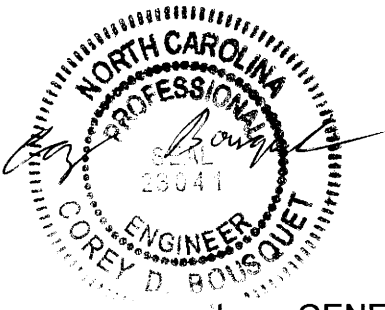


Project: B-3376
 County: Wake

PROJECT SPECIAL PROVISIONS
 Utility Construction



1. GENERAL CONSTRUCTION REQUIREMENTS:

Aug 12, 2004

Specifications:

The proposed utility construction shall meet the applicable requirements of the NC Department of Transportation's "Standard Specifications for Roads and Structures Metric" 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).

Owner and Owner's Requirements:

The existing utilities belong to the City of Raleigh. The Contractor shall provide access for the owner's representatives to all phases of construction. The owners shall be notified according to procedures noted elsewhere in these provisions.

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

Abandoned Sanitary Facilities:

Any existing sewer pipe exposed by grading operations shall be removed to a depth of 305 millimeters below subgrade elevation of the proposed roadbed or completed grading template and plugged with portland cement grout as directed by the Engineer.

All abandoned sewer pipes shall be plugged with portland cement grout at the entrance to all manholes whether the manhole is to be abandoned or not.

All adjusted sewer manhole covers shall be adjusted to an elevation slightly higher than the surrounding terrain so that surface water will not enter the manhole after the adjustment. Manholes located in paved areas shall be flush with the surrounding pavement.

Weekend, Night and Holiday Work:

During the course of the work, connections between existing and proposed utilities shall be made when and as directed by the Engineer. The connections shall be made at times most convenient to the public and when the service will be the least endangered by the work. The connections shall be made on weekends, at night, and on holidays if required by the Engineer.

Valve Operations:

No valve in the existing system shall be operated without following the procedure outlined below. Failure to comply with these requirements shall be grounds for suspension of pipe-laying operations until written assurances can be obtained from a company official that such noncompliance will not occur again. The Contractor should be aware that the City of Raleigh regards violations of these requirements as justifying punitive measures.

Notification procedures are as follows:

- a. The Contractor shall notify the City of Raleigh Public Utilities Department's Maintenance Division at 250-2737 in order to request the operation of any valves. At least forty-eight hours notice should be given to the Public Utilities Department, and at least twenty-four hours notice must be given to each consumer affected by a water cut-off. The Contractor is responsible for notifying the affected consumers. All valve operations shall be done by a Public Utilities Department valve crew or by the City's inspector for a particular project.
- b. The operation of all valves must have prior approval from the Public Utilities Department Maintenance Division Superintendent by dispatching a valve crew.
- c. Prior to granting approval for operating the valves and dispatching a crew, the Contractor shall call the Maintenance Division and give the following information:
 - (1) Name of person calling;
 - (2) Name of company;
 - (3) Telephone number of company;
 - (4) Location of valve and map number if available;
 - (5) Reason for requesting operating and whether to be closed or open;

- (6) Time valve to be opened or closed, and
 - (7) Approximate time water line to be out of service.
- d. Each time a Contractor needs a valve operated, he shall revert to paragraph (a) above and again secure permission, following the steps outlined.
 - e. A card file is kept on these valve operations, and the information supplied by the above procedure on the valve operations are systematically checked.
 - f. System valves shall be defined as any valve which has main pressure against either gate face. Newly installed tapping valves and control valves to networks not yet accepted for service are considered as system valves. Valves within a network still under construction are not considered as system valves.

In the case of an emergency, the Contractor shall be allowed to take such steps with the valves and hydrants as are necessary for the protection of life and property. Notification must be made after a break in a 100 millimeter or larger water main, or where ruptured smaller lines are causing property damage. After an emergency valve operation, the Contractor shall notify the Maintenance Division and give the details for that operation.

Hydrants shall not be operated without following the above procedures relative to requesting operating permission and reporting emergency use of hydrant.

Construction Water:

The City of Raleigh Public Utilities Department does not provide free or otherwise unmetered construction water for any construction project. The term "construction water" does not include water required to fill, hydrostatic test, chlorinate, or flush new water mains, which shall be furnished to the contractor at no cost. Contractors are responsible for securing adequate construction water for their job sites in one of the following approved manners:

- a. Apply for permanent water service connection at the Inspections Department Permit Office, Room 407, Raleigh Municipal Building, 222 West Hargett Street, (890-3450). Sufficient lead time (3 to 4 weeks) should be provided for all new service taps and all fees must be paid in full prior to the work order being authorized.
- b. Apply to the Public Utilities Department for rental of a hydrant meter. There are a limited number of these meters and they are reserved in advance by contacting the Meter Division (250-2737). A \$200 deposit is required along with a \$50 service charge plus the cost of the water utilized.

