PROJECT SPECIAL PROVISIONS
Sanitary Sewer Utility Construction

I. GENERAL CONSTRUCTION REQUIREMENTS:

Specifications:

The proposed sanitary sewer utility construction shall meet the applicable requirements of the NC Department of Transportation's "Standard Specifications for Roads and Structures" dated January 2002, and the following provisions.

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

Owner and Owner's Requirements:

The existing utilities belong to City of Durham. The Contractor shall provide access for the owner's representatives to all phases of construction. The owners shall be notified two weeks prior to commencement of any work and one week prior to switch over to the new pipe line. The force main shall not be shut down.

The Contractor shall provide the City of Durham with as-built plans for the proposed force main with elevations and coordinates based on the state plane coordinates established for this project.

The pressure test and leakage test on the proposed force main pipe may be performed concurrently.

II. Compensation

The force main installed in accordance with the plans and provisions herein and accepted, will be paid for by lump sum for "Sanitary Sewer Utility Construction Relocation ". Such prices and payments will be full compensation for installation, materials, excavation, labor, testing, backfilling and incidentals necessary to complete the work as required.

Sanitary Sewer Utility Construction Items:

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 and the detail sheets which are part of the Utility Construction Plans.

2. LINE STOP ASSEMBLY:

Line stop assembly shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

Each line stop assembly shall consist of 1-20" line stop fitting, line stop equipment, plugs and caps, and incidentals necessary to complete the work.

The line stop equipment shall be supplied by the contractor as a permanent means of shutting down a portion of the existing sewer force main. Line stop equipment shall be capable of stopping the flow in the existing force main sewer pipe up to a pressure of 200 psi.

Tapping sleeve used with the line stop equipment shall be carbon steel and shall be pressure rated at 200 psi. Tapping sleeve shall be split sleeve type. The tapping sleeve outlet shall have a flanged joint connection conforming to the dimensions of ANSI B16.1, Class 125. The tapping sleeve shall be coated with a bituminous or epoxy coating. The contractor shall verify the type material, size, etc. of the existing pipe to be tapped prior to ordering the sleeves.

Contractor will be require to provide all thrust blocking use for the line stopping equipment.

Tapping sleeves placed on pipe to remain in service shall be plugged and capped with a blind flange. Plugs and caps shall be rated for 200 psi.

3. TAPPING SLEEVE, VALVE, AND MANHOLE:

Tapping sleeves, valves, and manholes shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

Tapping sleeves shall be cast iron, ductile iron, or Type 304 stainless steel and shall be pressure rated at 200 psi. Tapping sleeves shall be either the split sleeve type with mechanical joint ends or the full circle type with double seals. The tapping sleeve outlet shall have a flanged joint connection conforming to the dimensions of ANSI B16.1, Class 125. The Contractor shall verify the type material, size, etc. of the existing pipe to be tapped prior to ordering the sleeve.

Tapping valves shall be iron body with flanged by mechanical ends and pressure rated at 200 psi. Tapping valves shall be AWWA type valves except the opening shall be clear to allow a full size cutter to pass thru. Tapping valves shall have non-rising stems with O-ring seals and 2 inch operating nut, and shall open counter clockwise. Tapping valves shall be of the same type as required for gate valves (resilient seat C-509).

Tapping sleeves and valves shall be pressure tested and the valve operated prior to the tap being made.

Manholes shall be precast concrete, shall conform to ASTM C478 and shall be as shown on the plans.

Joints between precast manhole section shall be O-ring rubber gaskets conforming to ASTM C-443 or butyl rubber gaskets conforming to AASHTO M198 .

Manhole frames and covers shall be of cast iron conforming to ASTM A48 Class 30, shall be traffic bearing, and shall machined contact surfaces. Manhole frames and cover shall be as shown on plans.

4. CEMENT GROUT FOR FILLING ABANDONED SANITARY FORCE MAIN SEWER PIPE:

All abandoned sanitary force main sewer pipe located in the roadway, which is twelve inches in diameter and larger and has a cover of less than twenty feet below finished pavement grade, shall be filled with a portland cement and sand grout to the satisfaction of the Engineer.

The contractor shall dispose of all sanitary sewage that remains in the abandoned force main in accordance with all local and state requirement.

The cement grout shall have a minimum compressive strength of 500 #. Such grout shall consist of portland cement, sand and water. The grout shall be of a consistency to flow and be vibrated, if necessary, in order for the mix to flow uniformly into the pipe to be filled.

5. HDPE FORCE MAIN SEWER PIPE BY DIRECTIONAL BORE:

High-density polyethylene (HDPE) Force Main Sewer Pipe shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer

HDPE Force Main Sewer Pipe shall be 24", SDR 9, 200 # WP, manufactured in accordance with ANSI/AWWA C906 (Polyethylene Pressure Pipe and Fittings, 4" through 64", For Water Distribution, Ductile Iron Pipe Size (DIPS)). HDPE pipe materials shall be made from materials conforming to standard PE code designation PE 3408.

