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Contract Documents

Southern Reinforcing Main - Phase IIB

City Contract: SRM-IIB

December 2012

Prepared for:
Department of Water Management
Durham, North Carolina

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Kimley-Horn
and Associates, Inc.

**CITY OF DURHAM, NORTH CAROLINA
DEPARTMENT OF WATER MANAGEMENT**

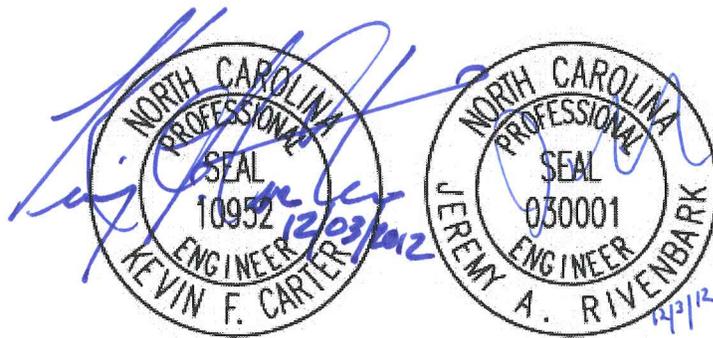
CONTRACT DOCUMENTS

FOR THE

SOUTHERN REINFORCING MAIN

PHASE IIB

CITY OF DURHAM PROJECT NO. SRM-IIB



DECEMBER 2012



**Kimley-Horn
and Associates, Inc.**

DOCUMENT 00 01 10

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DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

DOCUMENT 00 11 16

INVITATION TO BID

Contract: SRM-IIB

Project: SOUTHERN REINFORCING MAIN - PHASE IIB CONSTRUCTION

Owner: CITY OF DURHAM DEPARTMENT OF WATER MANAGEMENT
1600 MIST LAKE DRIVE
DURHAM, NORTH CAROLINA 27704

Issuing Office:

Attention: Bryant Green, P.E.
City of Durham
Department of Water Management
1600 Mist Lake Drive
Durham, North Carolina 27704
(919) 560-4381

Date: July 26, 2012

The City of Durham will open sealed formal Bids submitted by prequalified Bidders at **3:00 p.m., local time, on Tuesday, January 15, 2013** for Contract SRM-IIB, Project: **“Southern Reinforcing Main - Phase IIB Construction”** at the Department of Water Management, Administrative Offices, 1600 Mist Lake Drive, Durham, North Carolina, 27704. The Project involves the furnishing of all materials, labor, equipment, tools, etc. unless otherwise specified, for the complete installation of:

SOUTHERN REINFORCING MAIN - PHASE II: Consists of the installation of approximately 5,600 linear feet of 30-inch DIP waterline, selected sanitary sewer replacement, selected sanitary sewer service conflict resolution, sanitary sewer manholes, bored and jacked road/utility crossings, connections to existing piping, air release valves, gate valve and butterfly valve assemblies, traffic control, miscellaneous surface restoration and all associated appurtenances, as described in the Specifications and shown on the Drawings.

The foregoing description shall not be construed as a complete description of all work required.

The Contract Documents will be on file in the Department of Water Management, Administrative Offices, 1600 Mist Lake Drive, Durham, North Carolina. Copies of the Contract Documents may be obtained at the office of Kimley-Horn and Associates, Inc. located at 3001 Weston Parkway, Cary, North Carolina, 27513-2301, upon payment of \$200 by check (non-refundable) payable to Kimley-Horn and Associates, Inc. for each set of Contract Documents (full-size plans) so obtained. Additional full-size prints are available for \$3.50 each, and individual Specification pages for \$1.50 each. Mailing and handling charges are included.

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The Contract Documents may be viewed free of charge at the City of Durham, Department of Water Management, Administrative Offices, 1600 Mist Lake Drive, Durham, North Carolina .

Bidders are strongly encouraged to attend a non-mandatory **Pre-Bid Conference at 3:00 p.m. on Tuesday, December 18, 2012** at the City of Durham's Department of Water Management Administrative Offices, 1600 Mist Lake Drive, Durham, North Carolina.

Bidders should contact the City EO/EA Department at (919)560-4180 for pre-qualification requirements and forms. Only Bids submitted by prequalified Bidders will be considered responsive. SDBE Contractor Prequalification Forms are to be submitted to the City of Durham Department of Equal Opportunity/Equity Assurance (EO/EA). **The deadline for submitting completed Contractor Pre-Qualification Forms will be at 4:00 p.m. on Tuesday, January 8, 2013.** Prequalification Forms can be downloaded from the EO/EA web site: <http://durhamnc.gov/Pages/forms.aspx>. SDBE Contractor Prequalification Forms are also available in Appendix D of the Contract Documents. The established goals for this project are a **2% for minority** and **1% for women** participation.

Each Bidder must be licensed under Chapter 87 of the North Carolina General Statutes. Bidders must conform with the provisions of the North Carolina Contractor's Licensing Act of 1925, as amended. All Bids must include a Non-Collusion Affidavit.

To ensure that all Bidders are kept up to date on any Addenda, changes, or information notices, please send an e-mail to jeremy.rivenbark@kimley-horn.com indicating your intention to prepare a Bid for the Project. Failure to complete this step may render your Bid as non-responsive.

Each Bidder is advised that the Work may be inspected and supervised by an Engineer or firm under the direction of the City of Durham. The Engineer or firm may also be involved in the identification of specific repair areas and the proposed method of repairs for the Work.

The City of Durham requires the Project to be Substantially Complete within **150 Consecutive Calendar Days** from date of Notice to Proceed. The City expects to advertise, bid, award, and construct the above project with a firm completion date of no later than November 4, 2013.

No Bid shall be considered or accepted unless at the time of its filing the same shall be accompanied by a deposit of cash or a certified or cashier's check drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation (FDIC), in an amount equal to five percent (5%) of the amount of the Bid. The check shall be made payable to the City of Durham, North Carolina. Said deposit shall guarantee that the Contract will be entered into by the successful Bidder if the award is made. Such deposit of cash or certified or cashier's check may be held by the City until the successful Bidder has executed and delivered the Contract Documents, including performance and payment bond, to the City of Durham and returned or kept in accordance with North Carolina General Statute 143-129.

In lieu of the cash deposit or certified or cashier's check mentioned above, the Bidder may file a Bid bond in the same amount executed by a corporate surety authorized to execute such bonds in North Carolina and conditioned as provided by North Carolina General Statute 143-129 and in the form attached to the Bidding Documents (see Appendix F) or on file with the Engineer. Bid bond forms enclosed as part of the Bidding Documents must be properly executed at the time Bids are submitted before Bid will be

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considered. Properly executed Power of Attorney of the corporate surety's agent shall accompany such bond and be attached to the page provided therefore in the Bidding Documents.

Bids shall be submitted under a condition of irrevocability, except as required by law, for a period of ninety (90) days after Bid opening.

The City of Durham reserves the right to accept or reject any or all Bids, to waive any and all informalities, and to disregard all nonconforming or conditional Bids or counter Bids, and to accept the Bid that will be in the best interest of the City of Durham.

- END OF DOCUMENT -

DOCUMENT 00 21 15

INSTRUCTIONS TO BIDDERS - EJCDC

1.1 SUMMARY

- A. Document Includes:
1. Defined terms
 2. Copies of Bidding Documents
 3. Qualifications of Bidders
 4. Examination of Bidding Documents, other related data, and Site
 5. Pre-Bid conference
 6. Site and other areas
 7. Interpretations and Addenda
 8. Bid security
 9. Contract Times
 10. Liquidated damages
 11. Substitute and “or-equal” items
 12. Subcontractors, suppliers, and others
 13. Preparation of Bid
 14. Basis of Bid; comparison of Bids
 15. Submittal of Bid
 16. Modification and withdrawal of Bid
 17. Opening of Bids
 18. Bids to remain subject to acceptance
 19. Evaluation of Bids and award of Contract
 20. Contract security and insurance
 21. Signing of Agreement
 22. Sales and use taxes
- B. Related Documents:
1. Document 00 11 16 - Invitation to Bid
 2. Document 00 31 00 - Available Project Information
 3. Document 00 41 42 - Measurement and Payment
 4. Document 00 41 43 - Bid Form - Unit Price Contract
 5. Document 00 72 15 - General Conditions – EJCDC
 6. Bond types and values
- C. Notice of Bidding Documents and Contract Documents Provision Changes and Updates
1. The Bidder is advised that these Bidding Documents and Contract Documents include numerous changes, revisions, and updates from prior City of Durham contracts prepared previously by Kimley-Horn and Associates, Inc.

1.2 DEFINED TERMS

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract, EJCDC C-700 (2002 edition) and modified by the City of Durham

(Copyright 2009) shall have the meanings assigned to them in the General Conditions as modified, changed, added to or deleted by the General Conditions.

- A. Refer to Article 1 of the General Conditions.

1.3 COPIES OF BIDDING DOCUMENTS

- A. The Bidding Documents are identified as “Project Manual including Bidding Documents, Contract Documents, and Technical Specifications for Contract No. SRM-IIB, Project: **“Southern Reinforcing Main – Phase IIB Construction”**”
- B. The Contract Documents will be on file in the Department of Water Management, Administrative Offices, 1600 Mist Lake Drive, Durham, North Carolina. Copies of the Contract Documents may be obtained at the office of Kimley-Horn and Associates, Inc. located at 3001 Weston Parkway, Cary, North Carolina, 27513-2301, upon payment of \$200 by check (non-refundable) payable to Kimley-Horn and Associates, Inc. for each set of Contract Documents (full-size plans) so obtained. Additional full-size prints are available for \$3.50 each, and individual Specification pages for \$1.50 each. Mailing and handling charges are included.

To ensure that all Bidders are kept up to date on any Addenda, changes, or information notices, please send an e-mail to jeremy.rivenbark@kimley-horn.com indicating your intention to prepare a Bid for the Project. Failure to complete this step may render your Bid as non-responsive.

- C. Complete sets of Bidding Documents shall be used in preparing Bids; neither the City of Durham nor the Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- D. Upon receipt of Bidding Documents, Bidder shall verify that the Bidding Documents are complete. The Bidder shall notify the Engineer if they have received incomplete Bidding Documents.
- E. The City of Durham and Engineer, in making copies of the Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

1.4 QUALIFICATIONS OF BIDDERS

- A. The Contractor must be prequalified with the City of Durham at the time of the Bid opening. Bidders must submit the completed Small Disadvantaged Business Enterprise (SDBE) Contractor Prequalification Forms to the City of Durham Department of Equal Opportunity/Equity Assurance (EO/EA), by the deadline for submission of these forms as shown in Section 00 11 16, in order for City review of such requests to be completed prior to the Bid opening. The SDBE Contractor Prequalification Forms are included in Appendix D of this document, and can be found at the EO/EA web site: http://www.durhamnc.gov/forms/equal_prequalification.pdf. All questions concerning

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Prequalification should be directed to the City of Durham Department of EO/EA, (919) 560-4180.

B. Notice Under the Americans with Disabilities Act (ADA):

1. The City of Durham will not discriminate against qualified individuals with disabilities on the basis of disability. Anyone who requires an auxiliary aid or service for effective communications, or assistance to participate in a City program, service, or activity, should contact:

Attention: Stacey Poston
ADA Coordinator
City of Durham
Department of General Services
Administration Division
101 City Hall Plaza
Durham, North Carolina 27701
Phone: (919) 560-4197
TTY: (919) 560-4809
E-mail: stacey.poston@durhamnc.gov

All such requests should be submitted as soon as possible but no later than forty-eight (48) hours before any scheduled event.

C. The Contractor shall demonstrate the ability to complete a majority of all portions of the Contract using equipment and personnel owned and employed by the Contractor. The Contractor shall include the following information in the Bid in the spaces provided:

1. The number of years the Contractor has been regularly engaged in similar Contract municipal work and a list of projects they have completed with their equipment and personnel.
2. A list of the Contractor's personnel experienced to do the Work including the Superintendent to be in charge of the Work, including the length of their experience with this type of municipal work.
3. A list of the Contractor's equipment in good condition and suitable for completion of the Contract.
4. That the Contractor will have available to do the work at the proper time or times, adequate equipment and facilities listing such equipment and facilities in such detail that they can be quickly and accurately checked.
5. That the Contractor has ample repair parts and supplies to maintain all equipment and facilities properly and with a minimum of delay.
6. If the Bidder is a corporation, the names of all corporate officers and the name of the executive who will give his personal attention to the work.
7. Detailed financial information relating to the resources of the Bidder.
8. **The Contractor shall perform work amounting to at least 65% of the Contract, using its own equipment and personnel. No portion of the Contract shall be sublet, assigned, or otherwise disposed of except with the expressed written consent of the City of Durham. If the Contractor fails to demonstrate to the City that it has the ability to perform the specified**

percentage of the Contract work with its own equipment and personnel, its Bid may be considered non-responsive.

- D. Miscellaneous
1. If the Contractor fails to demonstrate the ability to complete a majority of all portions of the Contract with equipment and personnel owned and employed by the Contractor, the Bid may be considered non-responsive.
 2. The Contractor shall be licensed under Chapter 87 of the North Carolina General Statutes as a General Contractor. The Privilege License of the Contractor shall be included in the Bid.
 3. A Privilege License for all Subcontractors of the apparent Successful Bidder, and those Bidders requested by the City of Durham, shall be filed within five (5) calendar days after the Bid opening.
 4. City of Durham Privilege Licenses may be obtained from the Department of Finance, Treasury Management Division, located at 101 City Hall Plaza, Durham, North Carolina, (919) 560-4700.

1.5 EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

- A. Subsurface and Physical Conditions
1. The General Conditions identify:
 - a. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that the Engineer has used in preparing the Bidding Documents.
 - b. Those drawings of physical conditions in or relating to existing surface and subsurface structures at or contiguous to the Site (except Underground Facilities) that the Engineer has used in preparing the Bidding Documents.
- B. Copies of reports and drawings referenced in Paragraph 1.5.A.1 are made available by the City of Durham to any Bidder in accordance with Appendix K. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which the Bidder is entitled to rely and have been identified and established as provided in Paragraph 4.02 of the General Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
- C. Underground Facilities
1. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to the City of Durham and Engineer by owners of such Underground Facilities, including the City of Durham, or others.

- D. Hazardous Environmental Condition
1. The General Conditions identify those reports and drawings related to a Hazardous Environmental Condition identified at the Site, if any, that Engineer has used in preparing the Bidding Documents.
 2. Copies of reports and drawings referenced in Paragraph 1.5.D.1 will be made available by the City of Durham to any Bidder on request. Those reports and drawings are not part of the Contract Documents but the “technical data” contained therein upon which Bidder is entitled to rely and have been identified and established as provided in Paragraph 4.06 of the General Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
- E. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in Paragraph 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to Hazardous Environmental Conditions at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Technical Specifications or identified in the Contract Documents to be within the scope of the Work appear in Paragraph 4.06 of the General Conditions.
- F. On request, the City of Durham will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates. All requests for access to the Site must be received forty-eight (48) hours prior to the preferred time of access. **All Site access requests must be made to and coordinated by the City or Durham Project Manager, Mr. Bryant Green, P.E., at (919) 560-4381.** The Bidder may not access any Site without written permission from the City of Durham. The Bidder shall be responsible for any damage (including damage to any underground utility and acceptable restoration) as a result of additional subsurface investigations.
- G. Reference is made to Paragraph 7.04 of the General Conditions for the identification of the general nature of other work that is to be performed at the Site by the City of Durham or others (such as utilities and other contractors) that relates to the Work contemplated by these Bidding Documents. Reference is also made to Section 1 - GENERAL of the Specifications for the identification of those surveys and investigation reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the work which have been relied upon by Engineer in preparing the Drawings and Specifications. Subsurface data are offered in good faith solely for the purpose of placing the Bidder in receipt of all information available to the City of Durham and Engineer and in no event is to be considered part of the Contract Documents.

- H. It is the responsibility of each Bidder before submitting a Bid to:
1. examine and carefully study the Bidding Documents, the other related data identified in the Bidding Documents, and any Addenda thoroughly;
 2. visit the Site and become familiar with and satisfy Bidder as to the general, local, and site conditions that may affect cost, progress, and performance of the Work;
 3. become familiar with and satisfy Bidder as to all federal, state, and local, Laws and Regulations, ordinances or rules that may affect cost, progress, and performance of the Work;
 4. carefully study all:
 - a. reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in Paragraph 4.02 of the General Conditions, and
 - b. reports and drawings of Hazardous Environmental Conditions at the Site which have been identified in Paragraph 4.06 of the General Conditions;
 5. obtain and carefully study (or accept consequences of not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying and specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;
 6. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;
 7. become aware of the general nature of the Work to be performed by the City of Durham and others at the Site that relates to the Work as indicated in the Bidding Documents;
 8. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
 9. promptly give Engineer written notice of all conflicts, errors, ambiguities, omissions, or discrepancies that Bidder discovered in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
 10. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
- I. The submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with every requirement of this Paragraph 1.5, that without

exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performing and furnishing of the Work.

1.6 PRE-BID CONFERENCE

- A. A non-mandatory Pre-Bid conference will be held at **3:00 p.m. on Tuesday, December 18, 2012** at the City of Durham's Department of Water Management Administrative Offices, 1600 Mist Lake Drive, Durham, North Carolina. Representatives of the City of Durham, Engineer, and the Department of EO/EA will be present to discuss the Project. Bidders are strongly encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such agenda as Engineer considers necessary in response to questions arising from the conference. Oral statements may not be relied upon and shall not be binding or legally effective.
- B. Bidder questions pertaining to the Work and SDBE participation will be addressed at the Pre-Bid conference. Bidders may also identify potential SDBE Subcontractors at the Pre-Bid conference.
- C. Only Bids submitted by pre-qualified Bidders will be considered responsive. The deadline for submitting completed Contractor Pre-Qualification Forms will be **4:00 p.m., Tuesday, January 8, 2013**.

1.7 SITE AND OTHER AREAS

- A. The Site is identified in the Bidding Documents. Right-of-Entry and easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by the City of Durham unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by the Contractor.

1.8 INTERPRETATIONS AND ADDENDA

- A. All questions about the meaning or intent of the Bidding Documents shall be submitted in writing via mail to Kimley-Horn and Associates, Inc., P.O. Box 33068, Raleigh, NC, **Attn: Jeremy A. Rivenbark, P.E.** or via email to: jeremy.rivenbark@kimley-horn.com. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda emailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. All Addenda will also be posted on the City of Durham, Department of Finance, Purchasing Division web site and at the at least twenty-four (24) hours before Bids are opened:

<http://www.durhamnc.gov/departments/purchasing/bids.cfm>. Questions received less than five (5) days prior to the date for opening of Bids will not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications shall be without legal effect.

- B. Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by the City of Durham or Engineer.
- C. **It shall be the Bidder's sole responsibility to make inquiry as to the Addenda issued.** All Addenda shall be bound and securely attached to the Bidding Documents and submitted with the Bid. All such Addenda shall become a part of the Contract Documents and all Bidders shall be bound by such Addenda, whether or not received by the Bidders.

1.9 BID SECURITY

- A. No Bid shall be considered or accepted unless at the time of its filing the same shall be accompanied by a deposit of cash or a certified or cashier's check drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation (FDIC), in an amount equal to five percent (5%) of the amount of the Bid. The check shall be made payable to the City of Durham. Said deposit shall guarantee that the Contract shall be entered into by the Successful Bidder if the award is made.
- B. In lieu of the cash deposit or certified or cashier's check mentioned above, the Bidder may file a Bid bond in the same amount executed by a corporate surety authorized to execute such bonds in North Carolina and conditioned as provided by North Carolina General Statute 143-129 and in the form attached to the Bidding Documents or on file with the Engineer. Bid bond forms must be properly executed at the time Bids are submitted before Bid will be considered. Properly executed Power of Attorney of the corporate surety's agent shall accompany such bond and be attached to the page provided therefore in the Contract Documents.
- C. The Bid security of the Successful Bidder shall be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice to Award, whereupon the Bid Security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within fifteen (15) days after the Notice of Award, the City of Durham may annul the Notice of Award and the Bid Security of that Bidder will be forfeited. The Bid security of other Bidders whom the City of Durham believes to have a reasonable chance of receiving the award may be retained by the City of Durham until the earlier of seven (7) days after the Effective Date of the Agreement or ninety-one (91) days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.
- D. Bid security of other Bidders who the City of Durham believes do not have a reasonable chance of receiving the award will be returned within seven (7) calendar day after the Bid opening.

- E. In the event the Contract is not awarded, all Bid securities will be returned within seven (7) calendar days after the Bid opening.

1.10 CONTRACT TIME

- A. The number of days within which, or the dates by which, the Work is to be substantially completed (Contract Time) and ready for final payment are set forth in the Agreement. The Contractor shall commence work on the date specified in the Notice to Proceed, and he shall complete the work within the stipulated Contract time.

1.11 LIQUIDATED DAMAGES

- A. Provisions for liquidated damages, if any, are set forth in the Agreement.

1.12 SUBSTITUTE AND “OR-EQUAL” ITEMS

- A. The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or “or-equal” items. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment may be furnished or used by the Contractor if acceptable to the Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

1.13 SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- A. A Privilege License for all Subcontractors must be filed within five (5) days after the Bid opening.
- B. All Bidders are required to complete the SDBE Participation Document form E-101 and submit the completed forms with their Bid.
- C. Each Bidder must submit a “Statement of Intent to Perform as a Subcontractor” for each SDBE Subcontractor within five (5) days of the Bid Opening. The “Letter of Intent to Perform as a Subcontractor” form can be found in Appendix A and must be signed by each SDBE Subcontractor. SDBE goal participation is calculated by multiplying the goal percentages by the Bid price. A listing of the City of Durham certified SDBE firms for the Project can be found in Appendix B.
- D. All questions regarding SDBE documents or requirements may be directed to the City of Durham, Department of Equal Opportunity/Equity Assurance at (919) 560-4180.
- E. The City of Durham reserves the right to reject a proposed Subcontractor for reasonable cause.
- F. The General Conditions, Paragraph 6.06, require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to the City of Durham in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five (5) days after Bid opening,

submit to the City of Durham a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by the City of Durham. If the City of Durham or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, the City of Durham may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, without an increase in the Bid.

- G. If apparent Successful Bidder declines to make any such substitution, the City of Durham may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds of forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which the City of Durham or Engineer makes no written objection prior to giving of the Notice of Award will be deemed acceptable to the City of Durham and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.
- H. Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

1.14 PREPARATION OF BID

- A. The approved Bid form is included with the Bidding Documents. All Bids must be submitted on the approved Bid form furnished in the Bidding Documents. **DO NOT REMOVE ANY PAGES FROM THE BOUND DOCUMENTS.**
- B. The unit prices for specific items shall reflect all costs associated with furnishing, installing all items of Work as indicated on the Drawings and Technical Specifications, complete, in place and accepted, per the Engineer's Contract Documents, North Carolina Department of Transportation (NCDOT) Standards and Specifications, and the North Carolina Department of Environment and Natural Resources (NCDENR) Erosion and Sediment Control Planning and Design Manual.
- C. All blank spaces on the Bid form shall be completed by printing in ink or by typewriter in both words and numerals, and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid form. In case of a conflict between the Price in words and its equivalent shown in numerals, the words will take precedence. **PROPOSALS SHALL NOT BE CONDITIONAL, LIMITED OR RESTRICTED IN ANY WAY.** A Bid price shall be indicated for each unit price item listed therein, or the words "No Bid," "No Change," or "Not Applicable" entered.
- D. The omission of prices for any item on the Bid form, or the tendering of any unbalanced Bid may be the cause for the rejection of the submitted Bid.

- E. The estimated quantities contained on the Bid form are for the purpose of comparing Bids. While the quantities are close approximations, they are not guaranteed. Payment will be made on the basis of the Work as actually executed at the unit prices set forth in the executed Agreement and under the provisions of such Agreement.
- F. There shall be no additional compensation to the Contractor for materials, equipment, or work that is incidental to the successful completion of the Contract. Incidental costs include the costs inherent to the complete installation of those individual items included on the Bid form. For example, those costs associated with temporary electrical services, surveying, staking, deliveries and storage are incidental and defined within the Technical Specifications of the Bidding Documents.
- G. Item values on the Bid form shall be given as figures (i.e. \$23,000.00) and in writing (i.e. Twenty-three thousand and no/100's dollars).
- H. A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. Insert the corporate officer's capacity under each signature. The corporate address and state of incorporation shall be shown below the signatures.
- I. A Bid by a limited liability company shall be executed in the name of the firm by a member in the presence of a witness with signature, and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown below the signature. Affix the limited liability company seal adjacent to the signatures.
- J. A Bid by an individual or sole proprietorship shall be executed with a signature of the individual/sole proprietor in the presence of a witness with signature. Insert the words "Individual/Sole Proprietor" under the signature and show the Bidder's name and official address. Affix the individual/sole proprietor seal adjacent to the signature.
- K. A Bid by a partnership shall be executed in the partnership name and signed by all partners (whose title must appear under the signature) in the presence of a witness with signature, accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signatures. Affix the partnership seal adjacent to the each partner signature.
- L. A Bid by a joint venture shall be executed by each party of the joint venture under their respective seals in a manner appropriate to each such party as described above for each party type. Provide a single signature sheet for each party to the joint venture.
- M. All names shall be typed or printed in ink below the signatures.
- N. The Bid shall contain an acknowledgment of all Addenda, the numbers of which shall be filled in on the Bid form.
- O. The address and telephone number for communication regarding the Bid shall be shown.

- P. The Bid shall contain evidence of the Bidder's authority and qualification to do business in the State of North Carolina or covenant to obtain such qualification prior to the award of the Contract. Bidder's shall be licensed under Chapter 87 of the North Carolina General Statutes as a General Contractor. Bidder's State of North Carolina contractor license number shall also be shown on the Bid form.
- Q. Minority and Women Business Enterprise Ordinance (M/WBE) Construction Forms, completed in accordance with the M/WBE Requirement Instructions shall be submitted with the Bid, or the Bid may be considered non-responsive. The City Council has adopted a resolution that requires the City to solicit minority and women owned businesses to Bid on the Project. **The established goals for this project are 2% goal for MSDBE and 1% goal for WSDBE participation.**

1.15 BASIS OF BID; COMPARISON OF BIDS

- A. Unit Price
1. Bidders shall submit a Bid on a unit price basis for each item of Work listed on the Bid Schedule.
 2. The total of all estimated prices will be the sum of the Products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.
 3. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.
- B. The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Contract Documents as provided in Paragraph 11.02 of the General Conditions.
- C. Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents for liquidated damages for failing to achieve Substantial Completion for each day before or after the time allowed as set forth in the Agreement.

1.16 SUBMITTAL OF BID

- A. Bidders shall be solely responsible for delivery of Bids in the required manner and time.
- B. No Bid shall be accepted or considered unless the complete set of required and executed documents is included with the Contractor's submittal.
- C. Each Bid shall include Non-Collusion Affidavits for the Bidder. Affidavits for all Subcontractors of the apparent Successful Bidder, and those Bidders requested by the

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City of Durham, must be filed within five (5) days after the Bid opening. Blank Non-Collusion Affidavit Forms can be found in Appendix E.

- D. A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Invitation to Bid and shall be enclosed in an opaque sealed envelope plainly marked with the following information:
1. Contract: **SRM-IIB**
 2. Project: **“Southern Reinforcing Main - Phase IIB Construction”**
 3. Name of Bidder: _____ ✓
 4. Address of Bidder: _____ ✓

 5. Phone Number of Bidder: _____ ✓
 6. Contact Person for Bidder: _____ ✓
 7. Phone Number of Contact: _____ ✓
 8. Bidder’s North Carolina General Contractor’s License Number: _____ ✓
 9. The above-name Bidder has enclosed, and checked as appropriate, the following items in the Bid (check all):
 - a. _____ ✓ Bid Form
 - b. _____ ✓ SDBE Forms (E-101)
 - c. _____ ✓ Non-Collusion Affidavit of Bidder
 - d. _____ ✓ Privilege License of Bidder
 - e. _____ ✓ Bid Security
 - f. _____ ✓ List of Contractor Equipment and Personnel
- E. Incorrect information, incomplete information, or irregularities on the Bid envelope may be cause for a Bid to be declared invalid or informal. Invalid or informal Bids will not be opened.
- F. Bids submitted after the time listed in the Agreement and Invitation to Bid will be returned to the Bidder unopened.
- G. If a Bid is sent by mail should be registered mail. The sealed envelope containing the Bid shall be enclosed in a separate mailing/delivery envelope plainly marked on the outside with the notation “BID ENCLOSED.” A mailed Bid shall be addressed to:

Mr. Donald F. Greeley, PE, PLS, Director
Department of Water Management
101 City Hall Plaza
Durham, North Carolina 27701

NOTE: BIDS MAILED THROUGH THE UNITED STATES POSTAL SERVICE (USPS) SHALL BE SENT TO THE 101 CITY HALL PLAZA ADDRESS, AND SHALL ARRIVE NO LATER THAN JANUARY 14, 2013.

If a Bid is sent by air/ground special delivery, express delivery, etc. (e.g. FEDEX, UPS, etc.) shall be marked as indicated above and should be addressed to:

Mr. Donald F. Greeley, PE, PLS, Director
Department of Water Management
Administrative Offices
1600 Mist Lake Drive
Durham, NC 27704

Mark envelope with the Project title and Contract number in the lower left-hand corner. Bids sent by mail or express air/ground delivery and arriving after the time for opening of Bids shall not be considered as valid Bids. **SPECIAL NOTE: If the Bidder chooses delivery of the Bid by means other than in person, neither the City of Durham nor the Engineer assumes responsibility for delivery to the Bid opening.** In such instances, the Bidder shall have no claim against the Owner or Engineer.

- H. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared unacceptable at the City of Durham's discretion.
- I. Bid Forms, appendices, and enclosures which are improperly prepared may be declared unacceptable at the City of Durham's discretion.
- J. Failure to provide security deposit, bonds, or insurance requirements will invalidate the Bid at the City of Durham's discretion.