- c. Purchase hydrant meter (must read in cubic feet) and apply to Meter Division to establish "hydrant meter account" which requires following information:
- (1) Meter location;
 - (2) Billing address and responsible party name;
 - (3) Duration of use and frequency of meter reading;
Note: Meter must be brought to the Utilities Operations Center for monthly reading.
 - (4) Purchase water from nearest fire station to site.
Note: Those individuals caught using water unmetered and/or unauthorized by the Public Utilities Department will be prosecuted to the fullest extent of the law.

Explosives:

The use of explosives shall be in accordance with Article 107-11 of the Standard Specifications.

The Contractor shall secure a permit from the City of Raleigh Fire Marshall when the use of explosives is desired.

Protection of Pedestrian and Vehicular Traffic:

During the progress of the work, sidewalks and crossings shall be kept open for the passage of pedestrians. Unless otherwise authorized, streets shall not be obstructed; and unless the Engineer authorizes the complete closing of a street, the Contractor shall take such measures as may be necessary to keep the street open for traffic.

The Contractor shall construct and maintain adequate and approved bridges over excavations as may be necessary for the purpose of accommodating pedestrians or vehicles.

Utility Concrete Construction:

The utility concrete construction, reinforcing steel, metal fittings, etc., shall meet the requirements of Sections 825 and 840 of the Standard Specifications. All concrete shall be Class A unless otherwise indicated.

Submittals: Catalog Cuts, Shop Drawings, etc.

The Contractor shall submit to the Engineer catalog cuts and/or shop drawings for such materials as valves, hydrants, special fittings, tapping sleeves and saddles, air release valves, and manholes he proposes to use on the project. These shall be submitted by the Engineer to the Head of Design Services and the City of Raleigh Public Utilities Department for review and approval. Thirty days shall be allowed for the review of each submittal.

Materials which have not been approved shall not be delivered to the project. Eight (8) copies of each catalog cut and/or drawing shall be submitted and each shall show the material description, brand name, stock number, size, rating, manufacturing specification and the use for which it is intended.

As Built Plans:

"As built" plans and profiles shall be furnished to the Public Utilities Department by the Engineer upon completion and acceptance of the main by the City. The "as built" plans shall have at least two measurements to all valves, hydrants, and mains referenced to a fixed object located in the field, along with the depth information. "As built" plans of installed utilities shall be furnished to the City at issuance of the letter of acceptance. All service stubs shall be shown and located with respect to the property lines for each lot on the "as built" plans. The Contractor shall prepare a set of "as built" plans as described above and furnish them to the Engineer upon completion.

Maintaining Service:

When replacing or extending water and/or sewer mains, the Contractor shall maintain existing service to all property being served.

Trenches and Backfill for Utility Pipeline Construction:

Prior to any excavation or construction, the Contractor shall locate all existing utilities in the field. If help is needed in locating utilities operated by the City of Raleigh Public Utilities Department, the Contractor should contact the Construction Division (250-2737).

The utility excavations shall be made and the pipes shall be laid in accordance with Section 300 of the Standard Specifications and the following provisions:

Trench bottom conformation, where no special bedding is required, may be that referred to herein as Flat Bottom where the trench bottom is excavated slightly above grade and cut down to pipe grade by hand in the fine-grading operation. Where the trench bottom is inadvertently cut below grade, it shall be filled to grade with an approved material and thoroughly tamped.

The maximum length of open trench shall be no more than 91.44 meters and no less than 6.1 meters, unless approval is obtained from the Engineer.

Trench excavation shall conform to the line and depth shown on the plans. Trench bottom widths shall allow between 152 and 304 millimeters of clearance between the pipe and each trench wall.

In general, all portions of the excavations for the structures shall be made so that the safe slope of the earth is not exceeded. It shall be the responsibility of the

Contractor to properly and adequately protect any part of the excavation from caving or slipping by the use of sheeting, bracing, or shoring as required. All timbering or underpinning shall be put in place or driven by men skilled in such work and shall be so arranged that it may be withdrawn as backfilling progresses without disturbing the pipe or adjacent area.

