

May 10, 2004

Project: B-3348  
County: Hyde

PROJECT SPECIAL PROVISIONS  
Utility Construction

I. GENERAL CONSTRUCTION REQUIREMENTS:

Specifications:

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

Lay water mains at least 10 feet laterally from existing or proposed sanitary sewers.

The depth of pipeline installation may vary 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 sewer force mains and tie-in sections of sewer force mains, the method of anchoring pipe bends, plugs, caps, tees, reducing sections, valves, and related appurtenances will be the responsibility of the Contractor. Tying into existing sewer force mains may alter such lines to the extent that these pipelines with fittings, valves, and appurtenances may also require reaction backing or restraint; 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 before any applicable sewer force mains construction. Such approval will not relieve the Contractor of his responsibility of properly anchoring the sewer force mains system.

After the installed pipe, fittings, valves, hydrants, corporation stops and end plugs are inserted and secured, the pipe line shall be subjected to a hydrostatic pressure test of 200 psi for a period of 2 hours, by pumping the section full of clean water using an approved pressure pump. Cross connection for flushing and chlorination shall be made by means of a temporary connection from the supply pipe with an approved backflow prevention device. Taps for the cross connection piping shall be made to the portion of the existing water main that will be removed from service. The proposed water main shall be laid to within one pipe length of the point of final connection prior to flushing and testing. All flushing and chlorination work shall be performed in accordance with AWWA C651-99. All fittings, valves and backflow prevention devices required for chlorination and testing shall be incidental to the cost of the proposed pipe being tested.

Contractor shall make such arrangements, as the utility owner requires, for measuring and paying for water required to flush and test water mains.

Copies of bacteriological testing reports shall be provided to the utility owner prior to activating new water mains.

Owner and Owner's Requirements:

The existing utilities belong to the Englehard Sanitary District. The Contractor shall provide access for the owner's representatives to all phases of construction. Notify the owner two weeks before commencement of any work and one week before service interruption.

Utility Locations Shown on the Plans:

The location, size, and type material of the existing utilities shown on the plans are from the best available information. The Contractor will be responsible for determining the exact location, size, and type material of the existing facilities

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.

## II. 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 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 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.

## 2. 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.

Ductile Iron Restrained Joint Force Main Sewer 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 valves, and paid for at the contract unit price per linear foot for, "\_\_\_" DI Restrained Joint Force Main Sewer Pipe, PC 350". Such prices and payments will be full compensation for all materials, including pipe accessories, excavation, labor, pressure testing, sterilization, backfilling, and incidentals necessary to complete the work as required.

## 3. 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 250 # WP.

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 250# 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 existing pipe installations. On new installations, use one piece restrained retainer glands.

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

#### 4. 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 10", 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 DIRJ force main sewer to the HDPE, and fuse the fittings onto each end of the HDPE section of Force Main Sewer line.

Concrete for thrust restraint shall be Class A concrete meeting the requirements of Section 1000 of the Standard Specification. The concrete shall be placed around the pipe as shown on the plans and/or as directed by the Engineer. The proposed HDPE force main sewer pipe shall have a thrust collar fused into the pipe string adjacent to the proposed adapter from HDPE to the DI fitting. The thrust collars shall be design to withstand the pull back force in the HDPE pipe and the internal thrust forces that can separate the pipe where the HDPE pipe transition to RJ DI pipe. The concrete thrust block shall be poured around the thrust collar to restrain the HDPE pipe. The proposed DI reducer shall be restrained with 3/4 " threaded steel rods formed into the concrete thrust block.

The reinforcing steel shall meet the requirements of Section 1070 of the Standard Specifications. Reinforcing steel shall be placed in the center of the thrust block and shall be tied to the threaded rods.

Threaded rods shall be A-36 steel and shall match the diameter of the bolts in the coupling and/or ductile iron force main pipe fitting, but shall be no less than 3/4" diameter. The proposed transition coupling and/or the nearest ductile iron force main pipe fitting shall be tied to the thrust block. A minimum of four threaded rods shall be used, located as shown on the plans.

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 the stream to a hydrostatic pressure of 200# 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 10" 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 properly. No drilling fluid shall enter the stream.

HDPE Force Main Sewer 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 foot for "10" HDPE Force Main Sewer Pipe, SDR 9, 200# WP by Directional Bore". Such prices and payments will be full compensation for furnishing all labor, equipment, material, couplings and fittings, excavation, installation, testing, backfilling, and incidentals necessary to complete the work as required.

#### 5. IN-LINE CHECK VALVE AND VAULT:

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

Check valves shall be installed in the horizontal position. The check valve shall have a iron body, fully bronze mounted single bronze disc and bronze seat ring with swing type full opening and outside spring loaded lever arm capable of being mounted on either side of the valve. The check valve shall be rated for 175 psi working pressure. The check valves shall have mechanical joint end connections. All check valves shall have the name or monogram of the manufacturer, the year the valve casting was made, the size of the valve, and the working water pressure cast on the body of the valve. The check valve exterior shall be fully protected with 10 mils of epoxy coating

The vault shall be reinforced precast concrete and shall meet the requirements ASTM C478 and Section 1077 of the Standard Specifications. The vault shall be design to resist HS-20 traffic bearing loading and have a bolt down cast iron single access cover with two pull slots and skid resistant surface. The cast iron cover shall conform to ASTM A48, Class 30.

