dialer shall speak the user-recorded system information before making any report

b. Answer (Ring Count) Delay:

The system shall have the ability control the number of rings the dialer will see before answering an incoming call.

c. Access Code:

The system shall include a user-programmable access code feature which will prevent unauthorized access to the dialer from remote callers.

d. Snooze Delay:

The system shall include the ability to adjust the time before an acknowledged alarm will begin calling out again.

#### 5. TELEPHONE NUMBERS

a. The dialer shall have the ability to store up to 8 telephone numbers. Each phone number can be up to 30 digits in length, and optionally include special embedded control sequences to allow tone/pulse dialing selection, insertion of pauses, codes to dial a numeric pager, and auto-acknowledge an alarm callout in the event the call was answered.

b. The dialer must be able to accurately determine, through call-progress decoding, whether the called number was busy, answered, or was not answered.

c. Each telephone number in the system directory is referenced simply by its index number.

#### 6. INPUT CHANNEL FEATURES

a. Digital Input Channels:

The system shall be capable of accepting up to four (4) dry contact inputs. The dry contact inputs shall be fully electrically and optically isolated from the dialer's electronics.

b. Input Alarm Configuration:

Each channel shall operate independently of each other, and shall allow the user to configure its normal state as open or closed.

c. Input Channel Voice Name:

The dialer shall have the ability to record the user's own voice for channel identification of each fault input monitored.

d. Fault Delay:

The user shall have the ability to set a timer that determines how long an alarm condition must exist before the dialer recognizes that condition as an alarm. This parameter will filter out noisy or temporary state changes from placing undesired nuisance alarm calls.

e. Visual Indication:

Each external contact input channel shall provide visual indication of Normal, Unacknowledged Alarm, or Acknowledged Alarm status.

7. SITE CONTROL

The system shall have the capability to provide a summary local alarm output that de-energizes when there is a channel in alarm or the dialer is turned off.

8. ENCLOSURE AND ENVIRONMENTAL

a. As a factory option, the system shall be enclosed in a dust and corrosion proof Nema type 4 or type 12 fiberglass enclosure with lockable stainless steel latch.

b. Dialer shall be a Microtel DialStat™.

9. ELECTRICAL

a. Power:

The dialer shall normally be powered by 110 Vac at 50-60 cycles, through a UL-approved 12-volt transformer. The dialer shall optionally be capable of operation from an alternative 12 volt DC power source, such as that provided by a solar panel. The dialer shall have an internal, resettable fuse which does not require replacement or service.

b. Battery backup:

The dialer shall be supplied with an internal rechargeable battery. The dialer shall have its own built-in charging circuit for the provided

battery, and provide a minimum of six hours of operation on loss of external power.

c. Transient/Surge protection on the telephone and input power lines shall be built into the dialer's on-board electronics.

d. Electrical Isolation: Contact inputs shall provide both transformer and optical isolation to 1500 Volts. Optical isolation alone does not provide sufficient reliability.

e. FCC Certifications/Compliance:

The dialer shall be registered and certified to have passed FCC Part 68 requirements for connection to the Public Switched Telephone Network. In addition, the dialer shall be certified by an independent testing agency to have passed FCC Part 15 Class B Test Limits for Radiated and Conducted Emissions.

## 10. WARRANTY

Manufacturer's warranty is limited to one year parts and labor, at the factory, on all parts and workmanship. Excluded are miscues, vandalism, lightning damage, flood damage and other acts of God.

## 12. Execution

### a. GENERAL

i. It is the contractor's responsibility to insure that a complete and workable alarm system shall be provided.

### b. START UP AND TRAINING

One (1) day start up and training shall be provided to program, check system installation, and provide operator training on the operation of the alarm system.

## I. Construction Methods

All work shall be performed in a neat and organized manner by personnel that are skilled in such work.

The Contractor actually installing the electrical materials shall have a license of the proper classification from the North Carolina Board of Examiners of Electrical Contractors. The Contractor shall also be responsible to obtain all

permits from the City of Albemarle and Stanly County necessary to complete the electrical work for the lift station.

All appurtenances, i.e. wet well, guiderails, piping, control panel, etc., shall be installed plumb and securely attached and supported.

The ground underneath the wet well shall be removed to a depth of 100 mm and shall be leveled and compacted with foundation conditioning material.

Backfill around the wet well shall be in six-inch lifts and compacted to approximately 90% of the standard proctor density. Care should be used to avoid distortion or cracking of the wet well.

The finished grade around the pump station shall be sloped to provide drainage away from the pump station.

The services of a factory trained and qualified representative shall be provided to inspect the completed installation, make all adjustments necessary to place the system in trouble-free operation and instruct the operating personnel in the proper care and operation of the equipment.

All work shall be done in accordance with the NEC by a Contractor properly licensed by the N.C. State Board of Examiners of Electrical Contractors.

The Contractor shall coordinate all work to ensure that electrical power of the proper voltage, phase, frequency, and ampacity is available to complete the project. He shall contact the owner to assure that all work is completed. The Contractor will be responsible for payment of utility company charges incurred until the date of acceptance of the work by the Department.

The service circuit breaker, transfer switch, arrester and all conduit and wiring shall be installed secure and plumb with all conductors properly terminated and identified. All components shall be attached with stainless steel or galvanized hardware. Lengths of galvanized framing channel with galvanized through bolts shall attach to the support pipes at appropriate heights for mounting the equipment.