All timbering in trench excavations shall be withdrawn in stages on both sides of the trenches to prevent lateral movement of the pipe as the backfilling progresses, except where the Engineer permits the timbering to be left in place at the Contractor's request. The Contractor shall cut off any sheeting left in place at least 610 millimeters below finished grade wherever directed and shall remove and dispose of the material cut off.

Wherever necessary, in quicksand, soft or wet ground, or for the protection of surrounding structures and property, sheeting shall be driven to such depth below the bottom of the excavation as may be necessary. The Contractor may use well points or other methods in lieu of sheeting to stabilize the banks or for protection, provided those methods give the equivalent of the above in the judgment of the Engineer.

The Contractor shall take all measures necessary to keep surface water out of the foundations and trenches by diking, ditching, or otherwise avoiding it. Provisions for surface drainage shall meet the approval of the Engineer.

All excavations shall be kept free of water while the work is in progress. Water may be removed by pumps or the use of underdrains, whichever will produce the above results. When water is being pumped from the trench, the pump discharge shall follow natural drainage channels, drains or storm sewers. In discharging trench water, it will be necessary to follow standard erosion control measures so as to minimize erosion and sedimentation.

All excavated material shall be deposited in a manner that will not endanger the work and that will avoid obstructing sidewalks and driveways. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible at all times. Gutters shall be kept clear or other satisfactory provisions made for street drainage, and natural watercourses shall not be obstructed.

Should the position of any pole, pipe, conduit, or other structure be such as, in the opinion of the Engineer, to require its removal or adjustment, such change will be done by the Owner of the obstructions or a representative of the Owner, or as directed by the Engineer.

The foundation for ductile iron pipe shall be a firm and stable flat bottom trench with bell holes so that the pipe rests uniformly on the entire barrel length.

Pipe clearance in rock shall be a minimum of 152 millimeters below and on each side of the pipe for sizes 400 millimeters and less in diameter. For sizes larger

than 400 millimeters in diameter, the minimum clearance shall be 229 millimeters below and on each side.

Ductile iron pipe shall be backfilled with suitable native material. No rocks or boulders 102 millimeters or larger shall be used in the initial backfill for at least 610 millimeters above the top of the pipe.

All backfill shall be compacted in 152 millimeters layers measured from the pipe foundation upward. Backfill shall be compacted to at least 95% of maximum soil density in those areas where the supporting capacity of the soil is of prime consideration. Laboratory determination of maximum soil density will follow the procedure of AASHTO T99-57, Method A. Field determination of the density of the soil in place shall follow the procedure of AASHTO T147-59. All tests shall be conducted at the direction of the Engineer. NCDOT will perform all soil testing.

Deficiency of backfill material shall be supplied by the Contractor where this deficiency results from any cause other than rejection of unsuitable backfill material (other than rock) by the Engineer. In cases where the Engineer directs, the Contractor shall dispose of unsuitable backfill material and provide suitable backfill material. Such provisions of suitable backfill material shall be paid under a bid item, unless specified otherwise in the Special Provisions.

Where excavated material has been rendered unsuitable, either before or after excavation, by inclement weather or type of material, the Contractor must correct the moisture content or furnish replacement backfill material at the Contractor's own expense.

Backfilling shall not be allowed, except with permission of the Engineer. When a ditch is flooded or the weather is unsuitable, the Contractor shall not backfill unless permission is given by the Engineer. No backfilling with frozen material shall be allowed.

Safety and convenience of the public demand that all work, including excavation, be done in such a manner as to cause minimum traffic interruption, both pedestrian and vehicular. Utilities such as fire hydrants, valves, etc., shall be accessible at all times. Gutters and drains shall be left open and clear at all times, and the Contractor shall be responsible for all drainage around his work. Unless specifically waived by the Engineer, provisions shall be made to maintain vehicular traffic on all streets in which work is in progress, and suitable walkways shall be maintained for pedestrian travel.

II. WATER LINE CONSTRUCTION:

The applicable provisions of Section 1500 of the Standard Specifications, the Rules and Regulations of the North Carolina Department of Environment, Health, and Natural Resources, Division of Environmental Health shall apply to the construction of water lines except as otherwise provided below.

The Contractor is herein forewarned as to the possibility of having to vary the depth of pipeline installation to achieve minimum clearance of existing utilities while maintaining minimum cover specified (whether existing pipelines, conduits, cables, mains, etc. are shown on the Plans or not).