The Contractor shall furnish fittings necessary to connect the ductile iron force main sewer to the HDPE, and fuse the fittings onto each end of the HDPE section of Force Main Sewer line.

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

HDPE Force Main Sewer line shall be fused prior to placement beneath the stream noted on the plans. Join pipe segments by cutting 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 manufacturer's listing of fusion parameters, validated by appropriate testing, and the parameters of the Contractor's fusion systems, shall be submitted to the Resident Engineer prior to fusing segments of HDPE Force Main Sewer Pipe into the pipe string.

After installation, the HDPE Force Main Sewer Pipe string shall be tested under a hydrostatic pressure of 200# for 3 hours in accordance with the testing procedures outlined in Section 1520 of the Standard Specifications.

HDPE Force Main Sewer Pipe shall be installed beneath the stream by boring or drilling a small pilot hole along a parabolic arc beneath the stream. A minimum cover of 3' shall be maintained over the HDPE Force Main Sewer Pipe at all times. 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 24" HDPE Force Main Sewer line, the Contractor shall pull the pipe string through the hole by the drill string. Cap the pipe string during the pulling operation. The pulling operation shall incorporate a swivel connection to minimize torsional stresses imposed upon the pipe string. Fully support the pipe

string before and during pull back so that the pipe string will move freely without damage.

HDPE Force Main Sewer Pipe installed by directional boring shall not be connected to existing pipe or fittings for one week from the time of installation to allow tensional stresses to relax.

The Contractor may elect to conduct reaming and pulling of the pipe string in one operation at the discretion of the Engineer. The reamer head shall be fitted with a sleeve to prevent possible spalling that may become lodged and prohibit the pull back of the pipe string.

Drilling fluid that does not remain in the bore hole shall be collected and disposed of property. No drilling fluid shall enter the stream.

6. DUCTILE IRON RESTRAINED JOINT FORCE MAIN SEWER PIPE:

Ductile Iron Restrained Joint Force Main Sewer Pipe shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans and/or as directed by the Engineer.

Ductile Iron Restrained Joint Force Main Sewer Pipe shall be of the thickness class and pressure rating shown on the utility plans and shall conform to ANSI A21.51 (AWWA C151) Push-on joints for such pipe shall be in accordance with ANSI A21.11 (AWWA C111). Pipe thickness shall be designed in accordance with ANSI A21.50 (AWWA C150) and based on laying conditions and internal pressures as stated on the plans.

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

All Ductile Iron Restrained Joint Force Main Sewer Pipe shall be installed in accordance with laying condition Type 2 as stated in ANSI A21.51 (AWWA C151) unless otherwise shown on the plans.

7. DUCTILE IRON RESTRAINED JOINT FORCE MAIN SEWER PIPE FITTINGS:

Ductile Iron Restrained Joint Force Main Sewer Pipe Fittings shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans and/or as directed by the Engineer.

Ductile Iron Restrained Joint Bends and Tees shall be in accordance with applicable requirements of ANSI A21.10 (AWWA C110). Joints for such bends and tees shall be in accordance with ANSI A21.11 (AWWA C111) and be

cement mortar lined with a seal coat in accordance with ANSI A21.4 (AWWA C104). All restrained joint force main sewer pipe fittings shall have a minimum working pressure of 200# WP.

Restrained retainer glands and mechanical joint fittings will be acceptable only on buried installations. Restrained retainer glands shall not be used for aerial installation.

Restrained retainer glands shall be high strength ductile iron conforming to ASTM A536. Restrained retainer glands shall be capable of restraining mechanical joints for a minimum working pressure of 200# WP. The Restrained retainer glands shall have a series of machined serration on the inside diameter of the retainer, which provides a grip on the pipe surface, with 360° contact and support of the barrel. The split design allows use on both new and existing pipe installations.

PROJECT: B-2963
COUNTY: Durham

PROJECT SPECIAL PROVISIONS
Utility

UTILITY CONFLICTS:

General:

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

A. MCI
B. Bell South

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 owners. 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. MCI

1. See Utility Conflict Plans by others for relocation details. All other buried telephone
cables within the limits of the project will remain in place and be adjusted as necessary. MCI will required a 72 hours notice to adjust telephone cables for guardrail. If the contractor will stake or mark where proposed guardrail will be located, MCI can adjust much sooner.

B. Bell South

1. During the construction of the bridge the existing aerial telephone line and poles right of line -L- from Sta. 23+20.8 to Sta. 26+20.7 will be removed and new polls will be placed at proposed Right of Way line. All other buried telephone cables within the limits of the project will remain in place and be adjusted as necessary. See Utility Conflict Plans by others for details.