The quantity of check valves and vaults, installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per each for “\_\_\_” In-Line Check Valve and Vault”. Such prices and payments shall be full compensation for all labor, materials, excavation, backfilling, equipment, and incidentals necessary to complete the work as required.

#### 6. GATE VALVE AND VALVE BOX:

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

Gate valves shall be the resilient wedge type, rate for 200 psi and suitable for utilization with domestic sewage. The gate valve shall consist of a cast iron body, a modified wedge disc, resilient rubber seat ring, non-rising stem bronze stem nut cast integrally with valve disc, and O-ring seals mounted above and below the thrust collar. The resilient seat gate valve shall provide a tight shutoff and a full port flow-way. The valve interior shall be fully protected by a two part thermosetting epoxy coating. The modified wedge shall be fully supported with the backside traveling along a machined surface in the valve body. Solid guide lugs on the disc will allow travel within channels cast in the sides of the valve. The resilient rubber seat ring shall be attached to an annular mounting surface on the front side of the disc with stainless steel screws. All gate valves shall be

furnished with mechanical joint end connections, unless otherwise shown on the Plans or specified herein. The end connections furnished shall be suitable for connections to the pipe furnished. All gate valves shall have the name or monogram of the manufacturer, the year the valve casting was made, the size of the valve, and the working water pressure cast on the body of the valve. The gate valve exterior shall be fully protected with 10 mils of epoxy coating. All valves shall be provided with a two-inch square operating nut and shall open by turning to the left (counterclockwise).

The valve boxes shall be cast iron, three piece, screw type with drop cover marked "Sewer". They shall be set vertically and properly adjusted so that the cover shall be in the same plane as the finished surface of the ground or street. The valve boxes shall conform to ASTM A48, Class 30.

The quantity of gate valves and valve boxes, installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per each for "8" Gate Valve and Valve Box, 200# WP". Such prices and payments shall be full compensation for all labor, materials, excavation, backfilling, equipment, and incidentals necessary to complete the work as required.

#### 7. IN-LINE CLEAN-OUT AND VAULT:

Sanitary clean-outs and vaults shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

Sanitary clean-outs shall consist of a ductile iron 8" or 6"- wye, 8" or 6"- 45 degree bend and 8" or 6" plug used for the cap on the sewer clean-out, all manufactured with flange connections except for the wye which will have a flange connection for the clean-out and mechanical joint connection for the run along the force main. The ductile iron fittings shall conform to ANSI/AWWA C-153/A21.10 for compact fittings.

The vault shall be reinforced precast concrete and shall meet the requirements ASTM C478 and Section 1077 of the Standard Specifications. The vault shall be design to resist HS-20 traffic bearing loading and have a bolt down cast iron single access cover with two pull slots and skid resistant surface. The cast iron cover shall conform to ASTM A48, Class 30.

The quantity of sanitary clean-outs and vaults, installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per each for "\_\_\_" In-Line Clean-out and Vault". Such prices and payments shall be full compensation for all labor, materials, excavation, backfilling, equipment, and incidentals necessary to complete the work as required.

8. TAPPING SLEEVE, VALVE, AND VALVE BOX:

Tapping sleeves, valves, and valve vaults 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 outlet shall be 125# flange. 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 by turning to the left (counterclockwise). Tapping valves shall be of the same type as required for gate valves (double disc C-500 or resilient seat C-509).

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

The valve boxes shall be cast iron, three piece, screw type with drop cover marked "Sewer". They shall be set vertically and properly adjusted so that the cover shall be in the same plane as the finished surface of the ground or street. The valve boxes shall conform to ASTM A48, Class 30. A valve operating nut extension shall be installed inside the valve box as is shown on the utility plans.

The quantity of tapping sleeves, valves and valve boxes, installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per each for "10" x 6" Tapping Sleeve, Valve, and Valve Box, 200# WP". Such prices and payments will be full compensation for all materials, excavation, labor, installation, sterilization, pressure testing, valve vault, backfilling, and incidentals necessary to complete the work as required.



**Englehard Sanitary District of Hyde County, NC**  
**Sanitary Sewer Force Main Pre-Approved Materials List**

Precast Vaults:

Product: As manufactured by Stayright Tank Co., Carolina Precast Concrete, N.C. Products or approved equal and shall conform to dimensions shown on drawings.

Vault Covers & Gate Valve Boxes:

Product: As manufactured by US Foundary, Inc. Neenah Foundary, East Jordan Iron Works or approved equal and shall conform to dimensions shown on Drawings.

Gate Valves:

Product: As manufactured by Watts, Mueller, M & H or approved equal and shall conform to sizes shown on drawings.

Check Valves:

Product: As manufactured by Watts, Hammond Nibco or approved equal and shall conform to sizes shown on drawings.

February 27, 2004

PROJECT: B-3348  
COUNTY: Hyde

PROJECT SPECIAL PROVISIONS  
Utility

UTILITY BY OTHERS:

General:

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

- A. Tideland EMC
- B. Sprint

The conflicting facilities will be adjusted prior to the date of availability except where 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. Tideland EMC

- 1. See "Utility by Others Plans" for utility conflicts.

B. Sprint

- 1. See "Utility by Others Plans" for utility conflicts.