The owners shall be notified in advance of any interruptions of water service with ample time to make arrangements. Interruption of water service on main lines shall be limited to nights and weekends, to a maximum of 4 hours and shall not be on consecutive days, unless approved by the Engineer.

Small diameter service pipe (100 millimeters or less) to be placed under the existing pavement shall be installed by first boring a small hole slightly larger than the outside diameter of the pipe to be used and then inserting the pipe with a pilot guide attached through the bored hole.

On new water lines and tie-in sections of existing water lines, the method of anchoring pipe bends, plugs, caps, tees, reducing sections, fire hydrants, valves, and related appurtenances shall be as shown on the details. Tying into existing water lines may alter such lines to the extent that these pipelines with existing pipe bends, plugs, caps, tees, reducing sections, fire hydrants, valves, and appurtenances may also require reaction backing; this work shall also be considered incidental to water line installation. No additional payment shall be made for this work.

Handling and Storage of Materials:

The Contractor shall be responsible for the shipping and storing of all water and sewer materials. Any material which is damaged or defective shall be replaced by the Contractor at the Contractor's own expense.

The loading and unloading of all pipe, valves, hydrants, manholes and other accessories shall be in accordance with the manufacturer's recommended practices and shall at all times be performed with care to avoid any damage to the material.

The Contractor shall locate and provide the necessary storage areas for materials and equipment. If private property is being used for storage areas, then the Contractor must have written consent from the Owner. Without this written consent, all material and equipment shall be stored within the existing rights-of-way and easements of the project.

All materials, once on the job site, shall be stored in accordance with the manufacturer's recommendations. All PVC water pipe, PVC sewer pipe and ABS composite sewer pipe shall be protected from the sun's ultra violet rays if stored on the job site longer than twenty days. The type of protective cover for all plastic pipe material shall be approved by the Engineer prior to installation.

All valves and hydrants shall be stored so that they are protected from freezing. All pipes shall be kept free of dirt and other debris. Any damage relating to the coating of the various materials for sewer and water mains shall be repaired in a manner approved by the Engineer. Machined manhole frames and covers shall remain intact until construction is complete.

The Contractor shall be responsible for safeguarding and protecting all material and equipment stored on the job site. The Contractor shall be responsible for the storage of materials in a safe and workmanlike manner to prevent injuries, during and after working hours, until the project is complete.

Pipe Installation:

Ductile iron pipe shall be installed in accordance with the requirements of AWWA Standard C-600.

Water pipe shall be laid to the line and grade shown on the plans with all valves and hydrants located as shown on the plans. There shall be a minimum horizontal separation between water and sewer utilities of 3.05 meters.

Protection shall be afforded to all underground and surface structures using methods acceptable to the Engineer. This protection shall be furnished by the Contractor at the Contractors' own expense.

Deviations from line and grade may be made only with the written permission of the Engineer when such deviations arise from grade or line conflicts with existing utilities, structures or other sources of conflict.

Subsurface explorations shall be made by the Contractor at the direction of the Engineer where it is necessary to determine the location of existing pipes, valves or other underground structures.

Depth of pipe cover, unless shown otherwise on the plans or directed otherwise by the Engineer, shall be 914 millimeters. Depth of cover shall be measured from the established street grade or the surface of the permanent improvement to the top of the barrel of the pipe.

After the foundation has been properly graded, bedded when applicable, and the bell holes dug, the pipe and accessories shall be carefully lowered into the trench by approved methods. Under no circumstances shall the pipe or accessories be dropped or dumped into the trench. All damaged pipe and accessories shall be properly repaired or removed from the job. Damaged pipe shall be replaced at the expense of the Contractor. Care shall be taken to avoid abrasion of the pipe coating. Poles used as levers for removing skids across trenches shall be of wood and shall have broad flat faces to prevent damage to the pipe or pipe coating.

Pipe shall be swabbed clean before it is laid, and any pipe which cannot be cleaned with a swab shall be removed and cleaned with suitable apparatus. Any pipe showing evidence of oil, tar or grease shall be permanently marked and removed from the job. This pipe shall not again be brought on the job site until it has been cleaned to the satisfaction of the Engineer.

Laying of pipe and jointing of pipe shall be done according to manufacturer's recommendations with care being taken to provide uniform bearing for the pipe. Bell and spigot of pipe shall be cleaned and properly lubricated where a mechanical joint or a "push on" type joint is employed. No chlorine powder or tablets shall be put in the lines during installation.

Open ends of pipe, fittings, and valves shall be plugged with a standard plug or cap at all times when pipe laying is not in progress. Trench water, earth, or other foreign substances shall not be permitted to enter pipe.