1.17 MODIFICATION AND WITHDRAWAL OF BID

- A. Amendments to properly submitted Bids will be permitted when received in writing prior to Bid opening and when endorsed by the same party or parties who signed and sealed the Bid. Bidders are cautioned that if in the opinion of the City of Durham or the Engineers such modifications are not explicit, or are in any sense subject to misinterpretation, then the Bid so amended or modified will be subject to rejection.
- B. Bidders upon properly notarized written request may withdraw their Bid at any time before Bid opening. Negligence on the part of the Bidder in preparing its Bid confers no right for the withdrawal of the Bid after it has been opened.
- C. No Bidder may withdraw a Bid after Bid opening and prior to the conclusion to the period of time stated in the Bid form except to the extent, if any, that may be required by law.

1.18 OPENING OF BIDS

- A. Bids shall be opened, unless obviously non-responsive, at the time and place indicated in the Invitation to Bid and read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

- B. Bidders may be present at the opening of Bids.

1.19 BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- A. All Bids will remain subject to acceptance for the period of time stated in the Bid form, but the City of Durham may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

1.20 EVALUATION OF BIDS AND AWARD OF CONTRACT

- A. The City of Durham reserves the right to reject any or all Bids, including without limitation, nonconforming, non-responsive, unbalanced, or conditional Bids. The City of Durham further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. The City of Durham may also reject the Bid of any Bidder if the City believes that it would not be in the best interest of the Project to make an award to that Bidder. The City of Durham also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate terms with the Successful Bidder.
- B. More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- C. In evaluating Bids, the City of Durham will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid form or prior to the Notice of Award.
- D. In evaluating Bidders, the City of Durham will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Supplies, and other individuals or entities must be provided as provided in the General Conditions.
- E. The City of Durham may conduct such investigations as the City deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.
- F. If the Contract is to be awarded, the City of Durham will award the Contract to the Bidder whose Bid is in the best interest of the Project.
- G. Notice of Award or notice of intent to Award will not constitute a Contract binding on the City of Durham and will not obligate the City to enter into a Contract with the Bidder. The City will not be legally bound before the City executes and delivers to the Contractor a written Contract.

1.21 CONTRACT SECURITY AND INSURANCE

- A. Article 5 of the General Conditions sets forth the City of Durham's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to the City of Durham, it shall be accompanied by such bonds.

1.22 SIGNING OF AGREEMENT

- A. After the City of Durham has identified the Successful Bidder, the Engineer on behalf of the City of Durham, will issue to the Successful Bidder, a written Notice to Award.
- B. The City of Durham will give the apparent successful Bidder a Notice of Award within ninety (90) calendar days after the day of the Bid opening. When the City of Durham gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts to the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within fifteen (15) calendar days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to the City of Durham. Within ten (10) days after execution of the Agreement by the Manager, the City of Durham will deliver one fully signed counterpart to Successful Bidder.
- C. Failure or refusal of the Bidder whose Bid is accepted to execute the Contract as hereinbefore provided shall constitute a breach by such Bidder of the Contract created by the acceptance of the Bid, and in such event, the City at its option, may determine that such Bidder has abandoned the Contract. Thereupon such Bidder's Bid and the acceptance thereof shall be null and void. It is understood by the Bidder, in the event of the annulment of the Award, that the amount of the cash, certified check, or Bid Bond, submitted with the Bid shall be forfeited to the use of the City of Durham, not as a penalty, but as liquidated damages.

1.23 SALES AND USE TAXES

The North Carolina General Assembly adopted legislation which required that contractors pay North Carolina Sale and Use Tax on materials, supplies, fixtures, and equipment used by the contractor in the performance of contracts with cities, counties, and towns on contracts dated July 1, 1961 or later.

The North Carolina General Assembly also authorized a refund to cities, counties, and towns of sales and use taxes paid on direct purchases of tangible personal property and construed purchases in the performance of contracts to be direct purchases.

The Bidder shall not include North Carolina Sales and Use Tax in unit price Bid. The Contractor will be reimbursed for all North Carolina Sales and Use Tax paid during any preceding month, at the time the monthly estimate is paid, provided the required submittals are made to the City of Durham. Refer to Paragraph 6.10 of the General Conditions for additional information.

- END OF DOCUMENT -

DOCUMENT 00 41 42

MEASUREMENT AND PAYMENT

1.1 SCOPE OF WORK

- A. The scope of this Section defines the procedures for measuring and making payments for each bid item in the Bid Form (Document 00 41 43) of these Contract Documents. Payment will be made based on completion in a satisfactory manner of the specified items included in the description in this Section for each Bid Item. Not all Work required, significant, or incidental, is identified in this Section or in the Bid Form. Where Work is shown on the Drawings and/or specified in the Contract Documents, but not specifically described in this Section or is incidental to or affiliated with the Work as described, the Work shall be deemed to be included in the value of the Work described in the Pay Items with which the Work is most closely associated. All Work so shown or specified is included in these payment items.
- B. Where descriptions of Work are given for each Bid Item below, they are given to convey the intent of the Contract Documents in regard to allocating the costs of performing the Work to the various unit price Bid Items. Such descriptions are general in nature and do not attempt to describe all work shown, specified, or otherwise necessary to complete the Work in accordance with the Contract Documents.
- C. As required by the Agreement (Document 00 52 15) and the Instructions to Bidders (Document 00 21 15) the bid items and prices included in the Bid Form constitute all of the pay items for the completion of the Work and will be full compensation for all labor, materials, tools, equipment and incidentals, permit fees, bonds, taxes, insurance, overhead and profit, temporary access roads and facilities, and other incidental and other miscellaneous costs necessary to complete the Work as shown on the Drawings and/or as specified in the Contract Documents to be performed under this Contract. Compensation for all such services, things, and materials shall be included in the appropriate Bid Item.
- D. Actual quantities of each item Bid Item on a unit price basis will be determined upon completion of the construction in the manner set up for each item in this Section. Payment for all items listed in the Schedule of Prices will constitute full compensation for all work shown and/or specified and required to accomplish the intent of this Contract.
- E. As specified in the General Conditions, payment will be made for materials properly stored in areas designated as Permanent Utility Easements (PUE) and Temporary Construction Easements (TCE), which include temporary construction staging areas or at a bonded warehouse or secured storage yard independently obtained by the Contractor. Payment for any stored materials or equipment shall not imply that the materials or the equipment meets the requirements of the Contract Documents or that it will be determined acceptable when incorporated into the Work.
- F. Retainage and other payment conditions apply to all payments.

- G. The Contractor shall submit for the Engineer's approval, a complete detailed breakdown of all Lump Sum Items in the Proposal. This breakdown, modified as directed by the Engineer, will be used as a basis for preparing estimates and establishing progress payments.
- H. Progress payment requests shall include the percentage of the total amount of the Contract which has been completed from the start-up of the Project to and including the last day of the preceding month, or other mutually agreed upon day of the month accompanied by such data and supporting evidence as Owner or Engineer may require.

1.2 PAY ITEM DESCRIPTIONS

Pay Item 1 – Mobilization, Demobilization, etc. (3% Maximum)

A Lump Sum Payment less than or equal to 3% of the Total Bid Price minus Pay Item 1 (to include all bonds, insurance, move-on expenses, etc.) will be allowed for 'mobilization and demobilization' as a progress payment line item. The actual cost of bonds and insurance (up to the maximum payment of 3%) will be considered in the initial payment request provided that cost documentation suitable to the Engineer is furnished by the Contractor. Any outstanding balance of the mobilization and demobilization Pay Item will be payable when the Project is determined to be 10% complete as indicated by the approved progress payments (less cost of mobilization, stored materials and stored equipment).

Pay Item 2 – Surveys and Layout

Work specified under Section 2 and as shown on the Drawings, shall be included for payment in the Contractor's Unit Price Bid Items for Section 4. No specific payment will be made for this Work under Section 2.

Pay Item 3 – Site Preparation

The Contractor shall be responsible for all site preparation necessary for the Work shown on the Drawings and specified herein. Work specified under Section 3 and as shown on the Drawings, shall be paid for as a Lump Sum Pay Item.

Pay Item 4a(1) – Furnish and Install 30-Inch DIP Push-On Joint Waterline

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, disinfecting and placing into complete operational service all 30-Inch DIP Push-On Joint Waterline, fittings and appurtenances, as shown on the Drawings and specified in Section 4. Quantities of pipe included for payment under this Pay Item shall be based on the actual linear footage of laying length of the pipe installed measured continuously along a horizontal line, plus the laying length of any partial joints and shown fittings. **No additional payment will be made for special linings, coatings or polyethylene wrapping required.**

Pay Item 4a(2) – Furnish and Install 30-Inch DIP Restrained Joint Waterline

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, disinfecting and placing into complete operational service all 30-Inch DIP Restrained Joint Waterline, fittings and appurtenances, as shown on the Drawings and specified in Section 4. Quantities of pipe included for payment under this Pay Item shall be based on the actual linear footage of laying length of the pipe installed measured continuously along a horizontal line, plus the laying length of any partial joints and shown fittings. **No additional payment will be made for special linings, coatings or polyethylene wrapping required.**

Pay Item 4b – Furnish and Install Concrete Thrust Collars for 30-Inch DIP

This item includes furnishing all labor, materials, equipment, tools and other services required for installing concrete thrust collars for 30-Inch DIP at the locations shown on the Drawings or as requested by the Engineer. The excavation at such location(s) shall receive special attention with such undisturbed materials within as short a distance as possible from the pipe. Concrete Thrust Collars shall be installed in accordance with the Detail 0222119, as shown on the Drawings. The ductile iron pipe manufacture shall provide a section of pipe with a welded-on thrust collar that is welded 360° around the barrel of the pipe.

All other work required to complete the concrete thrust collar installation shall be considered as incidental to the project and no specific payment will be made. Payment for completing the work specified in Section 4 and as shown on the Drawings shall be included for payment under Pay Item 4b.

Pay Item 4c – Furnish and Install 8-Inch DIP Sanitary Sewer (0' – 10' depth)

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into complete operational service all 8-Inch DIP Push-On Sanitary Sewer pipe, fittings transition pieces, couplings, and appurtenances for a complete and operable installation, as shown on the Drawings and specified in Section 4. Quantities of pipe included for payment under this Pay Item shall be based on the actual linear footage of laying length of the pipe installed measured continuously along a horizontal line from center of manhole to center of manhole; or in the case of stubs for future service connections from the center of the sewer main to the end of the pipe installed. **No additional payment will be made for special linings, coatings or polyethylene wrapping required.**

All other work required to complete the 8-Inch DIP Sanitary Sewer installation shall be considered as incidental to the project and no specific payment will be made. Payment for completing the work specified in Section 4 and as shown on the Drawings shall be included for payment under Pay Item 4c.

Pay Item 4d – Furnish and Install 4-Inch DIP Sanitary Sewer Service

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into complete operational service all 4-Inch DIP Push-On Sanitary Sewer Service pipe, fittings transition pieces, couplings, and appurtenances for a complete and

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operable installation, as shown on the Drawings and specified in Section 4. Quantities of pipe included for payment under this Pay Item shall be based on the actual linear footage of laying length of the pipe installed measured continuously along a horizontal line from the center of the sanitary sewer main to the right-of-way line or from the center of the manhole to right-of-way line, or in the case of stubs for future service connections from the center of the sanitary sewer main to the end of the pipe installed. **No additional payment will be made for special linings, coatings or polyethylene wrapping required.**

The cost for furnishing and installing the 4-Inch DIP sanitary sewer service pipe and fittings shall be paid for under the Unit Price Bid for Pay Item 4d. Installation of a sewer service pipe shall be as indicated in the Typical Sanitary Sewer Lateral Connection [Detail 0260106], shown on the Drawings, except as otherwise directed by the Engineer.

All other work required to complete the 4-Inch DIP sanitary sewer service pipe installation shall be considered as incidental to the project and no specific payment will be made.

Pay Item 4e – Furnish and Install 8” x 4” DIP Sanitary Sewer Service Lateral Fitting

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into complete operational service all 8” x 4” DIP Sanitary Sewer Service Lateral Fittings and appurtenances for a complete and operable installation, as shown on the Drawings and specified in Section 4. Sanitary sewer laterals shall be connected to the sanitary sewer main by means of a ductile iron WYE fitting rotated at an angle of forty-five degrees (45°) with respect to horizontal and the direction of flow. The cost for furnishing and installing the WYE fitting and the appropriate transition coupling shall be included in the cost for the 8” x 4” DIP Sanitary Sewer Service Lateral Fitting under the Unit Price Bid for Pay Item 4e.

[The Contractor shall be responsible for identifying and locating the existing sewer services and locating the 8” x 4” Sanitary Sewer Service Lateral Fitting in the most appropriate location to make the connection.] All sanitary sewer service lateral fitting locations shall be reviewed and approved by the City of Durham and the Engineer prior to installation.

All other work required to complete the 8” x 4” DIP Sanitary Sewer Service Lateral Fitting installation shall be considered as incidental to the project and no specific payment will be made.

Pay Item 4f - Furnish and Install 4-Inch DIP Sanitary Sewer Service Lateral Cleanout

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into complete operational service all 4” DIP Sanitary Sewer Service Lateral Cleanouts and appurtenances for a complete and operable installation, as shown on the Drawings and specified in Section 4. The cost for furnishing and installing each sanitary sewer service lateral cleanout shall also include all required fittings, pipe, nipples, adapters, cleanout and cap, and concrete collar from the right-of-way to the cleanout as shown in Detail 0260106. The cost of furnishing and installing the 4-Inch DIP Sanitary Sewer Service Lateral Cleanout for each service shall be paid for under the Unit Price Bid for Pay Item 4f.

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All other work required to complete the 4” DIP Sanitary Sewer Service Lateral Cleanout installation shall be considered as incidental to the project and no specific payment will be made.

Pay Item 4g – Remove and Replace 3” DI Force Main

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into complete operational service all 3” DI Force Main and appurtenances for a complete and operable installation, as shown on the Drawings and specified in Section 4. Quantities of pipe included for payment under this Pay Item shall be based on the actual linear footage of laying length of the pipe installed measured continuously along a horizontal line of the pipe installed. **No additional payment will be made for special linings, coatings or polyethylene wrapping required.**

The cost for furnishing and installing the 3-Inch DI Force Main and fittings shall be paid for under the Unit Price Bid for Pay Item 4g.

All other work required to Remove and Replace the 3” DI Force Main for a complete installation shall be considered as incidental to the project and no specific payment will be made.

Pay Item 4h - Furnish and Install Sheeting

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, maintaining, and removing all sheeting and bracing which may be required to support sides of excavation or to protect pipes and structures from possible damage and to provide safe working conditions as shown on the Drawings and specified in Section 4. Quantities of sheeting included for payment under this Pay Item shall be based on the actual linear footage of sheeting installed measured continuously along a horizontal line of the sheeting installed. **The Contractor shall be responsible for the provision of signed and sealed structural designs of the shoring system.**

The cost for furnishing and installing sheeting shall be paid for under the Unit Price Bid for Pay Item 4h.

All other work required to Furnish and Install Sheeting for complete installation, maintenance, and removal shall be considered as incidental to the project and no specific payment will be made.

Pay Item 5a – Furnish and Install 30-Inch Butterfly Valve Assemblies

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into service all 30-Inch Butterfly Valve Assemblies, as shown on the Drawings and specified in Section 5. Butterfly valve assemblies shall include a flanged butterfly valve with operator, manhole, flanged coupling adapter, threaded rods, rod tabs, piping, valve box, thrust collars, corporation stops, concrete, etc., and all appurtenances required for a complete and operable installation in accordance with Detail 0264006.

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The cost for furnishing and installing the butterfly valve assemblies as specified in Section 5 and as shown on the Drawings with all accessories shall be included for payment under Pay Item 5a, unless the butterfly valve assembly is included for payment in the Unit Price Bid for other Pay Items.

All other work required to complete the 30-Inch Butterfly Valve Assemblies shall be considered as incidental to the project and no specific payment will be made.

Pay Item 5b – Furnish and Install 30” x 20” Flushing Connection Assemblies

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into service all Flushing Connection Assemblies, as shown on the Drawings and specified in Section 5. Flushing connection assemblies shall include a butterfly valve assembly, all piping as shown on the Drawings, fittings (including main fitting), concrete thrust blocking, stone, concrete slab, mechanical restraint system, manhole frame and cover, orifice plate, installation of piping to direct the water to the discharge point, etc., and all appurtenances required for a complete and operable installation in accordance with Detail 0260118 and Detail 1516405.

The cost for furnishing and installing the flushing connection assemblies as specified in Section 5 and as shown on the Drawings with all accessories shall be included for payment under Pay Item 5b.

All other work required to complete the Flushing Connection Assemblies shall be considered as incidental to the project and no specific payment will be made.

Pay Item 5c – Furnish and Install Pressure Air Release Valve Assemblies

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into service all Pressure Air Release Valve Assemblies, as shown on the Drawings and specified in Section 5. Pressure Air Release Valve Assemblies shall include a pressure air release valve, all piping as shown on the Drawings, fittings (including connection to the waterline), concrete, stone, precast concrete manhole, manhole frame and cover, corporation stops, etc., and all appurtenances required for a complete and operable installation in accordance with Detail 1509419R.

The cost for furnishing and installing the Pressure Air Release Valve Assemblies as specified in Section 5 and as shown on the Drawings with all accessories shall be included for payment under Pay Item 5c.

All other work required to complete the Pressure Air Release Valve Assemblies shall be considered as incidental to the project and no specific payment will be made.

Pay Item 5d – Furnish and Install Fire Hydrant/ARV Assemblies

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into service all Fire Hydrant/ARV Assemblies, as shown on the

Drawings and specified in Section 5. Fire hydrant/ARV Assemblies shall include fire hydrant, gate valve, valve box, all required piping, fittings (including main fitting), concrete, concrete thrust blocking, mechanical restraint system, stone, etc., and all appurtenances required for a complete and operable installation in accordance with Detail 1553000R. The cost for appropriate length extensions to adjust for final grades shall be included in the cost for the fire hydrant assemblies. No additional payment will be made for fire hydrant extensions.

The cost for furnishing and installing the Fire Hydrant/ARV Assemblies as specified in Section 5 and as shown on the Drawings with all accessories shall be included for payment under Pay Item 5d.

All other work required to complete the Fire Hydrant/ARV Assemblies shall be considered as incidental to the project and no specific payment will be made.

Pay Item 5e – Furnish and Install Water Service Connections

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into service all Water Service Connections, as shown on the Drawings and specified in Section 5. Water services connections shall be required at each location the existing distribution system waterline is abandoned and replaced, as shown on the Drawings. Water service connections shall include ¾"Ø corporation cock, brick support, all required ¾"Ø copper pipe, couplings (transitional or otherwise), connection to the existing water service pipe, and all appurtenances required for a complete and operable installation in accordance with Detail 0260121. ***[NOTE: It shall be the Contractor's responsibility to locate all existing water services that are connected to existing waterlines that are to be abandoned and replaced.]***

The cost for furnishing and installing the water service connections as specified in Section 5 and as shown on the Drawings with all accessories shall be included for payment under Pay Item 5e.

All other work required to complete the Water Service Connections shall be considered as incidental to the project and no specific payment will be made.

Pay Item 5f – Furnish and Install Waterline Drain Assemblies

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into service all Waterline Drain Assemblies, as shown on the Drawings and specified in Section 5. Waterline Drain Assemblies shall include a butterfly valve assembly, all piping as shown on the Drawings, fittings (including main fitting), concrete thrust blocking, stone, concrete, mechanical restraint system, manhole frame and cover, and all appurtenances required for a complete and operable installation in accordance with Detail 155300R-2.

The cost for furnishing and installing the Waterline Drain Assemblies as specified in Section 5 and as shown on the Drawings with all accessories shall be included for payment under Pay Item 5f.

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All other work required to complete the Waterline Drain Assemblies shall be considered as incidental to the project and no specific payment will be made.

Pay Item 5g – Furnish and Install Blank Valve Boxes

This item includes furnishing all labor, materials, equipment, tools and other services required for installing all Blank Valve Boxes, as shown on the Drawings and specified in Section 5. Blank Valve Boxes shall include a valve box and lid as specified in Subsection 5.09, all required concrete, stone, etc., and all appurtenances required for a complete and operable installation. The cost for appropriate length valve box extensions to adjust for final grades shall be included in the cost for the Blank Valve Boxes. No additional payment will be made for valve box extensions.

The cost for furnishing and installing the Blank Valve Boxes as specified in Section 5 and as shown on the Drawings with all accessories shall be included for payment under Pay Item 5g.

All other work required to complete the Blank Valve Boxes shall be considered as incidental to the project and no specific payment will be made.

Pay Item 6 – Furnish and Install Concrete Encasement, Concrete Arch, Concrete Ballast, Concrete Thrust Blocking, Concrete Seepage Collars and Flowable Fill (not pumpable flowable fill or non-shrink grout)

This item includes furnishing all labor, materials, equipment, tools and other services required for installing all Concrete Encasement, Concrete Arch, Concrete Ballast, Concrete Thrust Blocking, Concrete Seepage Collars and Flowable Fill (not pumpable flowable fill or non-shrink grout), as shown on the Drawings and specified in Section 6.

The quantity of concrete to be measured under this Pay Item shall be the number of cubic yards of concrete or flowable fill installed within the limits shown on the Drawings and as directed by the Engineer.

The cost for furnishing and installing Concrete Encasement, Concrete Arch, Concrete Ballast, Concrete Thrust Blocking, Concrete Seepage Collars and Flowable Fill (not pumpable flowable fill or non-shrink grout) as specified in Section 6 and as shown on the Drawings shall be included for payment under Pay Item 6.

All other work required to complete the installation of Concrete Encasement, Concrete Arch, Concrete Ballast, Concrete Thrust Blocking, Concrete Seepage Collars and Flowable Fill (not pumpable flowable fill or non-shrink grout) shall be considered as incidental to the project and no specific payment will be made.

Pay Item 7a – Maintenance and Restoration of Unpaved Surfaces

This item includes furnishing all labor, materials, equipment, tools and other services required for performing the maintenance and restoration of all unpaved surfaces, as shown on the Drawings and specified in Section 7. *Maintenance and Restoration of Unpaved Surfaces shall also*

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include all landscaping (bushes, trees, decorative and miscellaneous plantings, etc.) associated with this project, as shown on the Drawings.

Payment for Maintenance and Restoration of Unpaved Surfaces shall be in accordance with the Lump Sum Price for Pay Item 7a.

All other work required to complete the Maintenance and Restoration of Unpaved Surfaces shall be considered as incidental to the project and no specific payment will be made.

Pay Item 7b – Restoration of Sub-Base (Type ABC)

This item includes furnishing all labor, materials, equipment, tools and other services required for installing Aggregate Base Course (ABC), as shown on the Drawings and specified in Section 7.

Payment for the Restoration of Sub-Base (Type ABC) to be paid for under Pay Item 7b shall be the measured number of tons placed in accordance with Section 7 and at the direction of the Engineer. The final quantity shall be measured and paid for under Pay Item 7b, up to the maximum widths shown on the Drawings. Beyond these widths, any quantities required for restoration shall be at the Contractor's expense.

All other work required to complete the Restoration of Sub-Base (Type ABC) shall be considered as incidental to the project and no specific payment will be made.

Pay Item 7c – Restoration of Asphalt Concrete Base Course (Type B25.0B)

This item includes furnishing all labor, materials, equipment, tools and other services required for installing Asphalt Concrete Base Course (Type B25.0B), as shown on the Drawings and specified in Section 7.

Payment for the Restoration of Asphalt Concrete Base Course (Type B25.0B) to be paid for under Pay Item 7c shall be the measured number of tons placed in accordance with Section 7 and at the direction of the Engineer. The final quantity shall be measured and paid for under Pay Item 7c, up to the maximum widths shown on the Drawings. Beyond these widths, any quantities required for restoration shall be at the Contractor's expense.

The base price for Pay Item 7c – Restoration of Asphalt Concrete Base Course (Type B25.0B) shall be no less than \$40 per ton. If a Bidder submits a Bid Price for Pay Item 7c that is less than \$40 per ton, the Bid Price for the item will be automatically increased to \$40 per ton and the Bidders overall Bid Price adjusted accordingly.

All other work required to complete the Restoration of Asphalt Concrete Base Course (Type B25.0B) shall be considered as incidental to the project and no specific payment will be made.

Pay Item 7d – Restoration of Asphalt Concrete Surface Pavement (Type S9.5B)

This item includes furnishing all labor, materials, equipment, tools and other services required for installing Asphalt Concrete Surface Pavement (Type S9.5B), as shown on the Drawings and specified in Section 7.

Payment for the Restoration of Asphalt Concrete Surface Pavement (Type S9.5B) to be paid for under Pay Item 7d shall be the measured number of tons placed in accordance with Section 7 and at the direction of the Engineer. The final quantity shall be measured and paid for under Pay Item 7d, up to the maximum widths shown on the Drawings. Beyond these widths, any quantities required for restoration shall be at the Contractor's expense.

The base price for Pay Item 7d – Restoration of Asphalt Concrete Surface Pavement (Type S9.5B) shall be no less than \$40 per ton. If a Bidder submits a Bid Price for Pay Item 7d that is less than \$40 per ton, the Bid Price for the item will be automatically increased to \$40 per ton and the Bidders overall Bid Price adjusted accordingly.

All other work required to complete the Restoration of Asphalt Concrete Surface Pavement (Type S9.5B) shall be considered as incidental to the project and no specific payment will be made.

Pay Item 7e – Miscellaneous Surface Restoration (not included in other Pay Items)

This item includes furnishing all labor, materials, equipment, tools and other services required for Work associated with Miscellaneous Surface Restoration, as shown on the Drawings and specified in Section 7. This item includes any miscellaneous surface restoration not previously included in other Pay Items such as concrete, brick or asphalt sidewalks, concrete, brick or asphalt curb and gutter, concrete, brick or asphalt driveways, concrete or asphalt traffic islands, traffic signal loops, pavement markings and striping, removal and replacement of catch basin frames and grating, removal and replacement of manhole frames and covers, and removal and replacement of valve boxes and lids, etc.

Payment for Miscellaneous Surface Restoration (not included in other Pay Items) shall be in accordance with the Lump Sum Price for Pay Item 7e.

All other work required to complete the Miscellaneous Surface Restoration (not included in other Pay Items) shall be considered as incidental to the project and no specific payment will be made.

Pay Item 7f – Asphalt Binder for Plant Mix PG64-22

This item includes furnishing all labor, materials, equipment, tools and other services required for Work associated with Asphalt Binder for Plant Mix PG64-22, as shown on the Drawings and specified in Section 7. Price adjustments for Asphalt Binder for Plant Mix PG64-22 shall be made in accordance with NCDOT Section 620 of the Standard Specifications, as modified herein. The base price index for the Asphalt Binder for Plant Mix (PG64-22) associated with this Project is **\$559.33** per ton. This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **November 1, 2012**.

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Payment for Asphalt Binder for Plant Mix PG64-22 to be paid under Pay Item 7f shall be the measured number of tons placed in accordance with Section 7. The Unit Price Bid and the Extended Total for this Pay Item have already been established by the Owner for this Project, and shall not be adjusted throughout the Contract period.

Any subsequent Asphalt Binder for Plant Mix PG64-22 price adjustments (increases or decreases) shall be made under Pay Item 7g only.

Pay Item 7g – Owner Asphalt Price Adjustment

This item provides a means for the Owner to implement a price adjustment (increase or decrease) for Asphalt Binder for Plant Mix PG64-22 in accordance with NCDOT Section 620 of the Standard Specifications, as modified herein. The base price index for the Asphalt Binder for Plant Mix (PG64-22) associated with this Project is **\$559.33** per ton. This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **November 1, 2012**.

Payment for Asphalt Binder for Plant Mix PG64-22 to be paid under Pay Item 7g shall be the measured number of tons placed in accordance with Section 7 times the difference between the base price index and the actual price index.

The Unit Price Bid and the Extended Total for this Pay Item has already been established by the Owner. This Pay Item only increases or decreases as the price index per ton for the Asphalt Binder for Plant Mix (PG64-22) on the first day of each subsequent month, increases or decreases throughout the Contract period.

Pay Item 7h – Milling Asphalt Pavement, 1½-Inch Depth

This item includes furnishing all labor, materials, equipment, tools and other services required for the milling asphalt pavement, as shown on the Drawings and specified in Section 7. Milled asphalt pavement to be paid for shall be the actual number of square yards of pavement surface that has been milled in accordance with the requirements of Section 7 and in accordance with the Engineer's directions. In measuring this quantity, the length will be the actual length milled, measured along the pavement surface. The width will be the width required by the Drawings or as directed by the Engineer, measured along the pavement surface. Any milling not authorized by the Engineer will be at the Contractor's expense. Additional milling which is less than or equal to 1-inch below the depths shown on the Drawings shall be considered incidental to the work and no additional payment will be made. If milling is ordered to a depth greater than 1-inch below the depths shown on the Drawings then the entire additional depth beyond the indicated milling depth will be considered for payment. No additional payment will be made for additional equipment necessary to remove pavement in the area of manholes, valve boxes, curb inlets, catch basins, curb and gutter, and other obstructions. No additional payment will be made for irregular areas and intersections or in areas where the length is less than 100-feet. No additional payment will be made where the Contractor elects to make multiple cuts to achieve the final depth. Milled asphalt pavement shall be paid for under Pay Item 7h.

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All other work required to complete the Milling Asphalt Pavement, 1½-Inch Depth shall be considered as incidental to the project and no specific payment will be made.

Pay Item 8a – Perform Additional Excavation

This item includes furnishing all labor, materials, equipment, tools and other services required for performing additional excavation specifically requested by the Engineer, in accordance with Section 8. The quantity of additional excavation to be paid for under Pay Item 8a shall be the volume of materials excavated in accordance with the Engineer's directions as measured in place by the Engineer. No payment will be made for excavation beyond the Maximum Trench Excavation Limits, as shown on the Drawings. Any excavation not authorized by the Engineer will be at the Contractor's expense. Additional excavation less than or equal to six (6) inches below the depths shown on the Drawings, including allowance for required bedding materials, shall be considered incidental to the work and no additional payment will be made. If excavation is ordered to a depth greater than six (6) inches, then the entire additional depth beyond the normal excavation limits will be considered for payment.