Trenched and excavated areas shall be backfilled, compacted and graded as required by the Engineer.

All conduit entrances shall be through the bottom of the control system enclosure. Entrances for the alarm light and switches shall be watertight. Conduits from the wet well shall be sealed after the cables to the motors and floats are installed to prevent moisture from the wet well entering the control system enclosure.

The control system cabinet shall be located and anchored as shown on approved drawings.

The Contractor shall coordinate all work with the owner of the existing lift station to ensure access is provided to the owner's electrical panel.

If the owner's service is not adequate to supply power to the control panel, the Contractor will be required to coordinate all work to ensure that electrical power of the proper voltage, phase, frequency, and ampacity is available to complete the project.

The control cabinet, service circuit breaker, lightning arrester and all conduit and wiring shall be installed secure and plumb with all conductors properly terminated and identified. All components shall be attached with stainless steel or galvanized hardware.

Trenched and excavated areas shall be backfilled, compacted and graded as required by the Engineer.

An identification label shall be installed on the exterior front of the service circuit breaker, transfer switch, and control cabinet enclosure. The label shall be of sufficient size for easy reading and shall have wording as approved by the Engineer.

#### J. Method of Measurement

The sewage lift station will be measured on a "lump sum" basis. Measurement will be made for the actual sewage lift station constructed as required and accepted. Measurement will include the wet well, the duplex pumps and all associated hardware as noted on the plans, the pump station piping, fittings, valves, site work, fencing, access road, area light, and removal of existing pump station and related appurtenances located on Parcel 175.

##### 1. Incidentals

The pump station submittals and repair manuals, excavation, backfill, site work, testing, activation, telemetry removal and installation at new pump station, services from manufacturer's field representatives, equipment and miscellaneous materials, labor, and warranties will be considered incidental to the other items and no separate measurement or payment will be made.

K. Basis of Payment

Payment will be made for the completed and accepted pump station, measured as provided above, at the contract lump sum price for "Sewage Lift Station". Such prices and payments will be considered compensation in full for all materials, labor, and incidentals necessary to complete the work as required.

1. Compensation

Payment will be made under the following contract items:

Sewage Lift Station.....Lump Sum



Office of  
Public Utilities  
Administration  
(704) 984-9605

**City of Albemarle**  
**North Carolina**

Mailing Address  
P. O. Box 190  
Albemarle, N. C.  
28002-0190

January 4, 2005

**Water and Sewer Tap Materials**

<b><u>Item</u></b>	<b><u>Manufacturer</u></b>	<b><u>Description</u></b>
Corporation Valve	Mueller (H15000cc x cf) Ford (F600-ccx)	3/4" flared fitting
Copper Tubing	None	3/4" Type K
Meter Setter	Mueller (H1404) Ford (Y72-7)	5/8" Meter Size Angle Meter Stop 3/4" Flared Pipe Connection
Meter	Neptune (T-10)	5/8" meter ITRON ERT Module
Meter Box	DFW Plastic	MBX-1

The taps are to be installed from the water main to the edge of the right-of-way (ROW) at the customer's property.

Sewer taps are run from the collector line to the edge of the ROW using 4" cast iron pipe. A clean out is to be located at edge of the ROW. The clean out shall have a cap held in place with a "no-hub" band.

Both the clean-out and meter box shall be level with finished grade.

**Water and Sewer Line Materials**

<b><u>Item</u></b>	<b><u>Manufacturer</u></b>	<b><u>Description</u></b>
Ductile Iron Water Pipe	Griffin, US Pipe, American Pipe	Class 50 or 52
PVC Sewer Pipe		8-inch SDR 35

(Over)

**141**

Gate Valve	Mueller, Waterous
Plug Valve	Dezurk
Check Valve	Mueller, Waterous
Backflow Preventer	FEBCO, Watts

**Sewer Pump Station Materials**

<b><u>Item</u></b>	<b><u>Manufacturer</u></b>	<b><u>Description</u></b>
Submersible Pumps	Flygt	NP3127
Generator Set	Caterpillar	
Voice Dialer	Microtel	DialStat



County: Stanly  
Project: R-0967CC

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) City of Albemarle - Power (Distribution)
- B) Union Power Cooperative - Power (Distribution)
- C) Concord Telephone (CTC) - Telephone
- D) Time Warner Cable - CATV

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) City of Albemarle - Power (Distribution)

- 1) See Utilities by Others Plans.

NOTE: The contact person for the City of Albemarle is Mr. Jerry Ford with Southeastern Consulting Engineers at (704) 523-6045.

- B) Union Power Cooperative - Power (Distribution)

- 1) See Utilities by Others Plans.

NOTE: The contact person for Union Power Cooperative is Mr. Mark McClamrock at 1-800-922-6840.

C) Concord Telephone (CTC) - Telephone

- 1) See Utilities by Others Plans.

NOTE: The contact person for Concord Telephone is Mr. Jim Foley at (704) 722-2822.

D) Time Warner Cable - CATV

- 1) See Utilities by Others Plans.

NOTE: Time Warner Cable will be in joint use with City of Albemarle, Union Power Cooperative, and Concord Telephone. Time Warner Cable will complete its facility relocations by January 31, 2007. The contact person for Time Warner Cable is Mr. Kevin Davis at (704) 378-2856.

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