Pipe cutting for inserting valves, fittings or closure pieces shall be done in a neat and workmanlike manner in accordance with the manufacturer's recommendations and without damage to the pipe.

Bell ends will face the direction of laying unless otherwise directed by the Engineer. For lines on an appreciable slope, the Engineer may also require that bell ends face upgrade.

Maximum horizontal deflections for ductile iron pipe shall be as follows for an 5.49 meter joint of pipe:

MAXIMUM DEFLECTION IN MILLIMETERS

<u>Size Pipe</u>	<u>B & S</u>	<u>MJ</u>	<u>Push-on-Joint</u>
150	178	686	483
200	381	508	483
250	356	508	483
300	305	508	483
350	254	330	279
400	229	330	279
450	203	279	279
500	178	279	279
600	152	229	279
750	127	229	279
900	102	203	279
1050	102	178	178
1200	76	178	178

Water mains shall be laid at least 3.05 meters laterally from existing or proposed sewers, unless local conditions or barriers prevent a 3.05 meter lateral separation in which case:

1. The water main is laid in a separate trench, with the elevation of the bottom of the water main at least 457 millimeters above the top of the sewer; or
2. The water main is laid in the same trench as the sewer with the water main located at one side on a bench of undisturbed earth, and with the elevation of the bottom of the water main at least 457 millimeters above the top of the sewer.

When a water main crosses over a sewer main, there must be 457 millimeters of vertical separation. If the water main must go under the sewer main, then both these lines must be of ductile iron for a distance of 3.05 meters on either side of the crossing with a 305 mm vertical separation. The crossing of other underground pipe requires a minimum of 305 mm of vertical separation. Any changes in these clearances must be approved by the Engineer. All crossings within these vertical clearances shall be filled with #67 stone.

When a water line passes under a storm sewer, it shall be protected by pouring a concrete pad under the storm sewer to prevent future settlement and infiltration. No extra compensation shall be allowed for the pad.

Where conditions are, in the opinion of the Engineer, unsuitable for laying pipe because of weather or trench conditions, the Contractor shall be required to cease work until permission is given by the Engineer for work to commence again providing such conditions have been corrected. Pipe shall not be laid upon a foundation into which frost has penetrated, or at any time, that in the

opinion of the Engineer, there is danger of the formation of ice or frost at the bottom of the excavation. The Engineer may at his discretion allow construction of the pipeline to continue under freezing conditions provided the Contractor promptly backfills the trench as directed.

Setting Valves and Valve Boxes

Valves shall be set at locations shown on the plans with care being taken to support the valve properly and to accurately position the valve box over the operating nut of the valve. Where pavement is existing, the box shall be adjusted to finished street grade. When valves are located in street rights-of-way, but out of pavement, the boxes shall be adjusted to finished grade and a concrete block 610 millimeters square and 152 millimeters thick shall be poured around the box 13 millimeters from the top. When valves are located outside of street rights-of-way, the boxes shall be adjusted 152 millimeters above the finished grade, and a concrete block 610 millimeters square and 152 millimeters thick shall be poured around the box at grade line. Valve locations out of street rights-of-way shall be marked with some type of metal post having a minimum diameter of 51 millimeters and a minimum bury of 914 millimeters with a minimum of 914 millimeters exposed. The exposed portion shall be painted bright orange and shall be placed so that a valve operating tool has free operation.

When a tapping sleeve and valve are being used, the valve, sleeve and machine assembly shall be air tested to hold at .69 megapascal for a five-minute duration in the presence of the inspector prior to drilling or tapping the main. The valve shall be in the open position during the testing.

III. 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/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

PROJECT: B-3376
COUNTY: Wake

PROJECT SPECIAL PROVISIONS
Utilities by Others

Utilities by Others:

General:

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

- A. PROGRESS ENERGY
- B. AT & T
- C. BELLSOUTH TELECOMMUNICATIONS
- D. TIME WARNER CABLE

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. The utility owners will do all utility work listed herein. All utilities are shown on the plans from the best available information.

The Contractor's attention is directed to Article 105.8 of the Standard Specifications.

Utilities Requiring Adjustment:

- A. PROGRESS ENERGY
See Utility Conflict Plan for details.
- B. AT & T
See Utility Conflict Plan for details
- C. BELLSOUTH TELECOMMUNICATIONS
See Utility Conflict Plan for details.
- D. TIME WARNER CABLE
See Utility Conflict Plan for details.