Payment for Performing Additional Excavation to be paid under Pay Item 8a shall be the measured number of cubic yards removed in accordance with Section 8.

All other work required to Perform Additional Excavation shall be considered as incidental to the project and no specific payment will be made.

Pay Item 8b – Furnish and Place Additional Stone Bedding

This item includes furnishing all labor, materials, equipment, tools and other services required for placing additional stone bedding specifically requested by the Engineer, in accordance with Section 8. The quantity of additional stone bedding to be paid for under Pay Item 8b shall be the volume of materials placed in accordance with the Engineer's directions as measured in place by the Engineer. The stone bedding specified under other Sections will not be included for payment under Pay Item 8b.

Payment for Placing Additional Stone Bedding to be paid under Pay Item 8a shall be the measured number of cubic yards placed in accordance with Section 8.

No payment will be made for stone bedding when soil (dirt) excavation is carried deeper than the required trench depths or outside the specified trench limits, except where the Contractor is ordered by the Engineer to excavate beyond the specified depth or the Maximum Trench Excavation Limits, as shown on the Drawings.

All other work required to Furnish and Place Additional Stone Bedding shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9a – Erect and Maintain Silt Fence

This item includes furnishing all labor, materials, equipment, tools and other services required to erect, maintain and the removal of silt fence in accordance with Section 9. The quantity of silt

fence to be paid for under Pay Item 9a shall be the total length of silt fence erected in accordance with the Engineer's directions as measured in place by the Engineer.

Payment for Erecting and Maintaining Silt Fence to be paid under Pay Item 9a shall be the measured number of linear feet erected in accordance with Section 9.

All other work required to Erect and Maintain Silt Fence shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9c – Construct and Maintain Stone Check Dams

This item includes furnishing all labor, materials, equipment, tools and other services required to construct, maintain, and the removal of stone check dams in accordance with Section 9. The quantity of stone check dams to be paid for under Pay Item 9c shall be the total number of check dams constructed in accordance with the Engineer's directions as measured in place by the Engineer.

Payment for Constructing and Maintaining Stone Check Dams to be paid under Pay Item 9c shall be the measured number constructed in accordance with Section 9.

All other work required to Construct and Maintain Stone Check Dams shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9d – Construct and Maintain Stone Filters

This item includes furnishing all labor, materials, equipment, tools and other services required to construct, maintain, and the removal of Stone Filters in accordance with Section 9. The quantity of Stone Filters to be paid for under Pay Item 9d shall be the total number of Stone Filters constructed in accordance with the Engineer's directions as measured in place by the Engineer.

Payment for Constructing and Maintaining Stone Filters to be paid under Pay Item 9d shall be the measured number constructed in accordance with Section 9.

All other work required to Construct and Maintain Stone Filters shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9e – Construct and Maintain Stone Filter Inlet Protection

This item includes furnishing all labor, materials, equipment, tools and other services required to construct, maintain, and the removal of Stone Filter Inlet Protection in accordance with Section 9. The quantity of Stone Filter Inlet Protection to be paid for under Pay Item 9e shall be the total number of Stone Filter Inlet Protection constructed in accordance with the Engineer's directions as measured in place by the Engineer and in accordance with Detail 0227010.

Payment for Constructing and Maintaining Stone Filter Inlet Protection to be paid under Pay Item 9e shall be the measured number constructed in accordance with Section 9.

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All other work required to Construct and Maintain Stone Filter Inlet Protection shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9g – Furnish and Place Rip Rap

This item includes furnishing all labor, materials, equipment, tools and other services required to furnish, install and maintain Rip Rap in accordance with Section 9. The quantity of Rip Rap to be paid for under Pay Item 9g shall be the total number of tons of Rip Rap installed in accordance with the Engineer's directions as measured in place by the Engineer.

Payment for Rip Rap to be paid under Pay Item 9g shall be the measured number installed in accordance with Section 9.

All other work required to Furnish and Place Rip Rap shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9i – Furnish and Place Synthetic Geotextile Filter Fabric

This item includes furnishing all labor, materials, equipment, tools and other services required to furnish, place and maintain Synthetic Geotextile Filter Fabric in accordance with Section 9. The quantity of Synthetic Geotextile Filter Fabric to be paid for under Pay Item 9i shall be the total number of square yards installed in accordance with the Engineer's directions as measured in place by the Engineer.

Payment for Synthetic Geotextile Filter Fabric to be paid under Pay Item 9i shall be the measured number of square yards installed in accordance with Section 9.

All other work required to Synthetic Geotextile Filter Fabric shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9j – Furnish and Place Straw with Net Temporary Ditch Lining

This item includes furnishing all labor, materials, equipment, tools and other services required to place and maintain Straw with Net Temporary Ditch Lining in accordance with Section 9. The quantity of Straw with Net Temporary Ditch Lining to be paid for under Pay Item 9j shall be the total number of square yards of Straw with Net Temporary Ditch Lining placed in accordance with the Engineer's directions as measured in place by the Engineer.

Payment for Furnishing and Placing Straw with Net Temporary Ditch Lining to be paid under Pay Item 9j shall be the measured number of square yards placed in accordance with Section 9.

All other work required to Furnish and Place Straw with Net Temporary Ditch Lining shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9p – Furnish and Place Temporary Gravel Construction Entrance/Exit

This item includes furnishing all labor, materials, equipment, tools and other services required to furnish, place, maintain, and the removal of Temporary Gravel Construction Entrance/Exit in accordance with Section 9. The quantity of Temporary Gravel Construction Entrance/Exit to be paid for under Pay Item 9p shall be the total number of Temporary Gravel Construction Entrance/Exit constructed in accordance with the Engineer's directions as measured in place by the Engineer and in accordance with Detail 0257701R.

Payment for Furnish and Place Temporary Gravel Construction Entrance/Exit to be paid under Pay Item 9p shall be the measured number constructed in accordance with Section 9.

All other work required to Furnish and Place Temporary Gravel Construction Entrance/Exit shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9q – Furnish and Place Straw Bale Fence

This item includes furnishing all labor, materials, equipment, tools and other services required to place, maintain and remove Straw Bale Fence in accordance with Section 9. The quantity of Straw Bale Fence to be paid for under Pay Item 9q shall be the total length of straw bale fence erected in accordance with the Engineer's directions as measured in place by the Engineer.

Payment for Furnish and Place Straw Bale Fence to be paid under Pay Item 9q shall be the measured number of linear feet erected in accordance with Section 9.

All other work required to Furnish and Place Straw Bale Fence shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9r – Furnish and Place Curb Inlet Sediment Control

This item includes furnishing all labor, materials, equipment, tools and other services required to construct, maintain, and the removal of Curb Inlet Sediment Control devices in accordance with Section 9. The quantity of Curb Inlet Sediment Control devices to be paid for under Pay Item 9r shall be the total number of Curb Inlet Sediment Control devices constructed in accordance with the Engineer's directions as measured in place by the Engineer.

Payment for Furnishing and Placing Curb Inlet Sediment Control to be paid under Pay Item 9r shall be the measured number constructed in accordance with Section 9.

All other work required to Furnish and Place Curb Inlet Sediment Control shall be considered as incidental to the project and no specific payment will be made.

Pay Item 9s – Furnish and Place Tree Protection Fencing

This item includes furnishing all labor, materials, equipment, tools and other services required to erect, maintain and the removal of tree protection fencing in accordance with Section 9. The quantity of tree protection fencing to be paid for under Pay Item 9s shall be the total length of tree

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protection fencing erected in accordance with the Engineer's directions as measured in place by the Engineer.

Payment for Furnishing and Placing Tree Protection Fencing to be paid under Pay Item 9s shall be the measured number of linear feet erected in accordance with Section 9.

All other work required to Furnishing and Placing Tree Protection Fencing shall be considered as incidental to the project and no specific payment will be made.

Pay Item 10a – Furnish and Install Bored and Jacked Railroad Crossing, W/L Sta. Sta. 96+66.58 to W/L Sta. 99+16.58

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the **GUARANTEED COMPLETE** installation of a bored and jacked casing, as specified Section 10 and as shown on the Drawings. The Contractor shall be responsible for the structural design of the casing pipe and coordinating work in Section 10, with related work specified elsewhere in the Contract Documents so as to provide all hardware and accessories for a complete installation. Quantities included for payment under Pay Item 10a shall be the total amount of work and materials required for the bored and jacked stream crossing installed at the location shown on the Drawings. The total cost shall include the carrier pipe, casing pipe, pipe alignment guides, vent pipe (if required), all excavations, dewatering, jacking, boring, brick bulkhead, concrete cradle (as specified above) and sheeting as required for a complete installation.

Payment for Furnishing and Installing Bored and Jacked Railroad Crossing shall be in accordance with the Lump Sum Price for Pay Item 10a.

All other work required to complete the bored and jacked crossing shall be considered as incidental to the project and no specific payment will be made.

Pay Item 10b – Furnish and Install Bored and Jacked Utility Crossing, W/L Sta. 110+60.22 to W/L Sta. 111+20.22

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the **GUARANTEED COMPLETE** installation of a bored and jacked casing, as specified Section 10 and as shown on the Drawings. The Contractor shall be responsible for the structural design of the casing pipe and coordinating work in Section 10, with related work specified elsewhere in the Contract Documents so as to provide all hardware and accessories for a complete installation. Quantities included for payment under Pay Item 10b shall be the total amount of work and materials required for the bored and jacked roadway crossing installed at the location shown on the Drawings. The total cost shall include the carrier pipe, casing pipe, pipe alignment guides, vent pipe (if required), all excavations, dewatering, jacking, boring, brick bulkhead, concrete cradle (as specified above) and sheeting as required for a complete installation.

Payment for Furnishing and Installing Bored and Jacked Utility Crossing shall be in accordance with the Lump Sum Price for Pay Item 10b.

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All other work required to complete the bored and jacked crossing shall be considered as incidental to the project and no specific payment will be made.

Pay Item 10c – Furnish and Install Bored and Jacked Stream Crossing, W/L Sta. 119+09.93 to W/L Sta. 120+08.93

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the **GUARANTEED COMPLETE** installation of a bored and jacked casing, as specified Section 10 and as shown on the Drawings. The Contractor shall be responsible for the structural design of the casing pipe and coordinating work in Section 10, with related work specified elsewhere in the Contract Documents so as to provide all hardware and accessories for a complete installation. Quantities included for payment under Pay Item 10c shall be the total amount of work and materials required for the bored and jacked stream crossing installed at the location shown on the Drawings. The total cost shall include the carrier pipe, casing pipe, pipe alignment guides, vent pipe (if required), all excavations, dewatering, jacking, boring, brick bulkhead, concrete cradle (as specified above) and sheeting as required for a complete installation.

Payment for Furnishing and Installing Bored and Jacked Stream Crossing shall be in accordance with the Lump Sum Price for Pay Item 10c.

All other work required to complete the bored and jacked crossing shall be considered as incidental to the project and no specific payment will be made.

Pay Item 10d – Furnish and Install Bored and Jacked Stream Crossing, W/L Sta. 143+14.13 to W/L Sta. 143+94.13

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the **GUARANTEED COMPLETE** installation of a bored and jacked casing, as specified Section 10 and as shown on the Drawings. The Contractor shall be responsible for the structural design of the casing pipe and coordinating work in Section 10, with related work specified elsewhere in the Contract Documents so as to provide all hardware and accessories for a complete installation. Quantities included for payment under Pay Item 10d shall be the total amount of work and materials required for the bored and jacked stream crossing installed at the location shown on the Drawings. The total cost shall include the carrier pipe, casing pipe, pipe alignment guides, vent pipe (if required), all excavations, dewatering, jacking, boring, brick bulkhead, concrete cradle (as specified above) and sheeting as required for a complete installation.

Payment for Furnishing and Installing Bored and Jacked Stream Crossing shall be in accordance with the Lump Sum Price for Pay Item 10d.

All other work required to complete the bored and jacked crossing shall be considered as incidental to the project and no specific payment will be made.

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Pay Item 10e – Furnish and Install Bored and Jacked Roadway Crossing, W/L Sta. 156+34.88 to W/L Sta. 158+14.88

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the **GUARANTEED COMPLETE** installation of a bored and jacked casing, as specified Section 10 and as shown on the Drawings. The Contractor shall be responsible for the structural design of the casing pipe and coordinating work in Section 10, with related work specified elsewhere in the Contract Documents so as to provide all hardware and accessories for a complete installation. Quantities included for payment under Pay Item 10e shall be the total amount of work and materials required for the bored and jacked stream crossing installed at the location shown on the Drawings. The total cost shall include the carrier pipe, casing pipe, pipe alignment guides, vent pipe (if required), all excavations, dewatering, jacking, boring, brick bulkhead, concrete cradle (as specified above) and sheeting as required for a complete installation.

Payment for Furnishing and Installing Bored and Jacked Roadway Crossing shall be in accordance with the Lump Sum Price for Pay Item 10e.

All other work required to complete the bored and jacked crossing shall be considered as incidental to the project and no specific payment will be made.

Pay Item 11 – Furnish and Install 4-Foot Diameter Standard Precast Concrete Manholes

This item includes furnishing all labor, materials, equipment, tools and other services required for installing, testing, and placing into complete operational service all 4-Foot Diameter Standard Precast Concrete Manholes and appurtenances, as shown on the Drawings and specified in Section 11. The quantity to be measured under Pay Item 11 shall be the actual vertical feet of each manhole installed, measured from the top of the manhole base slab to the finished elevation of the manhole cover. Unless there are changes in locations as directed by the Engineer or the Contractor can demonstrate that the depth is significantly greater than shown, then the Drawings shall be used to establish the depths for this Pay Item. The Unit Price shall also include the layout, excavation, sheeting (if required), vent pipe (if required), installation, stone bedding, backfill, painting, testing, frames, covers, steps (if required), sleeves, etc., and all associated appurtenances as shown on the Drawings. **No additional payment will be made for special linings or coatings required.**

Ballast concrete for manholes, if required, shall be included for payment under Pay Item 6.

Payment for furnishing and installing 4-Foot Diameter Standard Precast Concrete Manholes shall be in accordance with the Vertical Foot Price for Pay Item 11. All manholes already included for payment in other Pay Items shall not be paid for at the unit price for Pay Item 11.

All other work required to complete the installation of the 4-foot Diameter Standard Precast Concrete Manholes shall be considered as incidental to the project and no specific payment will be made.

Pay Item 12a – Furnish and Install Traffic Control Devices

This item includes furnishing all labor, materials, equipment, tools and other services required for installing all Traffic Control Devices and appurtenances, as shown on the Drawings and specified in Section 12. Payment for Work under Pay Item 12a shall be for the total of all Traffic Control Devices specified in Section 12, as shown on the TCP Drawings, and as required for this Project.

Payment for furnishing and installing Traffic Control Devices under Pay Item 12a shall be made as follows:

1. 25% of the Lump Sum Price when the Project work is 10% complete as indicated by approved progress payments, exclusive of stored materials.
2. 50% of the Lump Sum Price when the Project is 50% complete as indicated by approved progress payments, exclusive of stored materials.
3. 25% of the Lump Sum Price when the Project is substantially complete.

All other work required to complete the installation of the Traffic Control Devices, including all temporary pavement striping and covering existing pavement striping as indicated on the TCP Drawings, shall be considered as incidental to the project and no specific payment will be made.

Pay Item 12b – Furnish and Install Additional Changeable Message Signs

This item includes furnishing all labor, materials, equipment, tools and other services required to Furnish and Install Additional Changeable Message Signs required for traffic control that are not shown on the Drawings. Payment for Work under Pay Item 12b shall be for each Additional Changeable Message Sign required for this Project that is acceptably placed and in operation, at any one time during the life of the project. Payment will be based on an all inclusive per unit/per day, daily rental charge.

All other work required to Furnish and Install Additional Changeable Message Signs shall be considered as incidental to the project and no specific payment will be made.

Pay Item 13a – Remove and Dispose of Existing Manholes

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the removal and disposal of existing manholes as shown on the Drawings and specified in Section 13. The Contractor shall locate, excavate, remove and dispose the existing manhole in it's entirety as indicated on the Drawings. The removal and disposal of existing manholes shall generally, but not always, occur in a location where a new manhole will be put in it's place. Excavation and backfilling of the trench for this work shall be considered incidental to the work and no additional payment will be made.

Payment to Remove and Dispose of Existing Manholes shall be paid under Pay Item 13a and shall be in accordance with the unit price for each manhole removed and disposed of and in accordance with Section 13.

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All other work required to Remove and Dispose of Existing Manholes shall be considered as incidental to the project and no specific payment will be made.

Pay Item 18a – Removal, Storage, Transportation, Treatment and/or Disposal of Petroleum Impacted Groundwater

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the Removal, Storage, Transportation, Treatment and/or Disposal of Petroleum Impacted Groundwater as specified in Section 18.

Payment for the Removal, Storage, Transportation, Treatment and/or Disposal of Petroleum Impacted Groundwater shall be paid under Pay Item 18a, and shall be the measured number of gallons of petroleum impacted groundwater in accordance with Section 18. No payment will be made for the removal and disposal of groundwater not authorized by the Engineer.

The cost for petroleum impacted groundwater shall include the removal, storage, transportation, treatment and disposal via AFVR technology.

All other work required for Removal, Storage, Transportation, Treatment and/or Disposal of Petroleum Impacted Groundwater shall be considered as incidental to the project and no specific payment will be made.

Pay Item 18b – Mobile Pre-Treatment Remediation System

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the Mobile Pre-Treatment Remediation System as specified in Section 18.

Payment for the Mobile Pre-Treatment Remediation System shall be paid under Pay Item 8b, and shall be based on a monthly rental cost basis for the leasing of the mobile pre-treatment remediation system.

All other work required for the Mobile Pre-Treatment Remediation System shall be considered as incidental to the project and no specific payment will be made.

Pay Item 18c – Filter Bags

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the Filter Bags as specified in Section 18.

Payment for the Filter Bags shall be paid under Pay Item 8c, and shall be based on the number of Filter Bags used.

All other work required for the Filter Bags shall be considered as incidental to the project and no specific payment will be made.

Pay Item 18d – Granular Activated Carbon (GAC)

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the Granular Activated Carbon (GAC) as specified in Section 18.

Payment for the Granular Activated Carbon (GAC) shall be paid under Pay Item 8d, and shall be based on the measured number of tons of GAC used.

All other work required for the Filter Bags shall be considered as incidental to the project and no specific payment will be made.

Pay Item 18e – Excavation, Transportation, and “Temporary Stockpiling” of Petroleum Impacted Soil

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the Excavation, Transportation, and “Temporary Stockpiling” of Petroleum Impacted Soil as specified in Section 18.

Payment for the Excavation, Transportation, and “Temporary Stockpiling” of Petroleum Impacted Soil shall be paid under Pay Item 8e, and shall be based on the measured number of cubic yards of in-place material removed.

The cost for the temporary stockpiling of petroleum impacted soil shall include the excavation, storage, and transportation.

All other work required for the Excavation, Transportation, and “Temporary Stockpiling” of Petroleum Impacted Soil shall be considered as incidental to the project and no specific payment will be made.

Pay Item 18f – Excavation, Transportation, Treatment and Disposal of Petroleum Impacted Soil

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the Excavation, Transportation, Treatment and Disposal of Petroleum Impacted Soil as specified in Section 18.

Payment for the Excavation, Transportation, Treatment and Disposal of Petroleum Impacted Soil shall be paid under Pay Item 8f, and shall be based on the measured number of tons of impacted soil removed.

The cost for petroleum impacted soil shall include the excavation, storage, transportation, treatment and disposal. Documented disposal tonnage (tickets) shall be provided to the Resident Project Representative.

All other work required for the Excavation, Transportation, Treatment and Disposal of Petroleum Impacted Soil shall be considered as incidental to the project and no specific payment will be made.

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Pay Item 18g – Temporary Containment and Treatment of Petroleum Contaminated Soil as Illustrated in Figure 1

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with the Temporary Containment and Treatment of Petroleum Contaminated Soil as Illustrated in Figure 1 as specified in Section 18.

Payment for the Temporary Containment and Treatment of Petroleum Contaminated Soil as Illustrated in Figure 1 shall be paid under Pay Item 8g, and shall be based on the measured number installed.

All other work required for the Temporary Containment and Treatment of Petroleum Contaminated Soil as Illustrated in Figure 1 shall be considered as incidental to the project and no specific payment will be made.

Pay Item 18h – Furnish and Install “Replacement” Backfill and Select Backfill for Petroleum Impacted Soil Removed

This item includes furnishing all labor, materials, equipment, tools and other services required to perform all operations in connection with Furnishing and Installing “Replacement” Backfill and Select Backfill for Petroleum Impacted Soil Removed, as specified in Section 18.

Payment for Furnishing and Installing “Replacement” Backfill and Select Backfill for Petroleum Impacted Soil Removed shall be paid under Pay Item 8h, and shall be based on the measured number of cubic yards installed, as measured by the Engineer.

The cost for Furnishing and Installing “Replacement” Backfill and Select Backfill for Petroleum Impacted Soil Removed shall include the transportation and placement. All “Replacement” Backfill and Select Backfill shall meet the criteria established in Section 4 for “Backfill” and “Select Backfill” materials.

All other work required for Furnishing and Installing “Replacement” Backfill and Select Backfill for Petroleum Impacted Soil Removed shall be considered as incidental to the project and no specific payment will be made.

- END OF SECTION -

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DOCUMENT 00 41 43

BID FORM - UNIT PRICE CONTRACT

To: The Mayor and the City Council of the City of Durham, North Carolina
101 City Hall Plaza
Durham, North Carolina 27701

Date: 1-15, 2013

Contract: SRM-IIB

Project: Southern Reinforcing Main - Phase IIB Construction

Name of Bidder: Sullivan Eastern, Inc

Address of Bidder: 3874 S. Alston Ave. Ste 103
Durham, NC 27713

Phone Number of Bidder: 919.484.8993

Contact Person for Bidder: John Patrick

Phone Number of Contact: 919.484.8993

Bidder's NC General Contractor's License Number (required): 63673

1. OFFER

The undersigned Bidder hereby declares that the names of all persons interested in this Bid as principals appear in the blank spaces hereinafter provided for such purpose, that this Bid is in all respects fair and without collusion, that the Bidder has examined the locations of the proposed Work, the Advertisement, the Instructions to Bidders, the Technical Specifications, SDBE requirements of the Department of EO/EA of the City of Durham, the Contract Documents and bond forms, and the Drawings therein referred to and fully understands the same and agrees and accepts the terms and conditions thereof, that it is understood that the estimated quantities are approximate only and are given for the purpose of comparing Bids upon a uniform basis, and that said estimate shall in no way affect the unit prices for the Work.

The undersigned Bidder hereby agrees to furnish at the Bidder's cost the expense of all the necessary labor, tools, apparatus, machinery, equipment, transportation, and all other things which may be required to fully and properly perform all the terms, covenants, provisions, and agreements of this Contract.

The undersigned Bidder hereby agrees to do said Work and furnish said materials as prescribed in the Contract Documents and Technical Specifications, and, according to the Drawings and

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requirements of the Engineer under said Contract Documents and Technical Specifications, in a first-class manner and to the best of the undersigned's ability at the following unit prices.

The undersigned Bidder has examined the Site of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by the Engineer for the Project, we, the undersigned Bidder, hereby offers to enter into a Contract to perform the Work for the unit prices listed in this Bid form in lawful money of the United States of America.

The undersigned Bidder acknowledges that the following quantities are approximate only and are given as the basis for comparison of Bids. The City may increase or decrease the quantity of any item or portion of the work as may be deemed necessary or expedient. An increase or decrease in the quantity of any item will not be regarded as sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided for in the General Conditions.

The undersigned Bidder acknowledges that it is the intent of these Contract Documents to obtain a Contract based on Unit Prices applied to the various portions of the work except where Lump Sum Bid Prices are specifically requested. In the event of errors in the arithmetical extension of unit prices to total prices, the unit price bid shall govern, and the Award of the Contract shall be based on the recomputed total prices. Where discrepancy exists between words and numerals, the written words shall govern. If a Bidder submits a Bid showing a unit price for a particular item and omits an extended total for that item, or a Bidder submits a Bid showing an extended total for a particular item and omits a unit price for that item, the omitted numbers shall be computed using the equation "Estimated Quantity x Unit Bid Price = Extended Total", so that the omission shall not render the Bid non-responsive or incomplete. If the Bidder leaves blank any lines or spaces indicated for the dollar amount of any item in the Bid, that omission will be understood and treated as if the Bidder had written in zero dollars (\$0.00) for that particular item in the Bid. Before applying the preceding two (2) sentences this paragraph, the following rule shall apply in the special case that it describes: In places where it is indicated that a Bid should show both words and numerals for a particular dollar amount, if the Bid shows the dollar amount in numerals but omits to show any dollar amount in words (or vice versa), the Bid shall be treated as if it had shown the indicated dollar amount in both numerals and words.

The successful Bidder shall be required to submit a complete detailed cost breakdown of all of the Lump Sum items for payment purposes, for approval by the Engineer, prior to the Award of the Contract.

The undersigned Bidder acknowledges that all costs for mobilization, demobilization, bonds, insurance, etc. shall be included in the Unit Bid Price indicated. There shall be no additional compensation for mobilization, demobilization, bonds, insurance, etc and no adjustments to the Lump Sum or Unit Prices Bid based on changes in the scope of work, including but not limited to any additions to the Work on the Contract.

The undersigned Bidder acknowledges that the Project will be Awarded to the lowest responsible Bidder for the "Southern Reinforcing Main - Phase IIB", as selected by the City whose evaluation indicates that the Award will be in the best interest of the Project.

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The undersigned Bidder acknowledges that all blanks on the Bid Form shall be completed by printing in ink or by typewriter and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each unit price item listed therein, or the words, “No Bid”, “No Change”, or “Not Applicable” entered.”

The undersigned Bidder acknowledges that the omission of prices for any item on the Bid Form, or the tendering of any unbalanced Bid may be the cause for the rejection of the submitted Bid.

The undersigned Bidder acknowledges that the payment will be made on the basis of the Work as actually executed at the unit prices set forth in the executed Contract and under the provisions of such Contract.

The undersigned Bidder acknowledges that there shall be no additional compensation to the Bidder for materials, equipment, or work that is incidental to the successful completion of the Contract. Incidental costs include the costs inherent to the complete installation of those individual items included on the Bid Form.

The undersigned Bidder acknowledges that the Non-Collusive Affidavit shall be submitted for the Contractor and all subcontractors for the apparent low bidder within five (5) calendar days of the Bid Opening.

We have included the Bid security as required by the Instruction to Bidders.

All applicable federal taxes are included and State of North Carolina taxes are excluded from the unit prices.

2. ACCEPTANCE

This offer shall be open to acceptance and is irrevocable, except as required by law, for ninety (90) days from the Bid opening date.

If this Bid is accepted by the City of Durham within the time period stated above, we will:

- Execute the Agreement within fifteen (15) days of receipt of Notice of Award.
- Furnish the required bonds within fifteen (15) days of receipt of Notice of Award.
- Commence Work within ten (10) days after written Notice to Proceed.

If this Bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required bonds, the Bid security shall be forfeited as damages to the City of Durham by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this Bid and the Bid upon which a Contract is signed.

In the event our Bid is not accepted within the time stated above, the required security deposit will be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

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3. CONTRACT TIME

If this Bid is accepted, we will:

Substantially Complete all work within **150 CONSECUTIVE CALENDAR DAYS**, of the date specified in the Notice to Proceed, and fully complete all work hereunder ready for final payment within **180 CONSECUTIVE CALENDAR DAYS**, of the date specified in the Notice to Proceed.

4. UNIT PRICES

Contract: **SRM-IIB**

Project: **Southern Reinforcing Main - Phase IIB Construction**

The unit prices Bid for specific items shall reflect all costs associated with furnishing, installing all items of Work as indicated on the Drawings and Technical Specifications, complete, in place, operable and accepted, per the Engineer's Contract Documents, North Carolina Department of Transportation (NCDOT) Standards and Specifications, the North Carolina Department of Environment and Natural Resources (NCDENR) Erosion and Sediment Control Planning and Design Manual, and the City of Durham.

The following are unit prices for specific portions of the Work as listed in the following Bid Form:

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SRM-IIB ADDENDUM 1 ATTACHMENT 1

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 PROJECT: SOUTHERN REINFORCING
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DEPARTMENT OF WATER MANAGEMENT
 CITY OF DURHAM, NORTH CAROLINA

BID FORM

NOTE TO BIDDERS: DO NOT REMOVE THIS ITEMIZED BID FORM FROM THE CONTRACT DOCUMENTS

BID FOR UNIT PRICE CONTRACT

SOUTHERN REINFORCING MAIN – PHASE IIB

Bidder agrees to perform all work included in these Contract Documents, complete as indicated on the Drawings and as specified, for the following Unit Prices:

<u>Pay Item No.</u>	<u>Description</u>	<u>Unit</u>	<u>Est'd Quantity</u>	<u>Unit Bid Price</u>	<u>Extended Total</u>
1	Mobilization, Demobilization, Etc. (3% Maximum)	LS	1	78,000. ⁰⁰	78,000. ⁰⁰
2	Survey and Layout (No specific payment)			N/A	N/A
3	Site Preparation	LS	1	75,000. ⁰⁰	75,000. ⁰⁰
4a(1)	Furnish and Install 30-Inch DIP Push-On Waterline	LF	887	118. ⁰⁰	104,666. ⁰⁰
4a(2)	Furnish and Install 30-Inch DIP Restrained Joint Waterline	LF	4724	225. ⁰⁰	1,062,900. ⁰⁰
4a(3)	Remove and Replace 16-Inch DIP Restrained Joint Waterline	LF	34	200. ⁰⁰	6,800. ⁰⁰
4b	Furnish and Install Thrust Collars for 30-Inch DIP [Not included in other Pay Items]	EA	3	2,000. ⁰⁰	2,000. ⁰⁰
4c	Furnish and Install 8-Inch DIP Sanitary Sewer (0' – 10' Depth)	LF	26	75. ⁰⁰	1,950. ⁰⁰
4d	Furnish and Install 4-Inch DIP Sanitary Sewer Service	LF	40	60. ⁰⁰	2,400. ⁰⁰
4e	Furnish and Install 8" x 4" Sanitary Sewer Service Lateral Fitting	EA	2	1,000. ⁰⁰	2,000. ⁰⁰
4f	Furnish and Install 4-inch Sanitary Sewer Service Lateral Cleanout	EA	2	600. ⁰⁰	1,200. ⁰⁰
4g	Remove and Replace 3-inch DIP Force Main	LF	31	62. ⁰⁰	1,922. ⁰⁰
4h	Furnish and Install Sheeting	LF	320	110. ⁰⁰	35,200. ⁰⁰
5a	Furnish and Install 30-Inch Butterfly Valve Assemblies	EA	2	39,000. ⁰⁰	78,000. ⁰⁰
5a(2)	Furnish and Install a 30-Inch Butterfly Valve Assembly utilizing City Provided Materials	EA	1	27,000. ⁰⁰	27,000. ⁰⁰

SRM-IIB ADDENDUM 1 ATTACHMENT 1

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<u>Pay Item No.</u>	<u>Description</u>	<u>Unit</u>	<u>Est'd Quantity</u>	<u>Unit Bid Price</u>	<u>Extended Total</u>
5a(3)	Furnish and Install a 30-Inch Butterfly Valve Assembly utilizing City Provided Manhole	EA	1	38,000. ⁰⁰	38,000. ⁰⁰
5b	Furnish and Install 30" x 20" Flushing Connection Assemblies	EA	1	40,000. ⁰⁰	40,000. ⁰⁰
5c	Furnish and Install Pressure Air Release Valve Assemblies	EA	1	6,000. ⁰⁰	6,000. ⁰⁰
5d	Furnish and Install Fire Hydrant/ARV Assemblies	EA	4	7,000. ⁰⁰	28,000. ⁰⁰
5e	Furnish and Install Water Service Connections	EA	2	1,500. ⁰⁰	3,000. ⁰⁰
5f	Furnish and Install Waterline Drain Assemblies	EA	3	7,500. ⁰⁰	22,500. ⁰⁰
5g	Furnish and Install Blank Valve Boxes	EA	8	300. ⁰⁰	2,400. ⁰⁰
6	Furnish and Install Concrete Encasement, Concrete Arch, Concrete Ballast, Concrete Thrust Blocking, Concrete Seepage Collars and Flowable Fill	CY	100	200. ⁰⁰	20,000. ⁰⁰
7a	Maintenance and Restoration of Unpaved Surfaces	LS	--	40,000. ⁰⁰	40,000. ⁰⁰
7b	Restoration of Sub-Base (Type ABC)	TON	260	32. ⁰⁰	8,320. ⁰⁰
7c	Restoration of Asphalt Concrete Base Course (Type B25.0B)	TON	65	120. ⁰⁰	7,800. ⁰⁰
7d	Restoration of Asphalt Concrete Surface Pavement (Type S9.5B)	TON	90	120. ⁰⁰	10,800. ⁰⁰
7e	Miscellaneous Surface Restoration (not included in other Pay Items)	LS	1	15,000. ⁰⁰	15,000. ⁰⁰
7f	Asphalt Binder for Plant Mix PG64-22	TON	8	\$559.33	\$4,474.64
7g	Owner Asphalt Price Adjustment	LS	1	\$10,000.00	\$10,000.00
7h	Milling Asphalt Pavement, 1½-Inch Depth	SY	320	20. ⁰⁰	6,400. ⁰⁰
8a	Perform Additional Excavation	CY	400	6. ⁰⁰	2,400. ⁰⁰
8b	Furnish and Place Additional Stone Bedding	CY	400	35. ⁰⁰	14,000. ⁰⁰
9a	Erect and Maintain Silt Fence	LF	2043	2. ⁰⁰	4,086. ⁰⁰
9c	Construct and Maintain Stone Check Dams	EA	3	350. ⁰⁰	1,050. ⁰⁰
9d	Construct and Maintain Stone Filters	EA	8	100. ⁰⁰	800. ⁰⁰
9e	Construct and Maintain Stone Filter Inlet Protection	EA	23	150. ⁰⁰	3,450. ⁰⁰

SECTION: 00 41 43 - Bid Form - Unit Price (Single-Prime Contract)

00 41 43-6

SRM-PH2

SRM-IIB ADDENDUM 1 ATTACHMENT 1

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<u>Pay Item No.</u>	<u>Description</u>	<u>Unit</u>	<u>Est'd Quantity</u>	<u>Unit Bid Price</u>	<u>Extended Total</u>
9g	Furnish and Install Rip Rap	TON	55	35. ⁰⁰	1,925. ⁰⁰
9i	Furnish and Place Synthetic Geotextile Filter Fabric	SY	80	4. ⁰⁰	320. ⁰⁰
9j	Furnish and Place Straw w/Net Temporary Ditch Lining (Type 1)	SY	2800	2. ⁰⁰	5,600. ⁰⁰
9p	Furnish and Install Temporary Gravel Construction Entrance/Exit	EA	1	3,500. ⁰⁰	3,500. ⁰⁰
9q	Furnish and Place Straw Bale Fence	LF	40	7. ⁰⁰	280. ⁰⁰
9r	Furnish and Place Curb Inlet Sediment Control	EA	2	150. ⁰⁰	300. ⁰⁰
9s	Furnish and Place Tree Protection Fencing	LF	100	2. ⁰⁰	200. ⁰⁰
10a	Furnish and Install Bored and Jacked Railroad Crossing, W/L Sta. Sta. 96+66.58 to W/L Sta. 99+16.58	LS	1	320,000. ⁰⁰	320,000. ⁰⁰
10b	Furnish and Install Bored and Jacked Utility Crossing, W/L Sta. 110+60.22 to W/L Sta. 111+20.22	LS	1	75,000. ⁰⁰	75,000. ⁰⁰
10c	Furnish and Install Bored and Jacked Stream Crossing, W/L Sta. 119+09.93 to W/L Sta. 120+08.93	LS	1	100,000. ⁰⁰	100,000. ⁰⁰
10d	Furnish and Install Bored and Jacked Stream Crossing, W/L Sta. 143+14.13 to W/L Sta. 143+94.13	LS	1	130,000. ⁰⁰	130,000. ⁰⁰
10e	Furnish and Install Bored and Jacked Roadway Crossing, W/L Sta. 156+34.88 to W/L Sta. 158+14.88	LS	1	170,000. ⁰⁰	170,000. ⁰⁰
11	Furnish and Install 4-Foot Diameter Standard Precast Concrete Manholes	VERT. FEET	18	550. ⁰⁰	9,900. ⁰⁰
12a	Furnish and Install Traffic Control Devices	LS	1	50,000. ⁰⁰	50,000. ⁰⁰
12b	Furnish and Install Additional Changeable Message Signs	DAILY	14	250. ⁰⁰	3,500. ⁰⁰
13a	Remove and Dispose of Existing Manholes	EA	1	1,000. ⁰⁰	1,000. ⁰⁰
18a	Removal, Storage, Transportation, Treatment and/or Disposal of Petroleum Impacted Groundwater	GAL	1000	0.25	250. ⁰⁰
18b	Mobile Pretreatment Remediation System	MONTHLY	2	2,500. ⁰⁰	5,000. ⁰⁰
18c	Filter Bags	EA	30	15. ⁰⁰	450. ⁰⁰

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<u>Pay Item No.</u>	<u>Description</u>	<u>Unit</u>	<u>Est'd Quantity</u>	<u>Unit Bid Price</u>	<u>Extended Total</u>
18d	Granular Activated Carbon (GAC)	TON	10	500. ⁰⁰	5,000. ⁰⁰
18e	Excavation, Transportation and "Temporary Stockpiling" of Petroleum Impacted Soil	CY	20	8. ⁰⁰	160. ⁰⁰
18f	Excavation, Transportation, Treatment and Disposal of Petroleum Impacted Soil	TON	20	35. ⁰⁰	700. ⁰⁰
18g	Temporary Containment and Treatment of Petroleum Contaminated Soil as Illustrated in Figure 1	EA	2	2,500. ⁰⁰	5,000. ⁰⁰
18h	Furnish and Install "Replacement" Backfill and Select Backfill for Petroleum Impacted Soil Removed	CY	20	8. ⁰⁰	160. ⁰⁰

The TOTAL BID PRICE for the sixty (60) pay items listed above for construction complete as indicated by the Contract Documents (in words and numerals):

Two million six hundred fifty nine thousand seven hundred sixty three Dollars

and sixty-four Cents (\$ 2,659,763.⁶⁴)

Bidder Thomas M Sullivan
 (Print Name)

Bidder Thomas M Sullivan
 (Signature)

NOTE: IF A CONTRACT IS TO BE AWARDED, IT WILL BE AWARDED TO THE LOWEST RESPONSIBLE BIDDER FOR THE SOUTHERN REINFORCING MAIN - PHASE IIB, AS SELECTED BY THE CITY WHOSE EVALUATION INDICATES THAT THE AWARD WILL BE IN THE BEST INTEREST OF THE PROJECT.

NOTE: NO ADDITIONAL PAYMENT WILL BE MADE FOR ROCK EXCAVATION REQUIRED TO INSTALL THE PIPE OR STRUCTURES AS SHOWN ON THE DRAWINGS, UNLESS SPECIFICALLY APPROVED BY THE ENGINEER.

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 PROJECT: SOUTHERN REINFORCING
 MAIN – PHASE IIB
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DEPARTMENT OF WATER MANAGEMENT
 CITY OF DURHAM, NORTH CAROLINA

**CERTIFIED LIST OF EQUIPMENT/MATERIAL
 MANUFACTURERS AND SUBCONTRACTORS**

The Bidder, **Sullivan Eastern, Inc.**, as part of the procedure for the submission of Bids on this project known as the **SOUTHERN REINFORCING MAIN – PHASE IIB**, submits the following list of Equipment/Materials Manufacturers and Subcontractors to be used in the performance of work to be done on said Project. The list of Manufacturers and all equipment/materials furnished and Subcontractors shall be based on requirements of the Contract Documents. Changes to this list after the Bid opening shall only be as approved by the City upon request by the Contractor or as required by the City based upon review of Contractor's submittals:

EQUIPMENT/MATERIALS	MANUFACTURER
DUCTILE IRON PIPE	American
PRECAST CONCRETE MANHOLES	CP+P
GATE VALVES	JMP AF Dezurik American
FIRE HYDRANTS	AFC
BUTTERFLY VALVES	Dezurik
WORK TASK	SUBCONTRACTOR
ASPHALT PAVING	TBD
TRAFFIC CONTROL	STAY ALERT
PAVEMENT RESTRIPIING	TBD
EROSION CONTROL	TBD
BORING AND JACKING/TUNNELING	RAZORBACK BORING

It is understood and agreed that, if awarded a Contract, the Contractor shall not make any additions, deletions or substitutions to this Certified list without the prior written consent of the City.

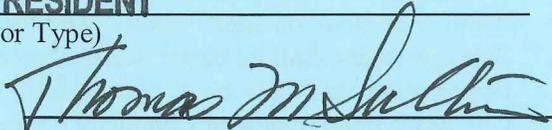
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CERTIFICATION AFFIDAVIT

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER UNDERSTAND AND AGREE THAT, IF AWARDED A CONTRACT, THIS CERTIFICATION SHALL BE ATTACHED THERETO AND BECOME A PART THEREOF.

NAME OF SIGNER: Thomas M. Sullivan, PRESIDENT
(Please Print or Type)

DATE: 1-15-13

SIGNATURE: 

We agree to diligently perform the Work in accordance with all Contract Documents, to complete such Work within the period as outlined in the Contract, and to begin Work within ten (10) consecutive calendar days after receipt of the Notice to Proceed from the Engineer.

5. ADDENDA

The following Addenda have been received. The modifications to the Bidding Documents noted below have been considered and all costs are included in the Bid.

Addendum No.: <u>1</u> , Dated: <u>1-2-13</u>	Addendum No.: _____, Dated: _____
Addendum No.: <u>2</u> , Dated: <u>1-8-13</u>	Addendum No.: _____, Dated: _____
Addendum No.: <u>3</u> , Dated: <u>1-11-13</u>	Addendum No.: _____, Dated: _____

6. APPENDICES

The following Documents will be submitted to the Engineer within five (5) calendar days after the Bid opening:

1. SDBE Form E-105 (see Appendix A for blank form and instructions)
2. Non-Collusion Affidavits of all Subcontractors (see Appendix E for blank affidavits)
3. Privilege Licenses of all Subcontractors (contact the City of Durham, Department of Finance, Treasury Management Division, (919) 560-4700 for information on securing privilege licenses)

The following information is included with Bid submission:

1. Bid Form
2. SDBE Forms E-101 (see Appendix A for blank form and instructions)
3. Non-Collusion Affidavit of Bidder (see Appendix E for blank affidavits)
4. Privilege License of Bidder (contact the City of Durham, Department of Finance, Treasury Management Division, (919) 560-4700 for information on securing privilege licenses)
5. Bid Security (see Appendix F for blank Bid bond forms)
6. List of Contractor Equipment and Personnel

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7. CONTRACTOR EXPERIENCE

All Bidders are hereby advised that the City will only accept bids from contractors who have successfully completed a minimum of three (3) projects during the past five (5) years of a similar type as the project being bid, and whose project Superintendent has also successfully completed a minimum of three (3) projects of a similar type during the past five (5) years. Failure to demonstrate compliance to the following requirements will render the bid non-responsive:

- a) Installation of 24" diameter pipelines or greater.
- b) Installation of ductile iron pipelines of size mentioned in item a) for 2,500 linear feet or greater.
- c) Installation of a bore and jack trenchless crossing of at least 100 linear feet. Experience may be by Prime Contractor or Subcontractor listed in the "Certified List of Equipment/Material Manufacturers and Subcontractors."
- d) Construction contracts for a governmental agency.

The following are representative projects conforming to the above-listed requirements. Provide the location, capacity, Engineer/Owner contact with phone number, and year completed. Failure to provide this information shall be just cause for rejection of the Bid.

2010 - Hillandale Phase I - City of Durham - Kimley-Horn 919.677.2000
2012 - Swift Creek Parallel force Main - Town of Cary - Robert Hint 919.481.5099
2012 - Harnett Co. WW to Ft. Bragg - Marziano-McGowan - Joe McGowan 843-488-0124

List of Contractor's personnel experienced to do this Work including and designating the Superintendent to be in charge of this Work showing the length of their varied experience with this particular Work. The list shall not include Subcontractor personnel.

Name	Experience	Name	Experience
John Patrick	18 yrs		
Corey Ritter	18 yrs		

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List of Contractor's equipment in good condition and suitable for completion of this Contract. Contractor must be able to demonstrate ownership of all equipment necessary to complete all portions of the Contract. The list shall not include Subcontractor equipment.

<u>Trackhoes - 4</u>	_____
<u>Loaders - 2</u>	_____
<u>Dozers - 2</u>	_____
_____	_____
_____	_____
_____	_____

Please attach additional sheets as necessary to complete the items above.

8. PAST SAFETY PERFORMANCE

Contract Safety Record Information

The Contractor's safety record shall be reviewed and evaluated in addition to other quality and performance criteria as part of bid evaluation process. The bidder's failure to provide the requested information and documentation may result in the rejection of your bid as non-responsive. Because a poor safety record can be indicative of poor past performance, your bid may also be rejected if you have any of the following deficiencies: (1) a DART Incident Rate above the Industry Average, (2) an EMR above the industry average, (3) OSHA citations or investigations, or (4) an inadequate safety plan. For each identified deficiency you must provide a written explanation of the deficiency and include a detailed explanation of the actions you have taken to address such safety record deficiency.

The following definitions shall apply to this section:

"DART incident rate" – Acronym for "Days Away, Restrictions and Transfers". The DART incident rate may be used to show the relative level of injuries and illnesses within a firm compared to the industry. It is based only on those injuries and illnesses severe enough to warrant "Days Away, Restrictions and Transfers". The DART incident rate is calculated using OSHA's Form 300 and the following formula:

$$\frac{((\text{Number of entries in column H (days away from work)} + \text{column I (job transfer or restriction)}) \times 200,000)}{(\text{Number of hours worked by all employees})} = \text{DART Incident rate.}$$

"EMR" – Acronym for "Experience Modification Rate," is an indicator of a contractor's past safety performance, widely used by the insurance industry as an equitable means of determining premiums for workers' compensation insurance. The rating system considers the average workers' compensation losses for a given firm's type of work and amount of payroll and predicts the dollar amount of expected losses to be paid by that employer in a designated rating period, usually three years. The rating is based on comparison of firms doing similar types of work, and the employer is rated against the average expected performance in each work classification. Losses incurred by the employer for the rating period are then compared to the expected losses to develop an experience rating.

"OSHA" – Acronym for the Federal Occupational Health and Safety Administration. The term "OSHA" as used in this Policy also refers to any state or local agency having jurisdictional authorization to enforce worker safety requirements and assess fines or warnings for violation of worker safety standards.

All bidders must submit the following information regarding their safety record.

1. OSHA DART Incident Rate. Provide the bidder's DART Incident Rate calculated from OSHA's Form 300 for the last three years and the other required information shown in the example table below. The bidder must attach all supporting documentation and calculations including certified OSHA forms.

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YEAR	CONTRACTOR DART INCIDENT RATE	MOST CURRENT INDUSTRY FIELD DART INCIDENT RATE**	NAISC CODE
2012	0	not out yet	
2011	1.37	2.0	237 Heavy and civil
2010	1.74	2.2	237 Heavy and civil

** the "Industry Dart Incident Rate" for your industry field and code may be found at the following website: <http://www.bls.gov/iif/oshsum.htm>. Scroll down to Summary Tables and click "PDF" for most current available data.

(a) IF YOUR DART INCIDENT RATE IS ABOVE THE INDUSTRY AVERAGE FOR ANY YEAR, ATTACH A WRITTEN EXPLANATION OF THE ACTIONS YOU HAVE TAKEN TO REDUCE YOUR DART INCIDENT RATE.

2. Experience Modification Rate (EMR). Provide the bidder's most recent Experience Modification Rate (EMR) based on insurance claims history. *The bidder must provide the source of the EMR information and contact information of insurer entity providing the EMR.*

YEAR	CONTRACTOR EMR	INDUSTRY FIELD AND CODE	NAME AND CONTACT INFO FOR EMR INFORMATION
9/10/12 to 9/10/13	1.07	237 Heavy + civil	Bill Moore 919-787-4432

(a) IF YOUR EMR IS GREATER THAN 1.0, ATTACH A WRITTEN EXPLANATION OF THE ACTIONS YOU HAVE TAKEN DO REDUCE YOUR EMR.

3. Answer the following OSHA Specific Questions:

(a) Within the last 2 years, has the bidder received any citations classified by OSHA as being (1) serious, (2) willful and/or (3) repeat violations where your company operates?

Yes _____ No X

If yes, attach a copy of each such citation and violation, and include a written explanation of the actions you have taken to reduce the incidents of such OSHA violations in the future.



January 9, 2013

Department of Water Management
Durham, North Carolina

Reference: Southern Reinforcing Main – Phase IIB

Subject: Required Written Explanation of Safety Record

Gentlemen:

At Sullivan Eastern, Inc. SAFETY is our first commitment to our employees and clients. We take pride in our safety performance and make every effort to ensure its employees a safe and healthful work place. Our EMR is above 1.0 due to an accident on February 9, 2011 where an employee was assisting an outside truck driver with unstrapping his load of ductile iron pipe. When the truck driver released the strap the load shifted and came off of the truck on the side of SEI's employee and landed on his right foot.

Sullivan Eastern, Inc. has never had an accident of this type and severity and has taken immediate measures to ensure it does not have a chance to occur again. We held a supervisor's safety meeting immediately after the incident to review the incident including the specific hazard exposures and actions and activities that lead up to the accident and to develop and revise our safety policy. Subsequently, Sullivan Eastern, Inc. held a company wide safety training meeting to review and discuss the incident and implement revised safety policies to avoid future unloading hazards.

Sullivan Eastern, Inc. continues to hold daily tool box safety meetings at each project that highlight the activity hazards for the specific days work and we have emphasized the hazards associated with unloading and loading trucks including our trucks and outside haulers. Sullivan Eastern, Inc. continues to strive toward a corporate culture wherein potential accidents and injuries are prevented before they occur. As of December 31, 2012 our DART incident rating for 2012 was 0.0.

Please do not hesitate to contact me, should you have any questions or need anything from us.

Very truly yours,

SULLIVAN EASTERN, INC.

Thomas M. Sullivan.
President

3874 S. Alston Ave
Suite 103
Durham, NC 27713
919-484-8993 Fax: 919-484-0142

Sitework / Heavy Highway / Utilities
An Equal Opportunity Employer

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(b) Has the bidder experienced any work-related fatalities within the last five years?
Yes _____ No X

If yes, attach an explanation of each such fatality, and include a written explanation of the actions you have taken to reduce the incidents of such fatality or fatalities in the future.

(c) Has the bidder had any citations issued by OSHA as a result of work related fatalities within the past 5 years?
Yes _____ No X

If yes, attach a copy of such citation(s), an explanation of the citation(s), and include a written explanation of the actions you have taken to reduce the incidents of such OSHA citations in the future.

(d) Is the bidder under investigation for any work-related fatalities?
Yes _____ No X

If yes, attach a written explanation of each such investigation, and include a written explanation of the actions you have taken to reduce the incidents of such fatality or fatalities in the future.

4. Safety Plan:

(a) Does the company have a written safety program that includes responsibility for all aspects of safety management?
Yes X No _____ N/A _____

If you answered "No" or "N/A", attach a written explanation and what actions you have taken to address such Safety Plan deficiency.

(b) Does the company have a written plan for safety training of new employees and ongoing training of existing employees?
Yes X No _____ N/A _____

If you answered "No" or "N/A", attach a written explanation and what actions you have taken to address such Safety Plan deficiency

(c) Does the company have documented evidence of safety training that they have conducted?
Yes X No _____ N/A _____

If you answered "No" or "N/A", attach a written explanation and what actions you have taken to address such Safety Plan deficiency

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(d) If the company has employees with limited English ability, does the company have a written plan for ensuring that their employees understand the training they are being given?

Yes No N/A

If you answered "No" or "N/A", attach a written explanation and what actions you have taken to address such Safety Plan deficiency

(e) Do all supervisors have an appropriate documented level of OSHA training (e.g., a minimum of 30 hour OSHA construction safety training)?

Yes No N/A

If you answered "No" or "N/A", attach a written explanation and what actions you have taken to address such Safety Plan deficiency

(f) Do employees have documented basic OSHA 10 hour construction safety training?

Yes No N/A

If you answered "No" or "N/A", attach a written explanation and what actions you have taken to address such Safety Plan deficiency

(g) Does the company have a documented Hazard Communication Program?

Yes No N/A

If you answered "No" or "N/A", attach a written explanation and what actions you have taken to address such Safety Plan deficiency.

5. Required Written Explanation of Deficient Safety Record. Your bid may be rejected if you fail to provide an adequate written explanation of actions you have taken to address a deficient safety record pursuant to this safety information request form.

9. BID FORM SIGNATURES

Refer to Document 00 21 15 for specific Bid Form signature requirements for corporations, partnerships, limited liability companies, individuals, or sole proprietorships.

10. INTERIM COMPLETION DATES [NOT APPLICABLE]

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DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

CORPORATION

The Corporate Seal of
Sullivan Eastern, Inc.

(Bidder - print the full corporate name of firm)

Thomas M Sullivan

(President/Vice President/Authorized Corporate Officer)

(Seal) **Thomas M. Sullivan, PRESIDENT**

was hereunto affixed in the presence of:

Jeffrey J. Sullivan

(Secretary/Assistant Secretary)

(Seal) **Jeffrey J. Sullivan, Sec.**



Corporate Address:

3874 S. ALSTON AVE., SUITE 103
DURHAM, NORTH CAROLINA 27713

North Carolina
(State of Incorporation)

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LIMITED LIABILITY COMPANY

(Bidder - print the full name of firm)

(Authorized Firm Member)

(Seal)

was hereunto affixed in the presence of:

(Witness)

(Seal)

Firm Address:

(State of Formation)

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INDIVIDUAL OR SOLE PROPRIETORSHIP

(Bidder - print the full name of individual or sole proprietorship)

(Seal)

Individual or Sole Proprietorship Address:

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PARTNERSHIP

(Bidder - print the full corporate name of partnership)

(Partner and Title)

(Seal)

(All Partners shall sign, additional signatures with titles and seals may be added below.)

was hereunto affixed in the presence of:

(Witness)

(Seal)

Partnership Address:

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JOINT VENTURE

If the Bid is a joint venture, add additional forms of execution for each member of the joint venture in the appropriate manner using the forms from above.

- END OF DOCUMENT -

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DOCUMENT 00 52 16

FORM OF SUBMITTALS

1.1 Form of Submittals

The form of all submittals, notices, change orders and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the ENGINEER. The forms for Notice of Award, Notice to Proceed, Final Receipt, Release and Waiver of Claim, Change Orders, Work Change Directive, Field Order, Application for Payment, Certificate of Substantial Completion, and Affidavit of Final Payment and Subcontractor/Supplier Utilization which the ENGINEER expects to use are contained in the subsequent pages of this Document.

END OF SECTION

(FORMS FOLLOW)

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DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

NOTICE OF AWARD

Dated: _____

TO: _____
(Bidder)

PROJECT: **Southern Reinforcing Main - Phase IIB Construction**

CITY CONTRACT NO.: **SRM-IIB**

CONTRACT FOR: **SOUTHERN REINFORCING MAIN – PHASE IIB**

You are notified that your Bid dated _____, **2013** for the above Contract has been considered. You are the apparent successful Bidder and have been awarded a Contract for the construction of the **Southern Reinforcing Main – Phase IIB**.

The Contract Price of your Contract is: \$ _____.

Enclosed are three (3) copies of the Contract Documents for your execution and subsequent return to this office for further processing.

You must comply with the following conditions precedent within ten (10) days of the date of this Notice of Award that is by _____, **2013**:

1. Execute three (3) copies of the Agreement. Each Project Manual and set of contract drawings must bear your signature on the cover sheet. **Do not date the Agreements or Bonds**; this will be accomplished upon execution of the Contract by the CITY. Submit a power of attorney authorizing CITY to date Bonds and Agreements.
2. Submit three (3) copies of the Performance-Payment Bonds. Instructions to the Surety and the Principal for execution of the bonds are as follows:

Where the CONTRACTOR is a Corporation, the Agreement and any bonds must be executed by the President or the Chairman of the Board of the corporation. The Agreement or Bond is accompanied by a statement certified by a Secretary of the Corporation. The signatures of the persons executing the bond on behalf of the Principal and of the Surety, respectively, shall each be dated on the signature line. If the bond is executed by an Attorney-in-Fact for the Surety, the accompanying Power of Attorney must be executed by persons whose authority to do so is plainly identified on the face of the Power of Attorney.

Neither signatures nor the Corporate Seal may appear by facsimile unless the authority for them to appear in that form is plainly disclosed on the face of the document. The Secretary of other properly authorized Officer must certify and seal a statement declaring that the authority granted by the Power of Attorney remained in force on the date that the bond was executed by the Attorney-in-Fact.

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3. Include three (3) copies of the Certificate of Insurance. The Certificate must name the CITY and the ENGINEER as additional insured's and the standard cancellation clause must read as follows:

“Should any of the above described policies be canceled or changed by restricted amendment before the expiration date thereof, the issuing Company shall give thirty (30) days written notice to the below named certificate holder.”

Failure to comply with these conditions within the time specified will entitle CITY to consider your Bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

Within twenty (20) days after you comply with the above conditions, the CITY will return to you one fully signed counterpart of the Contract Documents attached.

If you have any questions, or if we can be of any further assistance, please do not hesitate to contact this office.

KIMLEY-HORN AND ASSOCIATES, INC.

(Authorized Signature)

Jeremy A. Rivenbark, P.E., Project Manager

CONTRACT: SRM-IIB
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DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

NOTICE TO PROCEED

Dated: _____, **2013**

TO: _____
(Bidder)

PROJECT: **SOUTHERN REINFORCING MAIN - PHASE IIB CONSTRUCTION**

CITY CONTRACT NO.: **SRM-IIB**

CONTRACT FOR: **SOUTHERN REINFORCING MAIN – PHASE IIB**

You are hereby notified to commence work on the subject Contract on or before _____, 2013; and are to substantially complete the work within 150 consecutive calendar days and fully complete the work within 180 consecutive calendar days. In accordance with the Contract Documents, the Substantial Completion date is _____, 2013, with the Final Completion date is _____, 2013. Extension in Contract Time will be by written Change Order only.

The Contract provides for assessment of liquidated damages for each consecutive calendar day after the above established Substantial Completion date at the sum of \$ 2,500/day that the work remains incomplete and for each consecutive calendar day after the above established Final Completion Date at the sum of \$ 2,500/day that the work remains incomplete.

The Contract provides for the assessment of the sum of \$2,500 as Liquidated Damages for each consecutive calendar day after each of the above established Interim Completion Dates that the work remains incomplete.

CITY OF DURHAM, NORTH CAROLINA

By _____
(Authorized Signature)

(Printed Name & Title of above signer)

CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
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DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

FINAL RECEIPT

PROJECT: **SOUTHERN REINFORCING MAIN - PHASE IIB CONSTRUCTION**

CITY CONTRACT NO.: **SRM-IIB**

CONTRACT FOR: **SOUTHERN REINFORCING MAIN – PHASE IIB**

_____ agrees to accept the sum of _____ as full and final payment of the cost of all improvements provided for in the foregoing contract whose total sum of _____ Dollars and _____ Cents, \$ _____, in cash, being the full amount accruing to the _____ undersigned by virtue of said Contract, said cash covering and including full payment for all extra _____ work and material furnished by the undersigned in the construction of said improvements, and all incidentals thereto. The undersigned hereby releases the said City of Durham and its agents and representatives from all claims whatsoever growing out of the said Contract.

The undersigned further certifies that all construction has been completed in substantial compliance with the Contract Documents and that all persons doing work upon or furnishing materials or supplies for said improvements under the foregoing Contract have been paid or will be paid in full in accordance with the requirements of the Contract Documents and the requirements of the General Laws of the State of North Carolina.

The undersigned further certifies that all taxes, imposed by General Conditions Article 6.10 – Taxes have been submitted to the City of Durham.

CONTRACTOR

DATE

CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
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DATE: December 3, 2012

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CITY OF DURHAM, NORTH CAROLINA

CONTRACTOR'S AFFIDAVIT, RELEASE AND WAIVER OF CLAIM

State of _____

County of _____

(Name) (Title)

of _____, being first duly sworn, deposes and says that

(Contractor)

1. The undersigned is authorized to execute this Affidavit, Release and Waiver of Claim on behalf of the Contractor and has personal knowledge of all facts set forth herein;
2. This Affidavit, Release and Waiver of Claim is made concerning the construction of the following Project: **SOUTHERN REINFORCING MAIN - PHASE IIB CONSTRUCTION.**
3. All payrolls, material bills, sales tax, social security, state and federal unemployment insurance, and all other liabilities and taxes owed by the Contractor and arising in any manner from the above-described Project have been paid in full;
4. No claim or lien exists in favor of any supplier of materials or labor or in favor of any subcontractor furnishing materials or labor on the above-described Project;
5. Notwithstanding the foregoing; if the City of Durham or property of the City of Durham is subjected to any claim or lien which arises in any manner from the failure of the Contractor to pay any liability described above, the Contractor will indemnify and hold the City of Durham harmless for any amount which the City of Durham is required to pay to discharge such lien or settle such claim and further will pay the City of Durham's expenses, costs, and attorney fees incurred in connection therewith;
6. All claims, suits, and proceedings of every name, description, or nature as arising out of the Project against the City of Durham, its officers, employees and agents have been settled;
7. The Contractor releases and waives any and all claims of every type and description which the Contractor may have against the City of Durham arising in any manner from the construction of the above-described Project.

Sworn to and subscribed before me _____ Title: _____
This the day of _____, 20___. Date: _____

NOTARY PUBLIC

My commission expires: _____

CONTRACT: SRM-IIB
 PROJECT: SOUTHERN REINFORCING
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DEPARTMENT OF WATER MANAGEMENT
 CITY OF DURHAM, NORTH CAROLINA

SALES TAX STATEMENT

Project: _____

Period Covered _____

Invoice No.	Invoice Date	Vendor's Name	Amount Before Taxes	___% NC Tax	___% County Tax	Total Inv. Amount	County Paid
Subtotal (Page 1) -----			\$	\$	\$	\$	
Plus total cost of material withdrawn from our warehouse stock							
Grand Total			\$	\$	\$	\$	

I certify that the above listed vendors were paid sales tax upon purchases of building materials during the period covered by the construction estimate, and the property upon which such taxes were paid with or will be used in the performance of this contract. No tax on purchases of tangible personal property purchased by such contractors for use in performing the contract which does not annex to, affix to, or in some manner become a part of the building or structure being erected, altered or repaired is included in the above list.

Signed: _____

 (Title)

 Contractor (or Sub-Contractor) Name

CONTRACT: SRM-IIB
 PROJECT: SOUTHERN REINFORCING
 MAIN – PHASE IIB
 DATE: December 3, 2012

DEPARTMENT OF WATER MANAGEMENT
 CITY OF DURHAM, NORTH CAROLINA

CHANGE ORDER

Change Order No.: _____

City Project No.: _____ City Approval Date: _____
 City Contract No.: SRM-IIB Contract Date: _____

NAME OF PROJECT: SOUTHERN REINFORCING MAIN – PHASE IIB

CONTRACTOR: _____

The following changes are hereby made to the CONTRACT DOCUMENTS:

Justification:

Change to CONTRACT PRICE

Original Price	Previous Change Orders	Current Change Order	New Total Price
\$	\$	\$	\$

Change to CONTRACT TIME:

	Substantial Completion		Final Completion	
	Calendar Days	Completion Date	Calendar Days	Completion Date
New Time	_____	_____	_____	_____
	-	-	-	-
Original Time	_____	_____	_____	_____
	-	-	-	-

It is understood and agreed that the change in Contract Price and Contract Time stated above is the Contractor's full, final, and sole consideration for this Change Order, and that the Contract Price and Contract Time will not be changed further as a result of the circumstances giving rise to this Change Order. Signature below indicates agreement to waive any past, present or future claims for direct, indirect, impact, delay, inefficiency, acceleration, and increased staff, general conditions, and home office costs in any way associated with or arising from this Change Order.

CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: December 3, 2012

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

Change Order Recommended/Requested by:

Contractor: _____ Signed: _____

Title: _____

Consultant: Kimley-Horn and Associates, Inc. Signed: _____

Title: Project Manager

Owner: City of Durham – Department of Water Management Signed: _____ Title:
Project Manager

Change Order Approved/Accepted by:

Owner: _____ Signed: _____

Title: _____

Attest to Approval: _____ Title: _____

CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: December 3, 2012

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

WORK CHANGE DIRECTIVE

No. _____

PROJECT: SOUTHERN REINFORCING MAIN – PHASE IIB

Date of Issuance: _____

Effective Date: _____

Owner: CITY OF DURHAM

Owner's Contract No: SRM-IIB

Contractor: _____

Engineer: KIMLEY-HORN AND ASSOCIATES, INC.

You are directed to proceed promptly with the following change(s):

Description: _____

Purpose of Work Change Directive: _____

Attachments (List documents supporting change):

A claim is made that the above change(s) have affected Contract Price or Contract Times; any claim for a Change Order based thereon will involve one or more of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:
Times:

_____ Unit Prices ()

_____ Lump Sum

_____ Other _____

_____ Increase in price to be paid from

Contract Contingency:

\$ _____

_____ Decrease in price to be credited

to Contract Contingency:

\$ _____

Method of determining change in Contract

_____ Contractor's Records

_____ ENGINEER's Records

_____ Other _____

Actual (increase/decrease) in Contract Times:

Substantial Completion: _____ days;

Ready for final payment: _____ days;

CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: December 3, 2012

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

If the change involves an increase, the amount
is not to be exceeded without further authorization.

If the change involves an increase, the times are
not to be exceeded without further authorization.

CONTRACTOR
RECOMMENDED:

CONTRACTOR
AUTHORIZED:

BY: _____
ENGINEER

BY: _____
CITY OF DURHAM

CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: December 3, 2012

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

WORK CHANGE DIRECTIVE - INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed for use in situations involving changes in the Work which, if not processed expeditiously, might delay the Project. These changes are often initiated in the field and may affect the Contract Price or the Contract Times. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order.

For supplemental instructions and minor changes not involving a possible change in the Contract Price or the Contract Times a Field Order may be used.

B. COMPLETING THE WORK CHANGE DIRECTIVE FORM

Engineer initiates the form, including a description of the items involved and attachments.

Based on conversations between Engineer and Contractor, Engineer completes the following:

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT PRICE: Mark the method to be used in determining the final cost of Work involved and the estimated net effect on the Contract Price. If the change involves an increase in the Contract Price and the estimated amount is approached before the additional or changed Work is completed, another Work Change Directive must be issued to change the estimated price or Contractor may stop the changed Work when the estimated price is reached. If the Work Change Directive is not likely to change the Contract Price, the space for estimated increase (decrease) should be marked "Not Applicable."

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT TIMES: Mark the method to be used in determining the change in Contract Times and the estimated increase or decrease in Contract Times. If the changes involve an increase in the Contract Times and the estimated times are approached before the additional or changed Work is completed, another Work Change Directive must be issued to change the times or Contractor may stop the changed Work when the estimated times are reached. If the Work Change Directive is not likely to change the Contract Times, the space for estimated increase (decrease) should be marked "Not Applicable."

Once Engineer has completed and signed the form, all copies should be sent to Owner for authorization because Engineer alone does not have authority to authorize changes in Price or Times. Once authorized by Owner, a copy should be sent by Engineer to Contractor. Price and Times may only be changed by Change Order signed by Owner and Contractor with Engineer's recommendation.

Once the Work covered by this directive is completed or final cost and times are determined, Contractor should submit documentation for inclusion in a Change Order.

THIS IS A DIRECTIVE TO PROCEED WITH A CHANGE THAT MAY AFFECT THE CONTRACT PRICE OR THE CONTRACT TIMES. A CHANGE ORDER, IF ANY, SHOULD BE CONSIDERED PROMPTLY.

CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: December 3, 2012

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT: SOUTHERN REINFORCING MAIN – PHASE IIB

DATE OF ISSUANCE: _____

OWNER: CITY OF DURHAM DEPARTMENT OF WATER MANAGEMENT

OWNER'S CONTRACT NO.: SRM-IIB

CONTRACTOR: _____ ENGINEER: KIMLEY-HORN AND ASSOCIATES, INC.

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

TO: CITY OF DURHAM DEPARTMENT OF WATER MANAGEMENT
Owner

And TO: _____
Contractor

The Work to which this Certificate applies has been inspected by authorized representatives of CITY, CONTRACTOR, and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

Date of Substantial Completion

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within _____ days of the above date of Substantial Completion.

CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

DATE: December 3, 2012

From the date of Substantial Completion the responsibilities between CITY and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees shall be as follows:

RESPONSIBILITIES:

OWNER: _____

CONTRACTOR: _____

The following documents are attached to and made a part of this Certificate:
(For items to be attached see definition of Substantial Completion as supplemented and other specifically noted conditions precedent to achieving Substantial Completion as required by Contract Documents.)

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

Executed by ENGINEER on _____
Engineer

By: _____
Authorized Signature

CONTRACTOR accepts this Certificate of Substantial Completion on _____
Date

Contractor

By: _____

OWNER accepts this Certificate of Substantial Completion on _____
Date

City of Durham, North Carolina

By: _____
Authorized Signature

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
a practice division of the
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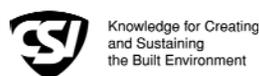
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Construction Specifications Institute

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City of Durham, Department of Public Works
101 City Hall Plaza, Durham, NC 27701

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

9A. *City*--The City of Durham, North Carolina.

9B. *City Council*--The City Council of the City of Durham, North Carolina.

9C. *City Manager*--The City Manager of the City of Durham, North Carolina.

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

17A. Document--A specific section of the Project Manual or a reference to a specific section of the Project Manual as noted with the accompanying numeric reference.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*--The individual or entity named as such in the Agreement.

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

23A. Issuing Office--The office from which the Bidding Documents are to be issued and where the Bidding procedures are to be administered.

24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Con-

tract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed. The Owner is the City of Durham, North Carolina. The City Manager is hereby designated as Owner's representative. The City Manager is the only individual authorized to act on Owner's behalf under or in connection with the Contract Documents, unless the City Manager designates a new representative in writing. The authority of the City Manager and designated representative(s), if any, includes terminating or suspending Work under Article 15 and executing changes in the Work under Article 10.

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

31A. *Products*--Means, materials, and equipment that Contractor furnishes and provides, other than labor and services.

32. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

34A. Property Owner--The individual, partnership, co-partnership, limited liability corporation, firm, company, corporation, unincorporated association, organization, joint stock company, trust, estate, institution, governmental entity, or any other entity that owns the property, or controls management or activities of the property where Work or a portion of the Work is performed.

35. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity* -- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*--The authorized representative of Engineer who may be assigned to the Site or any part thereof to make any and all inspections of the Work performed, acting under direct supervision of the Engineer.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer and approved by Owner, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be lawfully utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

46A. Superintendent--The authorized representative of the Contractor who is assigned to oversee the work forces responsible for performing the Work in accordance with the Contract Documents.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

51. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order

following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. Intent of Certain Terms or Adjectives

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered”, “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

- a. does not conform to the Contract Documents, or
- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
- c. has been damaged prior to Engineer’s - recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

G. Include

1. The word “include” in its various forms and derivatives shall mean ‘without limitation’ unless the context otherwise requires.

H. Persistently Fails

1. The expression ‘persistently fails’ and other similar expressions, as used in reference to the Contractor, shall mean any act or omission which causes Owner or Engineer to reasonably conclude that Contractor will not complete the Work within the Contract Times or Contract Price, or in substantial compliance with the requirements of the Contract Documents.

I. Pronouns, Numbers, and Titles

1. Unless the context otherwise requires, all personal pronouns used in the Contract Documents shall include all other genders, and the singular shall include the plural and vice versa. Titles and headings of articles, paragraphs, subparagraphs, sections, subsections, parts, subparts, etc., in the Contract Documents are for convenience only, and neither limit nor amplify the provisions.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in ~~the Supplementary Conditions Article 5,~~ certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

~~A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.~~

A. The City of Durham shall furnish to Contractor one (1) printed or hard copy of the drawings and Project Manual and one (1) set in electronic format. Additional copies will be furnished upon request. The cost of reproduction will be charged to the requestor.

2.03 *Commencement of Contract Times; Notice to Proceed*

~~A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.~~

A. The Contract Times will commence to run on the thirtieth (30th) day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty (30) days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the thirtieth (30th) day after the execution of the Contract by the City of Durham, Office of the City Manager.

2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No

Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

B. *Priority List of Sites:* The priority list of Sites for the Project shall be approved by the Engineer or Resident Project Representative. The City of Durham reserves the right to alter the priority list of Sites. The Contractor shall be given notice in writing of any change in the priority list of Sites.

2.06 *Preconstruction Conference*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the

Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

D. The General Requirements govern the execution of the Work of all sections of the Technical Specifications of the Contract Documents.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any

of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

a. The accuracy or exactness of grades, elevations, dimension, or locations given on any Drawings or the Work installed by other contractors, is not guaranteed by Owner.

b. Included under Contractor's duty under the first sentence of Paragraph 3.03.A.1 are:

1) to satisfy itself as to the accuracy of all grades, elevations, dimensions, and locations, and

2) in all cases of interconnection of the Work to be done by Contractor with the rest of the Project, it shall verify at the Site all dimensions needed to make proper interconnections.

c. Contractor shall promptly rectify all errors due to its failure to so verify all such grades, elevations, locations, or dimensions without additional cost to Owner. No extra charge or compensation shall be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings.

d. Contractor acknowledges:

1) the Contract Documents are sufficient to determine the cost of the Work;

2) it has had sufficient opportunity to visit the Site and to examine all conditions, including subsurface and physical conditions, affecting the Work;

3) it has had a sufficient opportunity to examine the Contract Documents for errors, inconsistencies, and omissions;

4) the Contract Documents are complete and unambiguous;

5) the Contract Times are reasonable and sufficient to complete the Work.

e. If the statements in Paragraph 3.03.A.1.d are not accurate, Contractor accepts any risk in connection with making them.

f. Contractor shall evaluate and satisfy itself as to the conditions and limitations under which the Work is to be performed, including (to the extent they are pertinent):

1) the location, condition, layout, and nature of the Site and surrounding areas,

2) generally prevailing climatic condition,

3) anticipated labor supply and costs,

4) availability and cost of materials, tools, and equipment, and

5) other similar issues.

g. To the extent that it may be appropriate for the proper execution of its subcontract, Contractor shall cause each Subcontractor to do the evaluation described in Paragraph 3.03.A.1.f.

h. Owner shall not be required to make any adjustment in with the Contract Times or the Contract Price in connection with any failure by Contractor to comply with Paragraph 3.03.A.

2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known

thereof or unless otherwise provided in the Contract Documents, or by Laws or Regulations or common law.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

2. Owner and Contractor shall do all acts, and shall make, execute, and deliver such written instruments, as shall from time to time be reasonably required to carry out the provisions of the Contract Documents. If inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, specifications, manuals, or Laws or Regulations cannot be resolved by use of provisions of the Contract Documents as described in Paragraph 3.03.B.1, Contractor shall:

a. provide the better quality or greater quantity of Work or

b. comply with the more stringent requirement.

3. Paragraph 3.03.B.2 shall not relieve the Contractor of any obligations otherwise imposed on it.

3.04 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or

2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

D. The City of Durham shall obtain a right-of-entry for each Site located on private property. No work shall commence on a private property Site until the Contractor has been given a copy of the executed right-of-entry for that Site and the Contractor has been given permission to begin work on the Site from the Engineer or Resident Project Representative. The City of Durham is solely responsible for obtaining rights-of-entry.

E. The Contractor shall have no more than one (1) uncompleted Site ongoing at any time, unless authorized by the Engineer or Resident Project Representative. Prior to moving to the next Site, the Contractor shall receive permission from the Engineer or Resident Project Representative.

F. The City of Durham shall obtain all encroachment agreements necessary for the completion of the Work. The Contractor shall become familiarized with all the provisions of the encroachment agreements, if any, required for Contract. The Engineer or Resident Project Representative will provide copies of the encroachment agreements. The City of Durham is solely responsible for obtaining encroachment agreements.

G. Public Notice and Advisory: The Contractor shall notify individuals or entities anticipated to be affected by the Work. Notice shall be written and provided to the recipient no less than two (2) days prior to commencing Site construction. Notice shall be delivered in person, door knob hanger, or letter and shall include the following information:

1. nature and schedule of the Work;
2. name and telephone number of a contact person; and
3. any additional necessary information or instructions.

H. The Engineer or Resident Project Representative shall approve any notice prior to commencement of construction.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The ~~Supplementary Conditions identify~~ Agreement, Paragraph 1.10.G.1 identifies:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and
2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer’s Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer’s findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:

- a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
- b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in ~~the Supplementary Conditions~~ [Article 4](#):

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 Hazardous Environmental Condition at Site

A. *Reports and Drawings*: Reference is made to the ~~Supplementary Conditions Agreement, Paragraph 1.10.G.2.~~ for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the general accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner’s own forces or others in accordance with Article 7.

~~G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual’s or entity’s own negligence.~~

G. Nothing in this Paragraph 4.06 is intended to reduce Owner’s duties under the Contract Documents, including Article 8.

~~H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,~~

~~attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.~~

H. Nothing in this Paragraph 4.06 is intended to reduce Contractor's duties under the Contract Documents, including Article 6.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act. Furnish Performance and Payment Bonds on the bond forms included in Appendix G. Performance and Payment Bonds shall be executed by a surety licensed to do business in the State of North Carolina.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within ~~20~~ five (5) days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in ~~the Supplementary Conditions~~ Article 5.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in ~~the Supplementary Conditions~~ Article 5, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

~~B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.~~

B. Certificates of insurance shall be addressed to the City of Durham, North Carolina, Attention: Finance Director, 101 City Hall Plaza, Durham, North Carolina 27701.

C. Both the certificates of insurance and additional insured endorsement must be originals and must be approved by the City of Durham's Finance Director before Contract can begin any Work under this Contract.

D. Failure of the City of Durham to demand such certificates or other evidence of full compliance with these insurance requirements or failure of the City of Durham to identify a deficiency from evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

E. By requiring such insurance and insurance limits herein, the City of Durham does not represent that coverage and limits will necessarily be adequate to protect Contractor, and such coverage and limits shall not be deemed as a limitation on Contractor's liability under the indemnities granted to the City of Durham in the Contract Documents.

5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain ~~such liability and other~~ commercial general liability insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which

may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

a. Workers compensation insurance shall cover statutory benefits.

b. Workers compensation insurance shall cover employees; cover Contractor's partners, officers, and relatives (who work on this Contract).

c. Workers compensation insurance shall cover employers' liability in the amount stipulated by the Agreement, Paragraph 1.10.H.1.

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

a. Automobile liability insurance shall cover owned, hired, or borrowed vehicles.

b. Automobile liability insurance shall cover employee vehicles, if used in performance of this Contract.

c. Automobile liability insurance limits shall be as stipulated in the Agreement, Paragraph 1.10.H.2.

7. claims for damages related to premises/operations.

8. claims for damages related to products/completed operations.

9. claims for damages related to broad form property damage.

10. claims for damages related to explosion, collapse, and underground hazards if the hazards exist in the performance of this Contract.

11. claims for damages related to contractual liability.

12. claims for damages related to independent contractors, if any are used in the performance of this Contract.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through ~~5.04.A.6~~ 5.04.A.12 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in ~~the Supplementary Conditions Article 5~~, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

a. City of Durham must be named additional insured, and an original of the endorsement to effect the coverage must be attached to the certificate (if by blanket endorsement, then agent may so indicate in the General Liability section of the certificate, in lieu of an original endorsement).

2. include at least the specific coverages and be written for not less than the limits of liability provided in ~~the Supplementary Conditions Article 5~~ or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in ~~the Supplementary Conditions Article 5~~ to whom a certificate

of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in ~~the Supplementary Conditions~~ Article 5, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

8. have a combined single limit and aggregate limit as stipulated in the Agreement, Paragraph 1.10.H.3.

9. be provided by companies authorized to do business in the State of North Carolina.

10. be provided by companies with Best rating A-VII. Anything less requires written approval from the Owner.

C. In the event that claims in excess of the insured amounts provided herein are filed by reason of any operations under the Contract, the amount of excess of such claims, or any portion thereof, may be withheld from payment due or to become due the Contractor until such time as the Contractor shall furnish such additional security covering such claims as may be determined by the Owner.

D. All policies and certificates of insurance of the Contractor shall contain the following clauses:

1. Insurers shall have no right of recovery or subrogation against the Owner and its agents and agencies and the Engineer, it being the intention of the parties that the insurance policies so affected shall protect both parties and be primary coverage for any and all losses covered by the above described insurance.

2. The clause "other insurance provisions" in a policy in which the Owner and its agents and agencies and the Engineer is named as an insured, shall not apply to these parties.

3. The insurance companies issuing the policy or policies shall have no recourse against the Owner and its agents and agencies and the Engineer, for the payment of any premiums or for assessments under any form of policy.

4. Any and all deductibles in the above described insurance policies shall be assumed by and be for the amount of, and at the sole risk of the Contractor.

E. Contractor shall purchase and maintain professional liability covering architects and engineers employed or engaged by Contractor covering claim arising out of work in connection with this Contract.

1. Self-insured retentions/deductibles shall be as stipulated in the Agreement, Paragraph 1.10.H.4.

2. Combined single limit of insurance shall be as stipulated in the Agreement, Paragraph 1.10.H.5.

3. This insurance shall be maintained for six (6) years following the date of completion of the Work under this Contract.

F. Contractor shall cause each Subcontractor employed by the Contractor to purchase and maintain insurance of such types specified above. Valid certificates of insurance consistent with requirements of Article 5 shall be obtained by the Contractor and forwarded to the City prior to Contractor's use of Subcontractors in the performance of any aspect of this Contract.

~~5.05 — Owner's Liability Insurance~~

~~A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.~~

~~5.06 — Property Insurance~~

~~A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:~~

~~1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;~~

~~2. be written on a Builder's Risk "all risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;~~

~~3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);~~

~~4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;~~

~~5. allow for partial utilization of the Work by Owner;~~

~~6. include testing and startup; and~~

~~7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.~~

~~B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.~~

~~C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.~~

~~D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any~~

~~deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.~~

~~E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.~~

~~5.07 Waiver of Rights~~

~~A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.~~

~~B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:~~

~~1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and~~

~~2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.~~

~~C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.~~

~~5.08 — Receipt and Application of Insurance Proceeds~~

~~A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.~~

~~B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.~~

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract

Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B, but failure to give such notice does not waive any rights. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

~~5.10 — Partial Utilization, Acknowledgment of Property Insurer~~

~~A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.~~

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or

received from the superintendent shall be binding on Contractor.

C. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, Owner and Contractor shall communicate through Engineer. Communications by and with Engineer's consultants shall be through Engineer.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. Engineer may reject any material and equipment delivered to the Site without the approval of satisfactory evidence required by the Contract Documents.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07

as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. "Or-Equal" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,

3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other

work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2. The procedure for payment of expenses shall be similar to that provided in Paragraph 6.05.A.1.b.1.

C. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. Engineer's Cost Reimbursement: Engineer will record Engineer's costs in evaluating and implementing a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B

Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating and implementing each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

G. Any materials and equipment required to be approved by the Engineer that is installed on the Project without such approval is subject to removal, disposal, and replacement by the Contractor at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection. However, if the Contract Documents specify any item, process, or the like that is available only from an Subcontractor or Supplier against whom Contractor has an objection, the preceding sentence does not apply as to that particular Subcontractor or Supplier.

B. If ~~the Supplementary Conditions Article 6~~ requires the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with ~~the Supplementary Conditions Article 6~~, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate written agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. ~~Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same. Where appropriate, Contractor shall require~~

each Subcontractor or Supplier to enter into similar agreements with persons and firms that Subcontractor or Supplier has contracted with for any part of the Work.

H. *Furnishing Subcontractor Documents:* At any time after the Agreement is executed, whether or not notice of termination has been given, Contractor shall upon request of the Owner promptly give the Owner a copy of the entire text of all agreements, (including attachments and exhibits) with Subcontractors, together with all other documents by which any services, materials, equipment, or other goods were ordered by the Contractor, including documents showing the cost, delivery dates, and all terms and conditions (including those relating to ordering and canceling).

I. *Partial Requirements of Subcontracts:* All subcontracts shall include substantially the following Paragraphs 6.06.I.1 and 6.06.I.2. Upon Owner's request, Contractor shall demonstrate compliance with this Paragraph.

1. Paragraph 6.06.G of the General Conditions of the Construction Contract between Owner (City of Durham) and Contractor is incorporated by reference into this subcontract. To the extent of the Work to be performed by the Subcontractor, the rights of Owner and Engineer under the Owner-Contractor Agreement with respect to the Work to be performed by the Subcontractor are preserved and shall be protected so that subcontracting shall not prejudice those rights. Owner (City of Durham) is an intended third party beneficiary of this subcontract.

2. If Contractor is terminated by Owner, and even if Contractor defaults in such a way which would give the Subcontractor the right to terminate this subcontract, the Subcontractor hereby agrees that, upon written request (by Owner, or a contractor substituted in place of the original Contractor, or any surety obligated under bond relating to the Owner-Contractor Agreement), the Subcontractor will continue to perform its obligations under this subcontract (on the same terms and conditions as apply to this subcontract) for and on account of Owner, such substitute contractor, or the surety. If requested by Owner or surety, the Subcontractor shall execute a separate document to show its commitment to continue performance pursuant to this subcontract. Assignment is subject to the prior rights of the surety. Owner shall be responsible to the subcontractor only for those obligations of Contractor that accrue after Owner exercises any rights under this Paragraph.

J. The Contractor shall comply with all applicable provisions of Sections 18-50 through 18-54 of the City of Durham Code (Ordinance to Promote Equal Business Opportunities in City Contracting), as amended from time to time. Failure of Contractor to comply with these provisions shall be a material breach of Contract which may result in the rescission or termination of Contract and/or appropriate remedies in accordance with the provisions of the ordinance, Contract, and State law.

Section 18-58.f of the ordinance provides, in part, "If the City Manager determines that the Contractor has failed to comply with the provisions of the Contract, the City Manager shall notify the Contractor in writing of the deficiencies. The Contractor shall have fourteen (14) days, or such time as specified in the Contract, to cure the deficiencies or establish that there are no deficiencies. If the deficiencies are not cured, the City shall have the right to take all lawful actions." These provisions apply only to alleged Contractor violations of Sections 18-50 through 18-54 of the City Code.

K. The Contractor shall meet all City of Durham requirements for affirmative action and Small Disadvantaged Business Enterprises (SDBE) participation. These requirements are detailed in Appendix A, SDBE Requirements and Construction Forms.

1. The Contractor shall submit form E-105 "Statement of Intent to Perform as Subcontractor" within five (5) days of the Bid opening for each Subcontractor intended to be counted towards the SDBE goals of the Contract.

2. All questions regarding SDBE documents or requirements may be directed to the City of Durham, Department of Equal Opportunity/Equity Assurance at (919) 560-4180.

L. A Privilege License for all Subcontractors shall be filed within five (5) days after the Bid opening. The Contractor and all Subcontractors shall obtain a City of Durham Privilege License from the Department of Finance, Treasury Management Division, located at 101 City Hall Plaza, Durham, North Carolina, (919) 560-4700.

M. The City of Durham or Engineer may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor or Supplier.

6.07 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights, trade secrets, proprietary information, or copyrights held by others, whether or not a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work, and whether or not Engineer, or Owner, or the consultants, contractors, agents, and employees of either of them are aware of such patent rights, trade secrets, proprietary information, and copyrights. ~~If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual~~

~~knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.~~

~~B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.~~

6.08 Permits

A. Unless otherwise provided in ~~the Supplementary Conditions~~ Article 6, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 Laws and Regulations

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. ~~However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.~~

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on

the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 Taxes

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

B. The Contractor will be reimbursed for all North Carolina Sales and Use Tax paid during any preceding month, at the time the monthly estimate is paid, provided they submit a sworn notarized statement itemizing the tax, showing each amount and to whom paid, and certifying that the articles purchased were used in Work performed for the City of Durham. State tax and County tax must be separated. Group amounts by County and provide a subtotal for each County. Amounts for items purchased outside of Durham County and delivered on-Site shall be grouped by County. One copy of all receipts/invoices must be provided for these amounts.

C. Reimbursable sales taxes as described below are to be excluded from unit prices.

1. Sales taxes are reimbursable if they were originally paid on purchases of building materials, fixtures, and equipment that become part of or annexed to any building or structure that is owned or leased by the City of Durham and is being erected, altered, or repaired for use by the City of Durham. Infrastructure (streets, sidewalks, sewer pipes, and water lines, etc.) is generally held to be "structure" so as to allow reimbursement for sales taxes paid on materials and fixtures that become a part of or are annexed to it. Examples of sales taxes that cannot be reimbursed include those paid for purchases such as scaffolding, tools, equipment repair parts, equipment rentals, forms for concrete, or fuel to operate machinery or equipment.

E. The Contractor may seek reimbursement at the same time as, or subsequent to, the Application for Payment is made for the properties that were taxed. The Contractor shall not file for reimbursement for sales taxes before the Contractor has the right to file an Application for Payment for properties that were taxed.

F. Sales taxes paid by Subcontractors should be detailed on the form "Reimbursable Sales and Use Tax Statement by Subcontractor" (see Appendix H). The Subcontractor completes and signs the form and provides the form to the Contractor. The Contractor submits all sales tax forms with the Contractor's pay application for the properties listed on that form. The City of Durham will make the reimbursement payable to the Contractor.

Except for the differences listed above, the answers to all questions on this page still apply whether the Subcontractor or the Contractor completes and signs the form.

G. Contractor shall include all requests for reimbursement of North Carolina Sales and Use with Applications for Payment. No Sales or Use taxes shall be reimbursed to the Contractor after Owner issues final payment.

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

~~3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.~~

3. As used in this Paragraph 6.11, 'occupant' includes any person, firm, or corporation, whether present as a licensee, invitee, lessee, or sublessee of any tier or level.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work

and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger ~~it~~ the Work or adjacent property.

E. Where the Site is located on private property, Contractor shall take special care to restore the Site after construction is completed. All costs for this private property restoration shall be included in itemized unit prices. Restoration may include, but is not limited to, returning the Site to its original condition. Additional effort may be required to restore the Site. The Engineer or Resident Project Representative shall determine whether a Site has been adequately restored.

6.12 Record Documents

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

E. Existing Utilities

1. The City of Durham and Engineer have, to the best of their ability, shown the existing utilities and obstructions (water, sewer, electrical, gas, telephone, storm drainage, etc.) that may affect the Work. City of Durham Water & Sewer Construction Specifications require that Contractor shall, at Contractor's expense, locate all existing utilities that may be encountered during the Work. Contractor shall make every effort to avoid damage or disruption of services during the Work.

2. Contractor shall contact the North Carolina One Call Center to coordinate existing utility location prior to commencement of any Work.

a. North Carolina One Call Center, (800) 632-4949, www.ncocc.org.

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued. Contractor shall promptly report in writing to Owner and Engineer all accidents or incidents arising out of or in connection with the Work which cause death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injury, or serious property damage is caused, Contractor shall report the accident or incident immediately by telephone or messenger to Owner and Engineer. Contractor shall give Owner and Engineer reasonable advance notice before using or placing explosives or other hazardous materials or equipment on the Site.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*: Contractor shall also submit Samples to Engineer for review and approval in accor-

dance with the acceptable schedule of Shop Drawings and Sample submittals.

- a. Submit number of Samples specified in the Specifications.
- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

- a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
- b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;
- c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and
- d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a prominent specific notation made on each Shop Drawing or Sample

submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall prominently direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 Continuing the Work

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner, whether or not a Claim is pending. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, whether or not a Claim is pending, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

~~A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work~~

~~itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.~~

A. To the maximum extent allowed by Laws and Regulations, Contractor shall defend, indemnify, and save harmless Indemnitees from and against all Charges that arise in any manner from, in connection with, or out of, performance of the Work as a result of acts or omissions of Contractor, any Subcontractor, any Supplier, or any person or organization directly or indirectly employed by any of them or any entity for whose acts any of them may be liable. In performing its duties under this Paragraph 6.20.A, Contractor shall at its sole expense defend Indemnitees with legal counsel reasonably acceptable to Owner.

~~B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.~~

B. Definitions: As used in Paragraph 6.20.A above and Paragraphs 6.20.C and 6.20.D below:

1. 'Charges' means claims, judgments, costs, damages, losses, demands, liabilities, obligations, fines, penalties, royalties, settlements, and expenses. Included within 'Charges' are:

a. interest and reasonable attorneys' fees assessed as part of any such item;

b. amounts for alleged violations of sedimentation pollution or other environmental or pollution laws and regulations -- including any such alleged violation that arises out of the handling, transportation, deposit, or delivery of the items or materials that are involved in performance of the Work;

c. amounts related to Hazardous Environmental Conditions; and

d. amounts related to alleged infringement of patent rights, trade secrets, proprietary information, or copyrights.

2. 'Indemnitees' means Owner and Engineer and the officers, officials, independent contractors, agents, and employees of Owner and Engineer, but does not include Contractor.

~~C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:~~

~~1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or~~

~~2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.~~

C. Limitations of Contractor's Obligation: Neither Paragraph 6.20.A nor any other provision of the Contract Documents shall be construed to require Contractor to indemnify or hold harmless Indemnitees against liability for damages arising out of bodily injury to persons or damage to property proximately caused by or resulting from the negligence, in whole or in part, of Indemnitees.

D. Nothing in Paragraphs 6.20.A, 6.20.B, or 6.20.C shall affect any warranties in favor of the Owner. This Paragraph 6.20.D is in addition to, and Paragraphs 6.20.A and 6.20.B above shall be construed separately from, any other indemnification provisions that may be in the Contract Documents. This Paragraph 6.20 shall remain in force despite termination of this Agreement (whether by expiration of the term or otherwise) and termination of the services of the Contractor under this Contract, but this sentence does not imply that other provisions in the Contract Documents do not survive termination.

6.21 Delegation of Professional Design Services

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal

shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 Related Work at Site

~~A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:~~

~~1. written notice thereof will be given to Contractor prior to starting any such other work; and~~

~~2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.~~

A. Owner may perform other work at or affecting the Site by Owner's own forces or let other direct contracts therefor, or have other work performed at or affecting the Site by utility owners.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of

materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies not reasonably discoverable by said inspection in such other work.

7.02 Coordination

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in ~~Supplementary Conditions~~ Article 7:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
2. the specific matters to be covered by such authority and responsibility will be itemized; and
3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in ~~the Supplementary Conditions~~ Article 7, Owner shall have sole authority and responsibility for such coordination.

7.03 Legal Relationships

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

7.04 Other Work

A. The Agreement, Paragraph 1.10.H.3, stipulates any other work on the Site at the time of Notice to Proceed known to the City of Durham and the Engineer.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

~~8.01 Communications to Contractor~~

~~A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.~~

8.02 Replacement of Engineer

~~A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.~~

A. If Owner appoints a substitute Engineer, the substitute Engineer shall have the same status under the Contract Documents as the former Engineer.

8.03 Furnish Data

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 Pay When Due

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 Lands and Easements; Reports and Tests

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 Insurance

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in ~~the Supplementary Conditions Article 8.~~

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as

Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in ~~the Supplementary Conditions Article 9,~~ and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in ~~the Supplementary Conditions Article 9.~~

B. The Resident Project Representative will serve as Engineer's liaison with Contractor, working principally through Contractor's Superintendent to assist such Superintendent in understanding the intent of the Contract Documents.

C. The Resident Project Representative shall have the following authority, to the extent that Engineer has such authority: to conduct on-site observations of the Work in progress to confirm that it is proceeding in accordance with the Contract Documents; to verify that tests, equipment, and systems start-ups and maintenance instructions are conducted as required by the Contract Documents; and to disapprove and reject defective Work in accordance with the Contract Documents, including Article 13. No approval, inspection, failure to reject, or

other action or failure to act by the Resident Project Representative shall reduce or waive Owner's right to non-defective Work that meets the requirements of the Contract Documents.

D. Except upon written instructions of Engineer and Owner, the Resident Project Representative shall not:

1. authorize any deviation from the Contract Documents or approve any substitute materials or equipment;

2. exceed limitations of Engineer's authority as set forth in the Contract Documents;

3. undertake any of the responsibilities of Contractor, Subcontractors, or Contractor's Superintendent, or expedite the Work;

4. advise on or issue directions relative to any aspect of the means, methods, sequences, techniques, or procedures of construction unless such is specifically called for in the Contract; or

5. advise on or issue directions as to safety precautions and programs in connection with the Work.

E. Paragraph 9.03.D shall not be construed to expand the Resident Project Representative's authority.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in

connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be

performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

C. The Owner reserves the right to add to the original scope of Unit Price Work of the Contract upon the same terms and at the same unit prices included in the Agreement for all unit item additions, provided that such additions shall not result in an increase of more than fifty percent (50%) of the original Contract Price. The Contractor may be entitled to an extension in the Contract Times with the addition of Unit Price Work.

D. The Contractor shall perform emergency Work as required by the City of Durham. In such instances, the Engineer or Resident Project Representative shall give written notice to the Contractor for each instance of emergency Work. The Contractor shall perform all emergency Work within seventy-two (72) hours of the written notice. The City may perform (or engage another contractor to perform) emergency Work, at the Contractor's expense, if the Contractor fails to perform emergency Work within the time limit. If the City performs (or engages another contractor to perform) the following conditions apply:

1. if emergency Work is not a Unit Price Work item, the City shall charge all costs and expenses of the emergency Work, plus the City's then-current overhead charge to the Contractor and deduct those amounts from any money due to Contractor on the then-current or then-future Applications for Payment; and

2. if the emergency Work is a Unit Price Work Item, the City will charge all applicable emergency Work unit costs, plus an administrative and overhead charge of one hundred dollars (\$100.00) per instance to the Contractor and deduct those amounts from any money due to Contractor on the then-current or then-future Applications for Payment.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in the Contract Documents, including Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 Execution of Change Orders

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 Notification to Surety

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 Claims

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer or Owner allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in

Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer or Owner allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor:

1. invokes the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial, or

2. if the dispute resolution procedures set forth in Article 16 are not invoked and the appealing party institutes a formal proceeding, within 30 days of such action or denial, in a forum of competent jurisdiction (allowed under the Contract) to exercise such rights or remedies as the appealing party may have with respect to the Engineer's decision, unless otherwise agreed in writing by Owner and Contractor. The City Manager has authority to enter into a written agreement extending the time period during which either party may institute such a formal proceeding.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

G. Mitigation of Damages: Once a party recognizes that it has grounds for a Claim, dispute, or other matter that may be submitted to Engineer (whether or not it may also be submitted to the other party), it shall

use its best efforts to furnish Engineer and the other party, as expeditiously as possible, with notice of the potential Claim, dispute, or other matter. The potential claimant shall cooperate with Engineer and the party against whom the potential Claim, dispute, or other matter may be made in an effort to mitigate damages, delay, and other adverse consequences arising out of the condition which is the cause of the potential claim, dispute, or other matter. This duty to mitigate continues after the notice of Claim, dispute, or other matter is actually delivered.

H. These requirements, including as to time, are of the essence of the Contract Documents. No course of conduct or dealings between the parties, no express or implied acceptance of alterations or additions to the Work, and no assertion that the Owner has been unjustly enriched by any alteration or addition to the Work shall be the basis for any Claim to an increase in the Contract Price. In addition, all of Paragraphs 9.08.C and 9.08.D shall apply to those claims.

10.06 Change Orders

A. Unless the Contract Documents or the Change Order provides otherwise, agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work which is the subject of the Change Order, including all direct and indirect costs associated with such change and any and all adjustments to the Contract Price and the construction schedule. If a Change Order increases the Contract Price, Contractor shall include the Work covered by such Change Orders in Applications for Payment.

ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include,

without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of overtime or of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

~~4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.~~

5. Supplemental costs including the following:

~~a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.~~

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. These rates shall include all fuel, lubricants, insurance, etc. Equipment rental charges shall not exceed the prorated monthly rental rates listed in the edition of the 'Compilation of Rental Rates for Construction Equipment', as published by the Associated Equipment Distributors, which is current when the equipment rental begins. Charges per hour shall be determined by dividing the monthly rates by 176. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

~~f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.~~

g. The cost of utilities, fuel, and sanitary facilities at the Site.

~~h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.~~

~~i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.~~

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting and in accordance with Owner's and Engineer's instructions practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data. The Owner and Engineer may specify additional or different requirements in accordance with the preceding sentence, but unless they so specify, the following is required in order to support a determination of cost of Work pursuant to Paragraph 11.01:

1. For costs under Paragraph 11.01.A.1, for each person who worked on the additional Work: a statement showing his or her job title, hourly rate paid or other method of compensation, other amounts described under Paragraph 11.01.A.1 that were paid, and the net change in the number of hours worked attributable to the change in the Work.

2. For costs under Paragraph 11.01.A.2, dated receipts from the Subcontractors and/or Sub-subcontractors. The receipts must acknowledge the Contractor's payment, identify the materials, supplies, equipment and show the name of the Owner's Project.

3. For costs under Paragraph 11.01.A.5.c, dated receipts from the rental the Subcontractors and/or Sub-subcontractors. The receipts must acknowledge the Contractor's payment, identify the machinery and equipment, and show the name of the Owner's Project, the rental rate, and the number of hours, days, miles, or other basis of the charge. If the Contractor supplies the machinery or equipment, the statement must show the rental rate and the number of hours, days, miles, or other basis of the charge, and the rental rate must not exceed the market rental rate.

4. For costs under Paragraph 11.01.A.5.i, written proof of a net change in the amount paid by the Contractor attributable to the change in the Work. For bonds, the proof must include the invoice or statement from the surety or its agent showing that it is attributable to the change in the Work.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. If Owner changes any estimate of quantity before the Agreement is executed, it may substitute the new estimated quantity in those calculations. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead, ~~and~~ profit, and cost for coordinating the Work with the City of Durham for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

E. Each unit price shall be deemed to include an amount considered by the Contractor to be adequate to cover all construction surveying and existing utility location required to complete the Work as specified, or as directed by the Engineer, for each separately identified item.

F. This Paragraph 11.03.F applies except to the extent if any that the Bidding Documents specify otherwise.

1. Unit prices, if any, shall apply to Work done pursuant to Change Orders and to Work Change Directives.

2. In addition to Paragraph 11.03.F.1, it is agreed:

a. If unit price items are included in the Contract Documents for Work other than Work done pursuant to Change Orders and to Work Change Directives, it is also agreed that the Contract Price was calculated on the assumption that certain estimated quantities of unit price items will be used in the Work. Those estimated quantities are stated in the Contract Documents. The unit price multiplied by the quantity is referred to as the 'extension.'

b. If the actual extension of a unit price item is less than the estimated extension, the Contract Price shall be reduced accordingly.

c. The actual extension of each unit price item shall not exceed the estimated extension for that item unless the Contractor has received advance written approval from the Engineer to exceed the estimated quantity for that item. That approval may be limited in the Engineer's discretion. If that approval is given, the Contract Price shall be adjusted as follows:

1) If the actual quantity of a unit price item is more than the estimated quantity, the Contract Price shall be increased to reflect the difference between the actual and the estimated quantities.

2) If approval is not given, the Contractor shall not be obligated to use the quantity of that unit price item that exceeds the approved quantity, and a Change Order or Work Change Directive shall be executed to reflect the changes in the Work resulting from the actual quantity of the item that is used.

3) If the Contract Documents explicitly and clearly state that no further approval from the Engineer or the Owner is required for the Contractor to exceed the estimated quantity of specified unit price items, then it is agreed that the Contract Price shall be adjusted to reflect the actual quantities of those items without the necessity of further approval.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be ~~15 percent~~ ten percent (10%) and shall not be applied to payroll taxes, social security contributions, or unemployment taxes;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of ~~15 percent~~ ten percent (10%) of

the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 (excluding payroll taxes, social security contributions, and unemployment taxes) and that ~~any higher the next higher~~ tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God. Nothing in Article 12 or any other provision of the Contract Documents is intended to forbid or limit compensable damages for delays caused solely by the Owner or the Owner's agent, and any provision to the contrary shall be construed to comply with this Paragraph 12.03.A. For purposes of this Paragraph 12.03.A, 'Owner' or the 'Owner's agent' does not include prime contractors or subcontractors.

~~B. If Owner or Owner's agent, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the ~~Contract Price or the Contract Times, or both.~~ Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.~~

C If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C. Except to the extent, if any, that it may otherwise be provided in the Contract Documents, Contractor's sole remedy for any of the following:

1. delay in the commencement, prosecution, or completion of the Work,

2. hindrance or obstruction in the performance of the Work,

3. loss of productivity, or

4. other similar delays and losses (said 1, 2, 3, and 4 being collectively referred to in this Paragraph 12.03 as 'Such Delays').

Whether or not Such Delays are foreseeable, shall be an extension of the Contract Times if permitted and granted under this Article 12. To the extent allowed by the Contract Documents, Contractor shall be entitled to no other compensation or recovery of any damages in connection with any Such Delays, including consequential damages, lost opportunity costs, impact damages, or other similar remuneration. To the extent of conflict, the Contract or Agreement as signed by the Owner and Contractor shall control this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

F. Adjustment of Contract Times for weather related delays shall be as stipulated in the Agreement, Paragraph 1.4.D.

ARTICLE 13 - TESTS AND INSPECTIONS;
CORRECTION, REMOVAL OR ACCEPTANCE OF
DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

~~A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.~~

A. Contractor shall employ and pay for all inspections and testing services required by the Contract Documents, except those for which the Contract Documents specifically call for Owner to employ and pay.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform ~~all the~~ inspections, tests, or approvals required by the Contract Documents. ~~except:~~

~~1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;~~

~~2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and~~

~~3. as otherwise specifically provided in the Contract Documents.~~

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

G. The City of Durham may engage an independent consultant for the direct inspection and administration of any or all of the Work to be performed in the Contract. This consultant shall act on the behalf of the City of Durham.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, or contrary to the Contract Documents, or before required inspections, tests, or approvals, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and

charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Contractor shall not be entitled to any increase in Contract Times because of the time involved in such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05. However, if such Work had been prematurely covered, the preceding sentence shall not apply, and Contractor shall have no such rights.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, or persistently fails to carry out the Work in accordance with the Contract Documents, or if the Work interferes with the operation of the existing facility, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others). Engineer and Owner may reject any defective Work, even if inspected and paid for, except to the extent accepted under Paragraph 13.08. A failure to disapprove

or reject such defective Work does not constitute an acceptance.

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly (but in any event, commencing within thirty (30) days after receipt of said instructions and proceeding promptly to completion), without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly (but in any event, commencing within 30 days after receipt of said instructions and proceeding promptly to completion) comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications. If prior to the date of Substantial Completion, Contractor or any entity for which Contractor is responsible uses or damages any

portion of the Work, then Contractor, at no expense to Owner, shall cause such portion, system, device, or item to be restored (whether by replacement, repair, or otherwise) to the condition the item was required to be in, if such use or damage had not occurred. Nothing herein shall reduce the duty of Contractor with respect to such item in order to obtain a final payment.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

F. Establishment of the one (1) year periods in this Paragraph 13.07 relates only to the specific obligation of Contractor to take certain actions relating to defective Work and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

B. An acceptance of defective Work is not effective as an acceptance unless it specifically describes the condition that is defective and contains substantially the following statement: 'The Owner accepts [such condition] despite its being defective.'

13.09 *Owner May Correct Defective Work*

A. If Contractor fails ~~within a reasonable time~~ after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work some or all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow and provide Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site and storage locations referred to in the preceding sentence to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein including the transportation to the Work Site, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

4. Contractor shall submit the Subcontractor Monthly Record of Payment Report form with each Application for Payment, except for the initial and final Application for Payment. The Contractor shall submit the Final Subcontracting Report form with the final Application for Payment. Failure to submit these forms, which are provided in Appendix C, may be a basis for denying payment.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application

to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

- c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
- d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
- e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. ~~the Work is defective~~ any of the Work, whether or not paid for, is defective, except to the extent accepted under Paragraph 13.08, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; ~~or~~
- d. Engineer has actual knowledge of or reasonable grounds to believe in the occurrence of any of the events enumerated in Paragraph 15.02.A.

e. there are reasonable grounds to believe that the Work cannot be completed for the unpaid balance of the Contract Price; or

f. Contractor is anticipated to owe damages or other amounts to Owner.

C. Payment Becomes Due

1. ~~Ten~~ Thirty (30) days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

- a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
- b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
- c. there are other items entitling Owner to a set-off, including any cost or expense related to defective Work, against the amount recommended; ~~or~~
- d. Owner has actual knowledge of or reasonable grounds to believe in the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
- e. any of the property and casualty insurance requirements enumerated in Article 5 are not complied with at their renewal dates.
- f. there are reasonable grounds to believe that the Work cannot be completed for the unpaid balance of the Contract Price; or
- g. Contractor is anticipated to owe damages or other amounts to Owner.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld, as determined in a competent jurisdiction having binding authority, shall be treated as an amount due as determined by Paragraph 14.02.C.1.

4. Failure of Owner to refuse to make payment does not waive Owner's rights under the Contract Documents.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

B. The Application for Payment shall be accompanied by such data, satisfactory to Owner, as will

establish Owner's title to the material and equipment and protect his interest therein, including applicable insurance. Each subsequent Application for Payment shall include an Affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied to discharge in full all of Contractor's obligations reflected in prior Applications for Payment.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected), including the time within which each of those items shall be completed or corrected, reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

~~4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.~~

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

- a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;
- b. consent of the surety, if any, to final payment;
- c. a list of all Claims against Owner that Contractor believes are unsettled; and
- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Engineer's Review of Application and Acceptance

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's

recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

2. Without extra charge to Contractor, Engineer will make only two (2) such inspections to determine final completion. If Engineer is not able to make the representations and findings required to recommend final payment, successive inspections requested by Contractor shall be charged to Contractor.

C. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and , will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. ~~a waiver of all Claims by Owner against Contractor, except~~ no waiver of any claims, or the right to make any claims, by Owner against Contractor, including Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees

specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

14.10 Prompt Payment to Subcontractors

A. Within seven (7) days of receipt by Contractor of each payment from the City of Durham under this Contract, the Contractor shall pay all Subcontractors (including Suppliers and others) based on work completed or service provided under the subcontract. Should any payment to the Subcontractor be delayed by more than seven (7) days after receipt of payment by the Contractor from the City under this Contract, the Contractor shall pay the Subcontractor interest, beginning on the eighth (8th) day, at the rate of one percent (1%) per month or fraction thereof on such unpaid balance as may be due. By appropriate litigation, Subcontractors shall have the right to enforce this Paragraph 14.10.A directly against the Contractor, but not against the City of Durham. If the Engineer determines that it is appropriate to enforce this Paragraph 14.10.A, the City of Durham may withhold the sums estimated by the Engineer to be sufficient to pay this interest from progress or final payments to the Contractor.

B. Nothing in this Paragraph 14.10 shall prevent the Contractor at the time of invoicing, application, and certification to the City from withholding invoicing, application, and certification to the City for payment to the Subcontractor for unsatisfactory job progress; defective goods, services, or construction not remedied; disputed work; third-party claims filed or reasonable evidence that such a claim will be filed; failure of the Subcontractor to make timely payments for labor, equipment, and materials; damage to the Contractor or another Subcontractor; reasonable evidence that the subcontract cannot be completed for the unpaid balance of the subcontract sum; or a reasonable amount for retainage consistent with the Agreement.

C. The Engineer may require, as a prerequisite to making progress or final payments, that the Contractor provide statements from any Subcontractors designated by the Engineer regarding the status of their accounts with the Contractor. The statements shall be in such format as the Engineer reasonably requires, including notarization if so specified.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which, or the event after which, Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05. No adjustment shall be made to the extent that performance is, was, or would have been suspended, delayed, or interrupted directly or indirectly by Contractor or any Entity for which Contractor is responsible. The Contract Price shall not be adjusted except to the extent that the total of such suspensions exceeds thirty (30) days and after excluding such thirty day period.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, ~~including fair and reasonable sums for overhead and profit on such Work as~~ determined in Article 11;

2. expenses sustained prior to the effective date of termination in ~~performing services and furnishing labor, ordering materials, or equipment~~ as required by the Contract Documents in connection with uncompleted Work, ~~plus fair and reasonable sums for overhead and profit on such expenses;~~ the Owner shall have the options detailed in Paragraphs 15.03.A.2.a through 15.03.A.2.d;

a. Upon seven (7) days of receipt of the notice of termination for convenience Contractor shall provide evidence of materials ordered as described in Paragraph 15.03.A.2 including an itemized list, cost, order and delivery dates, and all terms or conditions (including ordering, canceling, or restocking charges).

b. Owner may direct the Contractor to cancel any one or more orders, in which case the Owner shall be liable for cancellation and restocking charges and other charges properly attributable to the cancellation; or

c. Owner may direct the Contractor to keep any one or more orders in effect and/or to assign any one or more orders to the Owner, in which case the Owner shall be responsible for bearing the costs of the order.

d. Within ten (10) days of the Owner's receiving the evidence described in Paragraph 15.03.A.2.a, the Owner shall give the Contractor notice of which options it exercises under Paragraphs 15.03.A.2.b or 15.03.A.2.c.

~~3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and~~

3. The Owner shall pay the Contractor a termination fee of one hundred dollars (\$100.00) in addition to other amounts due pursuant to this Paragraph 15.03.

~~4. reasonable expenses directly attributable to termination.~~

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally

determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

15.05 Protection and Preservation of the Work

A. Upon suspension (Paragraph 15.01), termination (Paragraphs 15.02, 15.03, and 15.04), or stopping Work (Paragraph 15.04):

1. Contractor shall take actions necessary for the protection and preservation of the Work, and Site, including those actions required by the Contract, except to the extent otherwise directed by the Engineer; and

2. Contractor shall erect and leave in place barricades, lights, and other safety devices as are appropriate for the protection of the public, including those devices required by the Contract, except to the extent otherwise directed by the Engineer.

B. If the Contractor performs work pursuant to directions given by the Engineer as described in Paragraph 15.05.A for the protection and preservation of the Work or of the public, Owner shall pay the Contractor for such protection and preservation work to the extent that it is greater than the Contractor would have done during or at the end of a work day had the contract not been suspended or terminated or the Work stopped.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

~~A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for~~

~~mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.~~

A. Any party allowed to use the dispute resolution process adopted by the State Building Commission pursuant to G. S. 143-135.26(11) and G. S. 143-128(F1) may participate in mediation pursuant to the dispute resolution process as a precondition to initiating litigation concerning the dispute. The amount of \$15,000 or more must be at issue before a party may require other parties to participate in the dispute resolution process. The costs of the dispute resolution process shall be divided between the parties to the dispute with at least one-third of the cost to be paid by the Owner, if the Owner is a party to the dispute.

~~B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.~~

~~C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:~~

~~1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or~~

~~2. agrees with the other party to submit the Claim to another dispute resolution process; or~~

~~3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.~~

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered by facsimile or in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

B. If a party is notified of a replacement person for purpose of getting notice, then notices afterwards shall be directed to the replacement person. Written notices shall be deemed to have been duly served, made, and received, and receipt thereof completed, if:

1. delivered in person to the individual or to that individual's receptionist; or

2. mailed by registered or certified mail to the last business address known to the party giving notice; or

3. faxed to the last fax number known to the party giving notice, provided that the fax transmission must be completed.

C. Written notices to the Owner must be directed to the Owner's representative, provided that if no individual is designated as the Owner's representative, then written notices must be directed to the City Manager. As used in this Paragraph 17.01, the word 'notice' includes 'request.'

D. The notice will be deemed served, made, and received, and receipt thereof completed, on the earlier of:

1. the date delivered in person; or

2. three (3) days after placing in the custody of the U. S. Postal Service; or

3. the date the fax transmission was completed.

E. Address of Surety: Unless the surety provides a different address as provided in Paragraph 17.01, notice to a surety may be sent to the address shown on the performance bond; if no address for the surety is shown on the performance bond, the surety's address provided by the N. C. Department of Insurance shall suffice; and if the Department of Insurance lacks an address, the last-known address of the attorney-in-fact who signed the performance bond shall suffice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation. As used in the preceding sentence, a 'legal holiday by the law of the applicable jurisdiction' is a holiday observed by city government of the City of Durham. See City Code Section 42-16 for information on such holidays.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available

hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

17.07 *Effect on Other Rights*

A. The Contract Documents shall not be construed to create a cause of action against Owner and in favor of any person, firm, or corporation, other than Contractor. The Contract Documents shall not be construed to create a cause of action against Engineer and in favor of any person, firm, or corporation, other than Owner. The Contract Documents are not intended to create a defense, except by Contractor, to any cause of action that may be brought by Owner. The recitation of duties, or limitations of duties, in the Contract Documents (e.g., Paragraph 9.09) of Engineer or Engineer's consultants, representatives, and assistants, shall not be construed to reduce Owner's rights against Engineer or to reduce Engineer's duties to Owner. No action or failure to act by Owner shall constitute a waiver of a right except to the extent specifically agreed in writing. If Owner waives a right, that waiver shall not imply other waivers of that right. If liquidated damages are assessable against the Contractor, Owner may, in its discretion, waive the imposition of some or all of the liquidated damages against the Contractor. That waiver shall be valid only if done by a writing signed by the City Manager or an Assistant City Manager, and the waiver must refer specifically to 'liquidated damages.' That waiver shall not constitute an extension of the Contract Time.

B. The Agreement represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations and representations. Except as specifically otherwise provided, the Agreement is not intended to benefit, or to create a cause of action in favor of, any person, firm, or corporation, other than Owner and Contractor. Oral statements by anyone, including Owner's employees, agents, and Engineer, whether made before or after the execution of the Agreement, shall not be binding on Owner and shall not reduce Owner's rights under the Contract Documents.

17.08 Place of Project

A. Choice of Law and Forum: The place of the Project is North Carolina. This Contract shall be deemed made in Durham, North Carolina. This Contract shall be governed by and construed in accordance with the laws of North Carolina. The exclusive forum and venue for all actions arising out of this Contract shall be the North Carolina General Court of Justice, in Durham County. Such actions shall neither be commenced in nor removed to federal court. This Paragraph shall not apply to subsequent actions to enforce a judgment entered in actions heard pursuant to this Paragraph.

17.09 Equal Employment Opportunity (EEO)

A. During the performance of this Contract the Contractor agrees as follows:

1. Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, political affiliation or belief, age, or handicap. Contractor shall take affirmative action to insure that applicants are employed and that employees are treated equally during employment, without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or handicap. Such action shall include but not be limited to the following: employment, upgrading, demotion, transfer, recruitment or advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. Contractor shall post in conspicuous places, available to employees and applicants for employment, notices setting forth these EEO provisions:

2. Contractor shall in all solicitations or advertisement for employees placed by or on behalf of Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or handicap;

3. Contractor shall send a copy of the EEO provisions to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding;

4. in the event of Contractor's noncompliance with these EEO provisions, the City of Durham may cancel, terminate, or suspend this contract, in whole or in part, and the City may declare the Contractor ineligible for further City contracts; and

5. unless exempted by the City Council of the City of Durham, Contractor shall include these EEO provisions in every purchase order for goods to be used in performing this Contract and in every subcontract related to this Contract so that these EEO provisions will be binding upon such Subcontractors and Suppliers.

B. City Policy: The City of Durham opposes discrimination on the basis of race and sex and urges all of its contractors to provide a fair opportunity for minorities and women to participate in their work force and as subcontractors and suppliers under City contracts.

17.10 Americans with Disabilities Act (ADA)

A. The City of Durham will not discriminate against qualified individuals with disabilities on the basis of disability. Anyone who requires an auxiliary aid or service for effective communications, or assistance to participate in a City program, service, or activity, should contact the office of Stacey Poston, ADA Coordinator, Voice: (919) 560-4197, ext. 254, TTY: (919) 560-4809; Stacey.Poston@durhamnc.gov, as soon as possible but no later than forty-eight (48) hours before the scheduled event.

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CONTRACT: SRM-II
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: January 2, 2013

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

DOCUMENT 00 91 13

ADDENDA

ADDENDUM NUMBER 1

DATE: January 2, 2013

PROJECT: Southern Reinforcing Main - Phase IIB Construction

CONTRACT NUMBER: SRM-IIB

OWNER: City of Durham, North Carolina

ENGINEER: Kimley-Horn and Associates, Inc.

TO: Plan Holders

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated December 3, 2012, Addendum Number 1 issued January 2, 2013, with amendments and additions noted herein below.

Acknowledge receipt of this Addendum in the space provided in the Bid form. Failure to do so may disqualify the Bidder.

This Addendum consists of 23 pages:

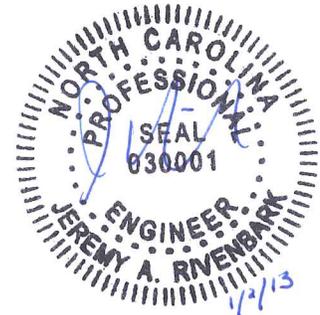
CHANGES TO THE SPECIFICATIONS:

1. SECTION 00 41 42 – MEASUREMENT AND PAYMENT

- Page 00 41 42-3; Pay Item 4a(2); following the 2nd paragraph, add the following:

“Pay Item 4a(3) – Remove and Replace 16-Inch DIP Restrained Joint Waterline

This item includes furnishing all labor, materials, equipment, tools and other services required for removing, installing, testing, disinfecting and placing into complete operational service all 16-Inch DIP Restrained Joint Waterline, fittings and appurtenances, as shown on the Drawings and specified in Section 4. Quantities of pipe included for payment under this Pay Item shall be based on the actual linear footage of laying length of the pipe installed measured continuously along a horizontal line, plus the laying length of any partial joints and shown fittings. **No additional payment will be made for special linings, coatings or polyethylene wrapping required.”**



- Page 00 41 42-6; Pay Item 5a; following the 2nd paragraph, add the following:

“Pay Item 5a(2) – Furnish and Install one (1) 30-Inch Butterfly Valve Assembly utilizing City Provided Materials

This item includes furnishing all labor, equipment, tools and other services required for installing, testing, and placing into service one (1) 30-Inch Butterfly Valve Assembly, as shown on the Drawings and specified in Section 5. The Contractor shall utilize the materials previously obtained by the City listed below for the installation. Any other materials required for installing, testing, and placing into complete service shall be provided by the Contractor. The Butterfly Valve Assembly shall include a flanged butterfly valve with operator, manhole, flanged coupling adapter, threaded rods, rod tabs, piping, valve box, thrust collars, corporation stops, concrete, etc., and all appurtenances required for a complete and operable installation in accordance with Detail 0264006.

The materials listed below shall be utilized by the Contractor. Any additional items/materials necessary for a complete and operable installation per the Drawings and Specifications shall be provided by the Contractor. The cost for furnishing any additional materials and installing the butterfly valve assembly, as specified in Section 5, and as shown on the Drawings with all accessories shall be included for payment under Pay Item 5a(2).

All other work required, including material transportation from the Ellis Road EST at 800 Ellis Road, to complete the one (1) 30-Inch Butterfly Valve Assembly shall be considered as incidental to the project and no specific payment will be made. All installed materials shall be tested and warrantied by the Contractor in accordance with the Specifications.”

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Pay Item 5a(2) Materials Provided

<u>Description</u>	<u>Quantity</u>
669-KP BWT Bolt Down WT R&C Solid M / Water	1
30" FLG BFV DeZurik	1
30" MJ Sleeves	2
30" Stargrips	4
30" FLG x PE DIP (1)-30petr -- 4' 1" LG	1
30" FLG x PE DIP (1)-30trb -- 5' 7" LG	1
30" FLG x PEMJ DIP -- 1' 0" LG	1
30" FLG x PE DIP (1)-30petr (2)-30wc -- 11' 8" LG	1
30" FLG x PE DIP (1)-30trb (2)-30wc -- 11' 8" LG	1
913-32003000-003 30" FLG ADPT	1
30x1/8" FLG RING RR (RING TYPE)	3
30" Gusset Plates 2 1/4" Thick	20
1 1/4" dia. X 3.25" Hex Head Bolt, A307, Grade B	4
1 1/4" dia. X 4.00" Hex Head Bolt, A307, Grade B	4
1 1/4" dia. X 6.00" Hex Head Bolt, A307, Grade B	36
1 1/4" dia. X 8.50" Hex Head Bolt, A307, Grade B	40
1 1/4" dia. Hex Nuts, A307, Grade B	76
Hanson Precast - 7' DIA MH	1

“Pay Item 5a(3) – Furnish and Install one (1) 30-Inch Butterfly Valve Assembly utilizing City Provided Manhole

This item includes furnishing all labor, equipment, tools and other services required for installing, testing, and placing into service one (1) 30-Inch Butterfly Valve Assembly, as shown on the Drawings and specified in Section 5. The Contractor shall utilize the materials previously obtained by the City listed below for the installation. Any other materials required for installing, testing, and placing into complete service shall be provided by the Contractor. The Butterfly Valve Assembly shall include a flanged butterfly valve with operator, manhole, flanged coupling adapter, threaded rods, rod tabs, piping, valve box, thrust collars, corporation stops, concrete, etc., and all appurtenances required for a complete and operable installation in accordance with Detail 0264006.

The materials listed below shall be utilized by the Contractor. Any additional items/materials necessary for a complete and operable installation per the Drawings and Specifications shall be provided by the Contractor. The cost for furnishing any additional materials and installing the butterfly valve assembly, as specified in Section 5, and as shown on the Drawings with all accessories shall be included for payment under Pay Item 5a(3).

All other work required, including material transportation from the North Durham Water Reclamation Facility at 1900 E. Club Blvd., to complete the one (1) 30-Inch Butterfly Valve Assembly shall be considered as incidental to the project and no specific payment will be made. All installed materials shall be tested and warranted by the Contractor in accordance with the Specifications.”

Pay Item 5a(3) Materials Provided

<u>Description</u>	<u>Quantity</u>
Hanson Precast - 8' DIA MH	1

- Page 00 41 42-6; Pay Item 5b; in the 5th paragraph, add the following: “. . .and Detail 1516405. **Contractor shall include the installation and removal of up to 500 LF of 20” (or larger) temporary discharge piping with each flushing connection assembly.**”

2. SECTION 00 41 43 – BID FORM

- Pages 00 41 43-5 through 00 41 43-8; delete in their entirety and replace with **ATTACHMENT NO. 1**. These pages must be bound into the Bid Form section in the correct location.

3. TECHNICAL SPECIFICATIONS

- **SECTION 1** – Add **ATTACHMENT NO. 2** at the end of **Section 1** of the Technical Specifications.
- **SECTION 4** – Page 4-23, Subsection 4.23, Payment; delete the Pay Item Description Table in its entirety and replace with the following:

Pay Item	Description	Unit
4a(1)	Furnish and Install 30-Inch DIP Push-On Waterline	LF
4a(2)	Furnish and Install 30-Inch DIP Restrained Joint Waterline	LF
4a(3)	Remove and Replace 16-Inch DIP Restrained Joint Waterline	LF
4b	Furnish and Install Thrust Collars for 30-Inch DIP [Not included in other Pay Items]	EA
4c	Furnish and Install 8-Inch DIP Sanitary Sewer	LF
4d	Furnish and Install 4-Inch DIP Sanitary Sewer Service	LF
4e	Furnish and Install 8” x 4” Sanitary Sewer Service Lateral Fitting	EA
4f	Furnish and Install 4-inch Sanitary Sewer Service Lateral Cleanout	EA
4g	Remove and Replace 3-inch DIP Force Main	LF
4h	Furnish and Install Sheeting	LF

- **SECTION 5 – Page 5-8; Section 5.14.C;** in the 4th paragraph, add the following: “...and operable installation. **Contractor shall include the installation and removal of up to 500 LF of 20” (or larger) temporary discharge piping with each flushing connection assembly.**”
- **SECTION 5 – Page 5-9, Subsection 5.14, Payment;** delete the Pay Item Description Table in its entirety and replace with the following:

Pay Item	Description	Unit
5a	Furnish and Install 30-Inch Butterfly Valve Assemblies	EA
5a(2)	Furnish and Install 30-Inch Butterfly Valve Assembly utilizing City Provided Materials	EA
5a(3)	Furnish and Install 30-Inch Butterfly Valve Assembly utilizing City Provided Manhole	EA
5b	Furnish and Install 30” X 20” Flushing Connection Assemblies	EA
5c	Furnish and Install Pressure Air Release Valve Assembly	EA
5d	Furnish and Install Fire Hydrant/ARV Assemblies	EA
5e	Furnish and Install Water Service Connections	EA
5f	Furnish and Install Waterline Drain Assemblies	EA
5g	Furnish and Install Blank Valve Boxes	EA

CHANGES TO THE DRAWINGS:

1. SHEET 14 of 38
 - Delete Sheet 14 of 38 in its entirety and replace with **ATTACHMENT NO. 3A.**
2. SHEET 16 of 38
 - Delete Sheet 16 of 38 in its entirety and replace with **ATTACHMENT NO. 3B.**

CONTRACT: SRM-II
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: January 2, 2013

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

3. SHEET 18 of 38

- Add the following Note 18.3:

“18.3. EXISTING WELL AND STRUCTURE LOCATED NEAR STA 149+50 SHALL BE PRESERVED AND PROTECTED DURING CONSTRUCTION. SUCH WORK SHALL BE CONSIDERED INCIDENTAL TO THE WATERLINE CONSTRUCTION.”

- Add the following Note 18.4:

“18.4. CONTRACTOR SHALL BE ADVISED THAT A BURIED ELECTRIC DOG FENCE IS PRESENT AT 4001 ANGIER AVE. IN THE EVENT OF DAMAGE TO THE EXISTING ELECTRIC DOG FENCE, THE FENCE SHALL BE REPAIRED TO PRECONSTRUCTION CONDITIONS. SUCH WORK SHALL BE CONSIDERED INCIDENTAL TO THE WATERLINE CONSTRUCTION.”

4. SHEET 19 of 38

- Delete Sheet 19 of 38 in its entirety and replace with **ATTACHMENT NO. 3C**.

- END OF DOCUMENT -

CONTRACT: SRM-IIB
 PROJECT: SOUTHERN REINFORCING
 MAIN – PHASE IIB
 DATE: January 2, 2013

DEPARTMENT OF WATER MANAGEMENT
 CITY OF DURHAM, NORTH CAROLINA

BID FORM

NOTE TO BIDDERS: DO NOT REMOVE THIS ITEMIZED BID FORM
 FROM THE CONTRACT DOCUMENTS

BID FOR UNIT PRICE CONTRACT

SOUTHERN REINFORCING MAIN – PHASE IIB

Bidder agrees to perform all work included in these Contract Documents, complete as indicated on the Drawings and as specified, for the following Unit Prices:

<u>Pay Item No.</u>	<u>Description</u>	<u>Unit</u>	<u>Est'd Quantity</u>	<u>Unit Bid Price</u>	<u>Extended Total</u>
1	Mobilization, Demobilization, Etc. (3% Maximum)	LS	1		
2	Survey and Layout (No specific payment)			N/A	N/A
3	Site Preparation	LS	1		
4a(1)	Furnish and Install 30-Inch DIP Push-On Waterline	LF	887		
4a(2)	Furnish and Install 30-Inch DIP Restrained Joint Waterline	LF	4724		
4a(3)	Remove and Replace 16-Inch DIP Restrained Joint Waterline	LF	34		
4b	Furnish and Install Thrust Collars for 30-Inch DIP [Not included in other Pay Items]	EA	3		
4c	Furnish and Install 8-Inch DIP Sanitary Sewer (0' – 10' Depth)	LF	26		
4d	Furnish and Install 4-Inch DIP Sanitary Sewer Service	LF	40		
4e	Furnish and Install 8" x 4" Sanitary Sewer Service Lateral Fitting	EA	2		
4f	Furnish and Install 4-inch Sanitary Sewer Service Lateral Cleanout	EA	2		
4g	Remove and Replace 3-inch DIP Force Main	LF	31		
4h	Furnish and Install Sheeting	LF	320		
5a	Furnish and Install 30-Inch Butterfly Valve Assemblies	EA	2		
5a(2)	Furnish and Install a 30-Inch Butterfly Valve Assembly utilizing City Provided Materials	EA	1		

CONTRACT: SRM-IIB
 PROJECT: SOUTHERN REINFORCING
 MAIN – PHASE IIB
 DATE: January 2, 2013

DEPARTMENT OF WATER MANAGEMENT
 CITY OF DURHAM, NORTH CAROLINA

<u>Pay Item No.</u>	<u>Description</u>	<u>Unit</u>	<u>Est'd Quantity</u>	<u>Unit Bid Price</u>	<u>Extended Total</u>
5a(3)	Furnish and Install a 30-Inch Butterfly Valve Assembly utilizing City Provided Manhole	EA	1		
5b	Furnish and Install 30" x 20" Flushing Connection Assemblies	EA	1		
5c	Furnish and Install Pressure Air Release Valve Assemblies	EA	1		
5d	Furnish and Install Fire Hydrant/ARV Assemblies	EA	4		
5e	Furnish and Install Water Service Connections	EA	2		
5f	Furnish and Install Waterline Drain Assemblies	EA	3		
5g	Furnish and Install Blank Valve Boxes	EA	8		
6	Furnish and Install Concrete Encasement, Concrete Arch, Concrete Ballast, Concrete Thrust Blocking, Concrete Seepage Collars and Flowable Fill	CY	100		
7a	Maintenance and Restoration of Unpaved Surfaces	LS	--		
7b	Restoration of Sub-Base (Type ABC)	TON	260		
7c	Restoration of Asphalt Concrete Base Course (Type B25.0B)	TON	65		
7d	Restoration of Asphalt Concrete Surface Pavement (Type S9.5B)	TON	90		
7e	Miscellaneous Surface Restoration (not included in other Pay Items)	LS	1		
7f	Asphalt Binder for Plant Mix PG64-22	TON	8	\$559.33	\$4,474.64
7g	Owner Asphalt Price Adjustment	LS	1	\$10,000.00	\$10,000.00
7h	Milling Asphalt Pavement, 1½-Inch Depth	SY	320		
8a	Perform Additional Excavation	CY	400		
8b	Furnish and Place Additional Stone Bedding	CY	400		
9a	Erect and Maintain Silt Fence	LF	2043		
9c	Construct and Maintain Stone Check Dams	EA	3		
9d	Construct and Maintain Stone Filters	EA	8		
9e	Construct and Maintain Stone Filter Inlet Protection	EA	23		

CONTRACT: SRM-IIB
 PROJECT: SOUTHERN REINFORCING
 MAIN – PHASE IIB
 DATE: January 2, 2013

DEPARTMENT OF WATER MANAGEMENT
 CITY OF DURHAM, NORTH CAROLINA

<u>Pay Item No.</u>	<u>Description</u>	<u>Unit</u>	<u>Est'd Quantity</u>	<u>Unit Bid Price</u>	<u>Extended Total</u>
9g	Furnish and Install Rip Rap	TON	55		
9i	Furnish and Place Synthetic Geotextile Filter Fabric	SY	80		
9j	Furnish and Place Straw w/Net Temporary Ditch Lining (Type 1)	SY	2800		
9p	Furnish and Install Temporary Gravel Construction Entrance/Exit	EA	1		
9q	Furnish and Place Straw Bale Fence	LF	40		
9r	Furnish and Place Curb Inlet Sediment Control	EA	2		
9s	Furnish and Place Tree Protection Fencing	LF	100		
10a	Furnish and Install Bored and Jacked Railroad Crossing, W/L Sta. Sta. 96+66.58 to W/L Sta. 99+16.58	LS	1		
10b	Furnish and Install Bored and Jacked Utility Crossing, W/L Sta. 110+60.22 to W/L Sta. 111+20.22	LS	1		
10c	Furnish and Install Bored and Jacked Stream Crossing, W/L Sta. 119+09.93 to W/L Sta. 120+08.93	LS	1		
10d	Furnish and Install Bored and Jacked Stream Crossing, W/L Sta. 143+14.13 to W/L Sta. 143+94.13	LS	1		
10e	Furnish and Install Bored and Jacked Roadway Crossing, W/L Sta. 156+34.88 to W/L Sta. 158+14.88	LS	1		
11	Furnish and Install 4-Foot Diameter Standard Precast Concrete Manholes	VERT. FEET	18		
12a	Furnish and Install Traffic Control Devices	LS	1		
12b	Furnish and Install Additional Changeable Message Signs	DAILY	14		
13a	Remove and Dispose of Existing Manholes	EA	1		
18a	Removal, Storage, Transportation, Treatment and/or Disposal of Petroleum Impacted Groundwater	GAL	1000		
18b	Mobile Pretreatment Remediation System	MONTHLY	2		
18c	Filter Bags	EA	30		

CONTRACT: SRM-IIB
 PROJECT: SOUTHERN REINFORCING
 MAIN – PHASE IIB
 DATE: January 2, 2013

DEPARTMENT OF WATER MANAGEMENT
 CITY OF DURHAM, NORTH CAROLINA

<u>Pay Item No.</u>	<u>Description</u>	<u>Unit</u>	<u>Est'd Quantity</u>	<u>Unit Bid Price</u>	<u>Extended Total</u>
18d	Granular Activated Carbon (GAC)	TON	10		
18e	Excavation, Transportation and "Temporary Stockpiling" of Petroleum Impacted Soil	CY	20		
18f	Excavation, Transportation, Treatment and Disposal of Petroleum Impacted Soil	TON	20		
18g	Temporary Containment and Treatment of Petroleum Contaminated Soil as Illustrated in Figure 1	EA	2		
18h	Furnish and Install "Replacement" Backfill and Select Backfill for Petroleum Impacted Soil Removed	CY	20		

The TOTAL BID PRICE for the sixty (60) pay items listed above for construction complete as indicated by the Contract Documents (in words and numerals): _____

Dollars

and _____ Cents (\$ _____)

Bidder _____
 (Print Name)

Bidder _____
 (Signature)

NOTE: IF A CONTRACT IS TO BE AWARDED, IT WILL BE AWARDED TO THE LOWEST RESPONSIBLE BIDDER FOR THE SOUTHERN REINFORCING MAIN - PHASE IIB, AS SELECTED BY THE CITY WHOSE EVALUATION INDICATES THAT THE AWARD WILL BE IN THE BEST INTEREST OF THE PROJECT.

NOTE: NO ADDITIONAL PAYMENT WILL BE MADE FOR ROCK EXCAVATION REQUIRED TO INSTALL THE PIPE OR STRUCTURES AS SHOWN ON THE DRAWINGS, UNLESS SPECIFICALLY APPROVED BY THE ENGINEER.

SPECIAL PROVISIONS FOR PROTECTION OF RAILWAY INTEREST
Pipeline and Wireline Crossings

INSURANCE:

- A. In addition to any other forms of insurance or bonds required under the terms of the contract and specifications, the Prime Contractor will be required to carry insurance of the following kinds and amounts:
1. Commercial General Liability Insurance having a combined single limit of not less than \$2,000,000 per occurrence for all loss, damage, cost and expense, including attorneys' fees, arising out of bodily injury liability and property damage liability during the policy period. Said policy shall include explosion, collapse, and underground hazard (XCU) coverage, shall be endorsed to name Railroad specified in item A.2.c. below as an additional insured, and shall include a severability of interests provision.
 2. Railroad Protective Liability Insurance having a combined single limit of not less than \$2,000,000 each occurrence and \$6,000,000 in the aggregate applying separately to each annual period. Said policy shall provide coverage for all loss, damage or expense arising from bodily injury and property damage liability, and physical damage to property attributed to acts or omissions at the job site (see **)

The standards for the Railroad Protective Liability Insurance are as follows:

- a. The insurer must be rated A- or better by A.M. Best Company, Inc.
- b. The policy must be written using one of the following combinations of Insurance Services Office ("ISO") Railroad Protective Liability Insurance Form Numbers:
 - (1) CG 00 35 01 96 and CG 28 31 10 93; or
 - (2) CG 00 35 07 98 and CG 28 31 07 98; or
 - (3) CG 00 35 10 01.
- c. The named insured shall read:

[Name of railroad that owns the track]; and
 Norfolk Southern Railway Company
 Three Commercial Place
 Norfolk, Virginia 23510-2191
 Attn: D. W. Fries, Director Risk Management
- d. The description of operations must appear on the Declarations, must match the project description in this agreement, and must include the appropriate Department project and contract identification numbers.
- e. The job location must appear on the Declarations and must include the city, state, and appropriate highway name/number.
- f. The name and address of the prime contractor must appear on the Declarations.
- g. The name and address of the Department must be identified on the Declarations as the "Involved Governmental Authority or Other Contracting Party."

- h. Other endorsements/forms that will be accepted are:
 - (1) Broad Form Nuclear Exclusion – Form IL 00 21
 - (2) 30-day Advance Notice of Non-renewal or cancellation
 - (3) Required State Cancellation Endorsement
 - (4) Quick Reference or Index Form CL/IL 240
- i. Endorsements/forms that are **NOT** acceptable are:
 - (1) Any Pollution Exclusion Endorsement except CG 28 31
 - (2) Any Punitive or Exemplary Damages Exclusion
 - (3) Known injury or Damage Exclusion form CG 00 59
 - (4) Any Common Policy Conditions form
 - (5) Any other endorsement/form not specifically authorized in item no. 2.h above.

B. If any part of the work is sublet, similar insurance, and evidence thereof as specified in A.1 above, shall be provided by or on behalf of the subcontractor to cover its operations on Railroad's right of way.

C. Prior to entry on Railroad right-of-way, the original Railroad Protective Liability Insurance Policy shall be submitted by the Prime Contractor to the Department at the address below for its review and transmittal to the Railroad. In addition, certificates of insurance evidencing the Prime Contractor's and any subcontractors' Commercial General Liability Insurance shall be issued to the Railroad and the Department at the addresses below, and forwarded to the Department for its review and transmittal to the Railroad. The certificates of insurance shall state that the insurance coverage will not be suspended, voided, canceled, or reduced in coverage or limits without (30) days advance written notice to Railroad and the Department. No work will be permitted by Railroad on its right-of-way until it has reviewed and approved the evidence of insurance required herein.

Insured Railroad:

RAILROAD Mailing Address:

Mr. D. W. Fries, ARM
Director Risk Management
Norfolk Southern Corporation
Three Commercial Place
Norfolk, Virginia 23510-2191

D. The insurance required herein shall in no way serve to limit the liability of Department or its Contractors under the terms of this agreement.

****Depending on the type of work to be performed, this coverage may be added to our Master Railroad Protective Insurance policy for a premium fee of \$1,000.**

Railroad Use Only
 NS File No. 1160774
 NCRR File No. o_h-058+4973
 AC:

PIPELINE AGREEMENT

THIS AGREEMENT, made and entered into by and between NORTH CAROLINA RAILROAD COMPANY, a North Carolina corporation, hereinafter styled "Company"; and CITY OF DURHAM, a North Carolina government entity, hereinafter styled "Licensee"; and NORFOLK SOUTHERN RAILWAY COMPANY, a Virginia corporation, hereinafter styled "NSR";

WITNESSETH

WHEREAS, Licensee proposes to install, maintain, operate and remove one (1) 30-inch ductile iron potable water pipeline in a 48-inch steel casing pipe, under and across the right of way or property and any tracks of Company, at Milepost H-058 plus 4,973 feet, Valuation Station 3014 plus 84 at or near Durham, Durham County, North Carolina, to be located with any ancillary appurtenances as shown on print of Drawing marked **Exhibits A1 and A2** dated September 21, 2011, attached hereto and made a part hereof (hereinafter called "Facilities");

WHEREAS, Company is willing to permit this proposed pipeline, but only upon the following terms and conditions;

NOW, THEREFORE, for and in consideration of the premises, payment of an initial fee by Licensee to NSR of TWO HUNDRED AND NO/100 DOLLARS (\$200.00), and also a one-time non-refundable fee to Company of SEVEN THOUSAND FIVE HUNDRED EIGHTY TWO AND 41/100 DOLLARS (\$7,582.41) and of the covenants hereinafter made, Company hereby permits and grants Licensee, insofar as Company has the right to do so, without warranty and subject to all encumbrances, covenants and easements to which Company's title may be subject, the right to use and to occupy so much of Company's property as may be necessary for the Facilities, upon the following terms and conditions:

1. Licensee will construct and maintain the Facilities, at its expense, in such a manner as will not interfere with the operations of Company or endanger persons or property of Company, and in accordance with (a) plans and specifications (if any) shown on said print(s) and any other specifications prescribed by Company, (b) applicable governmental regulations or laws, and (c) applicable specifications adopted by the American Railway Engineering Association when not in conflict with plans, specifications or regulations mentioned in (a) and (b) above.

2. To the extent allowed by law, Licensee hereby agrees to indemnify and save harmless Company, its officers, agents and employees, from and against any and all liability, claims, losses, damages, expenses (including attorney's fees) or costs for personal injuries (including death) and/or property damage to whomsoever or whatsoever occurring which arises in any manner from the installation, maintenance, operation, presence or removal or the failure to properly install, maintain, operate or remove the Facilities, unless such losses, damages or injuries shall be caused by the negligence of Company. The indemnity contained herein is intended to survive the termination of this Agreement.

3. Licensee assumes all responsibility for any environmental obligations imposed under applicable laws, regulations or ordinances relating to the installation of the Facilities and/or to any contamination of any property, water, air or groundwater arising or resulting from Licensee's permitted operations or uses of Company's property pursuant to this Agreement. In addition, Licensee shall obtain

any necessary permits to install the Facilities. To the extent allowed by law, Licensee agrees to indemnify and hold harmless Company from and against any and all liability, fines, penalties, claims, demands, costs (including attorneys' fees), losses or lawsuits brought by any person, company or governmental entity relating to contamination of any property, water, air or groundwater due to the use or presence of the Facilities. It is agreed that this indemnity provision extends to any cleanup costs related to Licensee's activities upon Company's property and to any costs related to cleanup of the Facilities or to other property caused by the use of the Facilities. The indemnity contained herein is intended to survive the termination of this Agreement.

4. No work of any character shall be started on the property until Certificates of Insurance, specifying that the policies have been furnished and accepted by Company as evidence that Licensee, Contractor, and Subcontractor maintain the following insurance coverages:

(a) Comprehensive General Liability Insurance having a combined single limit of not less than \$2,000,000 per occurrence for all loss, damage, cost and expense, including attorney's fees, arising out of bodily injury, liability and property damage liability during the policy period. Such policy shall be endorsed to name Company as an additional insured and shall include a severability of interests provision. In addition, Licensee's policy shall be endorsed to reflect Contractual Liability Insurance specifically relating to the indemnity provisions of this agreement. Any exclusion for construction or demolition activities (including installing wells or bore holes, but not for work done by means of a hand augur) conducted within 50 feet of railroad tracks shall be deleted from Licensee's policy.

(b) In the event Licensee cannot obtain contractual liability insurance to cover the obligations assumed under this Pipeline Agreement, Licensee or its contractor shall procure and furnish to Company a Railroad Protective Liability Insurance Policy having a combined single limit of \$2,000,000 per occurrence and \$6,000,000 aggregate. Said policy shall name Company as the named insured.

(c) Workers' Compensation Insurance in satisfaction of statutory requirements of the state where the property covered by this agreement is located. Also, Employers' Liability Insurance having limits of not less than \$500,000 each accident, \$500,000 per disease - policy limit, and \$500,000 per disease - each employee.

(d) Automobile Liability Insurance having a combined single limit of not less than \$500,000 per occurrence. Said policy shall name Company as an additional insured and shall include a severability of interests provision.

(e) The insurance required herein shall be of such form and content as may be acceptable to Company. Evidence of such insurance (a certificate of insurance for the general liability insurance policy and the original policy of Railroad Protective Liability Insurance) must be furnished to Company at Property Department, North Carolina Railroad Company, 2809 Highwoods Blvd, Suite 100, Raleigh, NC 27604-1000 (or such other current address provided to Licensee) and approved by Company prior to Licensee's entry on the Premises. The insurance required herein shall not limit the liability assumed by Licensee under this Agreement or consent.

5. The details of the Facilities to be installed, maintained and removed shall be at the option of Licensee, and subject to the approval of Company. In case of failure of Licensee to do the work as herein specified, Company reserves the right to remove the Facilities from Company's premises at the expense of Licensee, and to terminate this Agreement upon ten (10) days' written notice.

6. If Company shall make any change or addition on its right of way at or near the Facilities of Licensee affecting the character, height or alignment of any of Company's power lines, communication, signal or other wires or electrical apparatus, or shall place structures or additional wires

or electrical apparatus upon its said right of way, or shall make on its said right of way any change to any line, grade, track, roadbed, installations, works or structures or in the use of any such line, grade, track, roadbed, installations, works or structure, which would be affected by the Facilities of Licensee or by the use thereof, Licensee shall within thirty (30) days of written notice from the Company to Licensee, at Licensee's sole cost and expense, make such changes in the location and character of the Facilities as, in the opinion of Company, shall be necessary or appropriate on account of any such changes or additions.

7. Licensee will notify Company prior to the installation and placing in service of cathodic protection in order that tests may be conducted on Company's signal, communications and other electronic systems for possible interference. If the Facilities cause degradation of the signal, communications or other electronic facilities of Company, Licensee, at its expense, will relocate the cathodic protection and/or modify the Facilities to the satisfaction of Company so as to eliminate such degradation. Such modifications may include, without limiting the generality of the foregoing, providing additional shielding, reactances or other corrective measures deemed necessary by Company. This provision applies to the existing signal, communications and electronic equipment of Company and to any signal, communications or electronic equipment that Company may install in the future.

8. If Licensee fails to take any corrective measures requested by Company in a timely manner or if an emergency situation is presented which, in the Company's judgment, requires immediate repairs to the facilities, Company, at Licensee's expense, may undertake such corrective measures or repairs as it deems necessary or desirable and Licensee shall reimburse Company upon receipt of an invoice.

9. Notwithstanding any other provision of this Agreement, it is understood, agreed and covenanted that Licensee accepts this Agreement as a mere license and assumes all risk of damage to its property by reason of its occupation of the premises herein described caused by any defects therein or business conducted thereon, whether caused by the negligence of Company, its officers, agents or employees, or otherwise, and Licensee hereby indemnifies Company, its officers, agents, and employees, from and against any such liability for said damage. The indemnity contained herein is intended to survive the termination of this Agreement.

10. Company shall furnish, at the cost of Licensee, labor and materials to support its tracks and to protect its traffic during the installation, maintenance, repair, renewal or removal of the Facilities.

11. It is further agreed between the parties that the premises shall be used by Licensee only for the Facilities and for no other purpose without the written permission of the chief engineering officer of Company.

12. Licensee shall give Company seventy-two (72) hours' advance notice (or less in case of emergencies) of any work to be performed on the premises of Company. Licensee agrees to pay any reasonable costs incurred by Company for the purpose of protection and inspection considered necessary by Company during installation, maintenance, operation, modification, replacement and/or removal of the Facilities. Such costs shall be paid upon the Company's submission of an invoice to Licensee.

13. Licensee shall not assign this Agreement without the written consent of Company which consent may be withheld in Company's sole discretion.

14. The word "Company" as used herein shall include any other company whose property at the aforesaid location may be leased or operated by Company. Said term also shall include Company's officers, agents and employees, and any parent company, subsidiary or affiliate of Company and their officers, agents and employees.

15. This Agreement may be terminated by either party upon sixty (60) days written notice to the other party. During said sixty (60) day period, Licensee shall remove the Facilities from Company's premises and restore said premises to a condition satisfactory to Company's chief engineering officer. If Licensee fails to remove the Facilities within the aforesaid sixty day period, Company may elect: (a) to become the owner of the Facilities without any claim or consideration whatsoever therefor by or to Licensee, its successors or assigns, or (b) to remove the Facilities and all property of Licensee from the premises of Company at the expense of Licensee. Licensee agrees to reimburse Company for any and all costs of such removal upon receipt of an invoice. No termination of this Agreement shall affect any liability incurred by either party hereto prior to the effective date of such termination.

16. This Agreement shall take effect as of the _____ day of _____, 20__.

17. The terms set forth in the attached **Exhibit B**, consisting of two pages and titled "Agreement and Consent of Norfolk Southern Railway Company," are incorporated into this Agreement as if set forth verbatim herein.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement in triplicate, each part being an original, as of the _____ day of _____, 20__.

COMPANY:
NORTH CAROLINA RAILROAD COMPANY

By: _____
Title: _____

LICENSEE:
CITY OF DURHAM

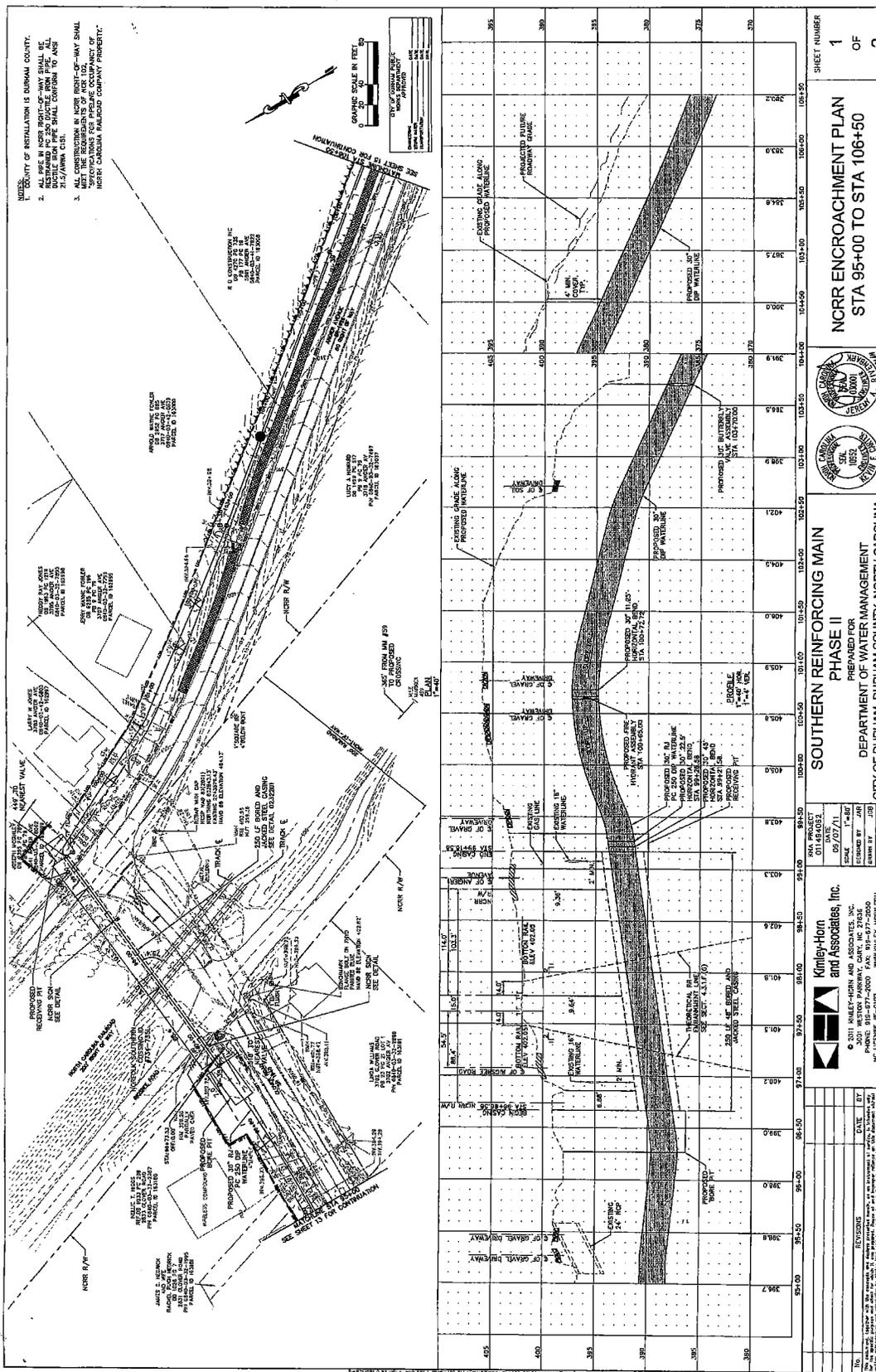
By: _____
Title: _____

NSR:
NORFOLK SOUTHERN RAILWAY COMPANY

By: _____
Title: _____

Exhibit A1
Milepost H-058+4973

HN-80
September 21, 2011
Durham County, NC



SHEET NUMBER
1 OF 2

NORR ENCROACHMENT PLAN
STA 95+00 TO STA 106+50

SOUTHERN REINFORCING MAIN
PHASE II
PREPARED FOR
DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, DURHAM COUNTY, NORTH CAROLINA

DATE	01/18/05
BY	JHS
SCALE	AS SHOWN
APPROVED BY	JHS
CHECKED BY	JHS

Kimley-Horn and Associates, Inc.
1001 WEST HARRIS STREET, SUITE 200
DURHAM, NORTH CAROLINA 27701
PHONE 919-487-2000 FAX 919-487-2050
WWW.KIMLEY-HORN.COM
NC LICENSE #P-0102

Parcel No. 2 of V-24/15

EXHIBIT B

AGREEMENT AND CONSENT OF NORFOLK SOUTHERN
RAILWAY COMPANY

WHEREAS, Company, Licensee, and NSR desire to enter into the attached Agreement regarding the property described therein (the "Premises").

NOW THEREFORE, in consideration of the above recitals and the promises and agreements contained herein, as well as for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, NSR, Company, and Licensee agree as follows:

1. NSR gives its consent to the Agreement pursuant to the terms and conditions of this Consent. All of the terms of this Consent are hereby incorporated by reference into the Agreement. The term "NSR" as used in this Agreement and Consent and as used in the Agreement shall include NSR's officers, agents and employees, and any parent company, subsidiary or affiliate of NSR and their officers, agents and employees.
2. The parties agree and understand that any right or claim of Company held in or by virtue of the Agreement shall also inure to the benefit of, and be enforceable by NSR or by any successor or assignee of Company or NSR, and NSR shall not be responsible for any obligations, duties or indemnities of Company to Licensee under the Agreement. NSR reserves any pre-existing rights, claims and defenses against Company and Licensee and said rights, claims and defenses shall not be waived or limited in any way by the Agreement.
3. Licensee understands that NSR makes no warranties or representations regarding the condition of or title to the Premises. Licensee takes the Premises "AS IS" and expressly waives any and all claims against NSR relating to or arising from the condition of or title to the Premises and the property surrounding the Premises, including without limitation, any claims and costs relating to environmental contamination under any applicable laws (such as, without limitation, those which might arise under CERCLA, RCRA, and the North Carolina Oil Pollution and Hazardous Substances Act).
4. Without the written consent of NSR, (i) neither the Agreement nor this Consent may be assigned in whole or in part by Company or Licensee; (ii) Licensee shall not enter into any sublicense or sublease of the Premises; and (iii) the Agreement shall not be amended by Company or Licensee. No consent by NSR to any sublease, sublicense, assignment, or amendment of the Agreement shall be construed to be consent to any further sublease, sublicense, assignment, or amendment of the Agreement.
5. In consideration of the rights granted by NSR to Licensee by this Consent, to the extent allowed by law, Licensee agrees to indemnify and hold NSR harmless to the same extent as Company is indemnified and held harmless pursuant to the Agreement. In addition, without limiting the indemnities provided in the Agreement, to the extent allowed by law, Licensee specifically shall indemnify and hold harmless NSR from and against any and all attorney's fees, costs, expenses, liabilities, injuries, claims (including third party claims and any claims under any environmental laws and regulations such as CERCLA, RCRA, and the North Carolina Oil Pollution and Hazardous Substances Control Act) and damages arising from or related to (1) the Agreement; (2) any acts or omissions by Licensee at or near the Premises, (3) Licensee's violations of environmental laws and regulations, and (4) environmental contamination caused by Licensee. For purposes of this paragraph, the term Licensee shall mean its officers, employees, agents, contractors, guests or invitees.
6. NSR must be given at least thirty (30) days notice prior to the placement of any equipment, structure, facility, fixture, or other improvement on the Premises other than those permitted by the Agreement.

7. Company and NSR agree that, by entering into this Consent, (i) NSR is not making any admission regarding any matter between NSR and Company; (ii) Company is not making any admission regarding any matter between NSR and Company; (iii) NSR is not waiving any claim or defense against Company or any affiliate of Company; (iv) Company is not waiving any claim or defense against NSR; (v) NSR does not waive or prejudice any position, claim or defense with regard to any legal or administrative proceedings in which Company or its affiliates and NSR are currently involved or may become involved, including but not limited to any claim or defense with respect to any leasehold rights, environmental obligation or liability, possessory rights, or holdover or non-holdover status of Company; and (vi) Company does not waive or prejudice any position, claim or defense with regard to any legal or administrative proceedings in which Company or its affiliates and NSR are currently involved or may be involved, including but not limited to any claim or defense with respect to any leasehold rights, environmental obligation or liability, possessory rights, or holdover or non-holdover status of Company.
8. Licensee acknowledges that NSR has not made any inspection of the Premises and that the Premises are located at or near active or inactive railroad facilities, structures, or related property.
9. No work of any character shall be started on the property until Certificates of Insurance, specifying that the policies have been furnished and accepted by NSR as evidence that Licensee, Contractor, and Subcontractor maintain the following insurance coverages:
 - (a) Comprehensive General Liability Insurance having a combined single limit of not less than \$2,000,000 per occurrence for all loss, damage, cost and expense, including attorney's fees, arising out of bodily injury, liability and property damage liability during the policy period. Such policy shall be endorsed to name NSR as an additional insured and shall include a severability of interests provision. In addition, Licensee's policy shall be endorsed to reflect Contractual Liability Insurance specifically relating to the indemnity provisions of this agreement. Any exclusion for construction or demolition activities (including installing wells or bore holes, but not for work done by means of a hand augur) conducted within 50 feet of railroad tracks shall be deleted from Licensee's policy.
 - (b) In the event Licensee cannot obtain contractual liability insurance to cover the obligations assumed under this Pipeline Agreement, Licensee or its contractor shall procure and furnish to NSR a Railroad Protective Liability Insurance Policy having a combined single limit of \$2,000,000 per occurrence and \$6,000,000 aggregate. Said policy shall name NSR as the named insured.
 - (c) Workers' Compensation Insurance in satisfaction of statutory requirements of the state where the property covered by this agreement is located. Also, Employers' Liability Insurance having limits of not less than \$500,000 each accident, \$500,000 per disease - policy limit, and \$500,000 per disease - each employee.
 - (d) Automobile Liability Insurance having a combined single limit of not less than \$500,000 per occurrence. Said policy shall name NSR as an additional insured and shall include a severability of interests provision.
 - (e) The insurance required herein shall be of such form and content as may be acceptable to NSR. Evidence of such insurance (a certificate of insurance for the general liability insurance policy and the original policy of Railroad Protective Liability Insurance) must be furnished to NSR at NSR Risk Manager, Three Commercial Place, Norfolk, VA 23510 (or such other current address provided to Licensee) and approved by NSR prior to Licensee's entry on the Premises. The insurance required herein shall not limit the liability assumed by Licensee under this Consent or the Agreement.

CONTRACT: SRM-II
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: January 8, 2013

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

DOCUMENT 00 91 13

ADDENDA

ADDENDUM NUMBER 2

DATE: January 8, 2013

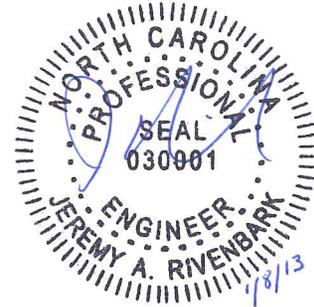
PROJECT: **Southern Reinforcing Main - Phase IIB Construction**

CONTRACT NUMBER: **SRM-IIB**

OWNER: **City of Durham, North Carolina**

ENGINEER: **Kimley-Horn and Associates, Inc.**

TO: Plan Holders



This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated December 3, 2012, Addendum Number 1 issued January 8, 2013, with amendments and additions noted herein below.

Acknowledge receipt of this Addendum in the space provided in the Bid form. Failure to do so may disqualify the Bidder.

This Addendum consists of 1 page:

CHANGES TO THE SPECIFICATIONS:

1. SECTION 00 21 15 – INSTRUCTIONS TO BIDDERS

- o Page 00 41 42-3; Section 1.10; following 1.10.A, add the following:

- B. The City will advertise, bid, award, and construct the above project with a firm completion date of no later than November 4, 2013. The City will issue a Notice to Proceed no later than May 8, 2013 to allow for a full contract period of 180 days matching the required completion date. Under no circumstances will the contract duration deviate from the 180 day final completion requirement regardless of Notice to Proceed date.

- END OF DOCUMENT -

CONTRACT: SRM-II
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: January 11, 2013

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

DOCUMENT 00 91 13

ADDENDA

ADDENDUM NUMBER 3

DATE: January 11, 2013

PROJECT: **Southern Reinforcing Main - Phase IIB Construction**

CONTRACT NUMBER: **SRM-IIB**

OWNER: **City of Durham, North Carolina**

ENGINEER: **Kimley-Horn and Associates, Inc.**

TO: Plan Holders

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated December 3, 2012, Addendum Number 3 issued January 11, 2013, with amendments and additions noted herein below.

Acknowledge receipt of this Addendum in the space provided in the Bid form. Failure to do so may disqualify the Bidder.

This Addendum consists of 2 pages:

CHANGES TO THE DRAWINGS:

1. SHEET 14 of 38

- o Delete Sheet 14 of 38 in its entirety and replace with **ATTACHMENT NO. 1.**

Please note that these changes account for NCDOT comments on the profile of the proposed bore and jack casing installation and waterline relocation near station 99+20. The proposed waterline is shown to be adjusted to 3' minimum cover and the proposed bore and jack casing installation was also slightly adjusted downward accordingly.

- END OF DOCUMENT -



TECHNICAL SPECIFICATIONS

SECTION 1 - GENERAL

1.00 Scope of Work

The work required under this Contract, and in accordance with these Specifications, consists of furnishing equipment, superintendence, labor, skill, material, and all other items necessary for the construction of the interceptor to be constructed under this Contract. The Contractor shall perform all work required for such construction in accordance with the Contract Documents, and subject to the terms and conditions of the Contract, complete and ready for use.

The principal features of work to be performed are as follows:

SOUTHERN REINFORCING MAIN - PHASE IIB: Consists of the installation of approximately 5,600 linear feet of 30-inch DIP waterline, selected sanitary sewer replacement, selected sanitary sewer service conflict resolution, sanitary sewer manholes, bored and jacked road/utility crossings, connections to existing piping, air release valves, gate valve and butterfly valve assemblies, traffic control, miscellaneous surface restoration and all associated appurtenances, as described in the Specifications and shown on the Drawings.

The foregoing description shall not be construed as a complete description of all work required.

1.01 General Arrangement

Drawings indicate the extent and general arrangement of the work. If any departures from the Drawings are deemed necessary by the Contractor to accommodate the materials and equipment he proposes to furnish, details of such departures and reasons therefore shall be submitted as soon as practicable to the Engineer for approval. No such departures shall be made without the prior written approval of the Engineer. Approved changes shall be made without additional cost to the Owner.

The specific equipment proposed for use by the Contractor on the project may require change, in structures, piping, or other work to provide a complete satisfactory operating installation. The Contractor shall submit to the Engineer for approval, all necessary drawings and details showing such changes to verify conformance with the overall performance requirements. The Bid Price shall include all costs in connection with the preparation of new drawings and details and all changes to construction work to accommodate the proposed equipment.

1.02 Additional Engineering Services

In the event that the Engineer is required to provide additional engineering services as a result of substitution of materials or equipment by the Contractor or changes by the Contractor in dimensions, weight, power requirements, etc., of the equipment and accessories furnished, or if the Engineer is required to examine and evaluate any changes proposed by the Contractor for the convenience of the Contractor, then the Engineer's charges in connection with such additional services shall be charged to the Contractor by the Owner.

Structural design shown on the Drawings is based upon typical weights for major items of equipment shown on the Drawings and as specified. If the equipment furnished by the Contractor exceeds the weights of said equipment, the Contractor shall assume the responsibility for all costs of redesign and for any construction changes required to accommodate the equipment furnished, including the Engineer's expenses in connection herewith.

In the event that the Engineer is required to provide additional engineering services as a result of the Contractor's errors, omissions or failure to conform to the requirements of the Contract Documents, or if the Engineer is required to examine them and evaluate any changes proposed by the Contractor solely for the convenience of the Contractor, then the Engineer's charges in connection with such additional services may be charged to the Contractor by the Owner.

1.03 Additional Owner's Expenses

The "normal time of work" under this Contract is limited to a maximum of 8 hours per day and 40 hours per week, Monday through Friday. **Work beyond these hours, weekends, or any nighttime work will result in additional expense to the Owner, unless specifically required by the Contract.** Any expenses and/or damages, including the cost of Engineer's on-site personnel, arising from the Contractor's operations beyond the hours and days specified above shall be borne by the Contractor and shall be deducted from monies due the Contractor. Hourly rates will depend on the number and classification of employees involved, but in no case shall such charges exceed \$125 per hour for each Resident Project Representative or \$235 per hour for each Engineering personnel, based on an eight (8) hour workday. Overtime will be charged at 1.5 times the regular hourly rates indicated above. Overtime rates will apply to any workday that exceeds eight (8) hours or any workweek that exceeds forty (40) hours, and any weekend work. ***Nighttime work is strictly prohibited, unless specifically required by the Contract or approved by the Engineer in writing at least two (2) weeks in advance of the proposed work.*** Nighttime work rates will be charged at 2.0 times the hourly rates indicated above. Additional quality control and materials testing charges will depend on the type of testing being performed, amount of time required, and day that these services are required.

In the event the work of this Contract is not completed within the Contract Time set forth in the Contract or within the time to which such completion may have been extended by Change Order, in accordance with the Contract Documents, the additional engineering or inspection charges incurred by the Owner may be charged to the Contractor and deducted from the monies due him.

Extra work or supplemental Contract work added to the original Contract, as well as extenuating circumstances beyond the control of the Contractor as defined by these Contract Documents, will be given due consideration by the Owner before assessing engineering and inspection charges against the Contractor.

1.04 Time of Work

Unless otherwise specifically permitted, work shall generally be done between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and not on Saturdays or Sundays, except as necessary, for the proper care and protection of work already performed.

All work located within paved surface areas along NCDOT Rights-of-Ways shall be done between the hours of 9:00 a.m. and 4:00 p.m., Monday through Saturday, unless appropriate concrete or water-filled "Jersey Barriers" and traffic controls are installed separating the construction activities from the travelling public. Under this scenario the Contractor shall not permit construction equipment or the delivery of materials to ingress to or egress from the construction zone barriers before 9:00 a.m. or after 4:00 p.m. No work will be permitted on Sundays, except as necessary for the proper care and protection of work already performed or for weekend work, if specifically required.

See Subsection 1.03, Additional Owner's Expenses for additional costs associated with working on weekends.

If it shall become imperative to perform work at night, the Owner and Engineer shall be informed at least two (2) weeks in advance of the beginning of such work. Temporary lighting and all other necessary facilities for performing and inspecting the work shall be provided and maintained by the Contractor.

Unless otherwise specifically permitted, all work that would be subject to damage shall be stopped during inclement, stormy, or freezing weather. Only such work as will not suffer injury to workmanship or materials will be permitted. Contractor shall carefully protect his work against damage or injury from the weather; and when work is permitted during freezing weather, he shall provide and maintain approved facilities for heating the materials and for protecting the finished work.

1.05 Limits of Work Area

The Contractor shall confine his construction operations within the limits of public rights-of-way or easements shown on the Drawings. Storage of equipment and materials, or erection and use of sheds or trailers outside these limits, if such areas are the property of the Owner, shall be used only with the Owner's approval. Storage of materials or equipment on private property outside the designated easements will not be permitted unless the Contractor secures written approval from the property owner that also totally exonerates the Owner from any liability for such use. This agreement shall clearly define the terms and conditions of the approval including any rents or payments as requested by the property owner. Pipe can be strung out or stockpiled within the water filled barriers for no more than the length of pipe anticipated to be installed for that particular days work. Pipe shall not be strung out anywhere else within the NCDOT Rights-of-Way and shall not be stockpiled on the road shoulder or in ditches. Any damage to the pipe or vehicles shall be the Contractor's responsibility. All pipe and materials shall be appropriately marked or otherwise barricaded to avoid collisions with vehicles.

Pipe can be strung out to any length outside NCDOT Rights-of-Way provided it does not interfere with property owner or emergency vehicle ingress and egress, obstruct drainage structures or flows, or is placed directly in the front yard of a residence, church, office, etc."

1.06 Subsurface Data

Subsurface data are offered in good faith solely for placing the Bidder in receipt of all information available to the Owner and Engineer and in no event is to be considered as part of the Contract Documents.

The Bidder must interpret such subsurface data according to his own judgement and acknowledge that he is not relying upon the same as accurately describing the subsurface conditions, which may be found to exist. The test logs present factual information of the subsurface conditions at the specific test location only. The Bidder should not consider, or conclude, that the subsurface conditions will be consistent between test locations.

The Bidder further acknowledges that he assumes all risk contingent upon the nature of the subsurface conditions to be actually encountered by him in performing the work covered by the Contract, even though such actual conditions may result in the Bidder performing more or less work than he originally anticipated.

The Bidder is further advised that the Owner has made subsurface investigations and a report has been prepared, in connection with this project for the Engineer, a copy of this report is posted

on a project ftp site at:

ftp://SRMII_FALCON:SRMII_BORINGS@ftp.kimley-horn.com/_secure/SRMII_GEOTECHNICAL

Note that the correct letter case (upper or lower) is required for the FTP site address, username, and password. Should your browser require you to enter a username and password, please use the following username and password:

Username: SRMII_FALCON

Password: SRMII_BORINGS

In making this data available, the Owner makes no guarantee, either expressed or implied, as to their accuracy or to the accuracy of any interpretation thereof.

1.07 Protection of Property and Structures

Contractor shall be responsible for the preservation and protection of property adjacent to the work site against damage or injury as a result of his operations under this Contract. The Contractor shall, at his own expense, sustain in their places and protect from direct or indirect injury all pipes, poles, conduits, walls, buildings and other structures, utilities and property in the vicinity of his work. Such sustaining and supporting shall be carefully done by the Contractor as required by the Company or party owning the structure or Agency controlling it. The Contractor shall take all risks attending the presence or proximity of pipes, poles, conduits, walls, buildings and other structures, utilities and property in the vicinity of his work and he shall be responsible for all damage caused by his work, to any of them, or to any person of property by reason of injury to them whether such structures are or are not shown on the Drawings. Any damage or injury occurring on account of any act, omission or negligence on the part of the Contractor shall be restored in a proper and satisfactory manner or replaced by and at the expense of the Contractor to an equal or superior condition than previously existed.

Contractor shall comply promptly with such safety regulations as may be prescribed by the Owner, or the local authorities having jurisdiction, and shall when so directed, properly correct any unsafe conditions created by, or unsafe practices on the part of his employees. In the event of the Contractor's failure to comply, the Engineer or Owner may take the necessary measures to correct the conditions or practices complained of; and all costs thereof will be deducted from any monies due the Contractor. Failure of the Engineer to direct the correction of unsafe conditions or practices shall not relieve the Contractor of his responsibility hereunder.

In the event of any claims for damage or alleged damage to property as a result of work under this Contract, the Contractor shall be responsible for all costs in connection with the settlement of or defense against such claims. Prior to commencing work in the vicinity of property adjacent to the work site, the Contractor at his own expense shall take such surveys as may be necessary to establish the existing condition of the property. Before final payment can be made, the Contractor shall furnish satisfactory evidence that all claims for damage have been legally settled or sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

1.08 Existing Utilities and Structures

The term existing utilities shall be deemed to refer to both publicly-owned and privately-owned utilities such as, but not limited to, electric power and lighting, telephone, cable TV, water, gas, storm drains, and sanitary sewers, and all appurtenant structures.

Where possible, the pipe alignment has been selected to avoid existing structures (including utility poles and buildings) and buried utilities.

THE INFORMATION ON THE DRAWINGS IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, BUT IS NOT GUARANTEED TO BE CORRECT OR COMPLETE. UNDERGROUND STRUCTURES NOT SHOWN MAY BE ENCOUNTERED. THE CONTRACTOR SHALL HEREBY DISTINCTLY UNDERSTAND THAT THE OWNER IS NOT RESPONSIBLE FOR THE CORRECTNESS OR SUFFICIENCY OF THE INFORMATION GIVEN; THAT HE SHALL HAVE NO CLAIM FOR DELAY OR EXTRA COMPENSATION ON ACCOUNT OF INCORRECTNESS, INSUFFICIENCY, OR ABSENCE OF INFORMATION REGARDING OBSTRUCTIONS REVEALED OR NOT REVEALED BY THE DRAWINGS; AND THAT HE SHALL NOT HAVE CLAIM FOR RELIEF FROM ANY OBLIGATION OR RESPONSIBILITY UNDER THE CONTRACT BECAUSE THE EXTENT, LOCATION, SIZE OR CHARACTER OF ANY PIPE OR OTHER UNDERGROUND STRUCTURE IS INCORRECTLY SHOWN OR HAS BEEN OMITTED FROM THE DRAWINGS.

The location of the pipe as shown on the Drawings is in accordance with the best information available, as to the obstructions to be avoided, but can be considered only as approximate and may be changed by the Engineer if the progress of work reveals other obstructions.

The work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to the existing utilities. Temporary connections shall be provided, as required, to insure uninterrupted of the existing services. Any damage resulting from the work of this Contract shall be promptly repaired by the Contractor at his own expense in a manner approved by the Engineer and further subject to the requirements of any authority having jurisdiction. Where it is required by the authority having jurisdiction that they perform their own repairs or have them done by others, the Contractor shall be responsible for all costs thereof.

Where excavations by the Contractor require any utilities or appurtenant structures to be temporarily supported, relocated and otherwise protected during the construction work, such support, relocation and protection shall be provided by the Contractor. All such work shall be performed in a manner satisfactory to the Engineer and the respective authority having jurisdiction over such work. In the event the Contractor fails to provide proper support, relocation or protection to any existing utility, the Engineer may, at its discretion, have the respective authority provide such support, relocation, or protection as may be necessary to insure the safety of such utility; and the costs of such measures shall be paid by the Contractor.

1.09 Field Verification of Utilities and Interferences

THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF THE EXACT LOCATION, ELEVATION, DIMENSION, ORIENTATION AND MATERIAL OF ALL UTILITIES AND STRUCTURES WHICH ARE IN THE IMMEDIATE VICINITY OF THE WORK SITES OR WHICH MAY BE AFFECTED BY THE CONTACTOR'S OPERATIONS. Whenever directed by the Engineer, the Contractor shall excavate to verify exact locations, elevations, dimensions, orientation and material of utilities or other interference's in order to assure proper protection of existing utilities or structures. No extra payment will be made for such field verification or any excavations or other work or expense incurred by the Contractor in properly locating and protecting utilities or other interference's.

1.10 Applicable Standards and Codes

Wherever reference is made to any published standards, codes, or standard specifications, it shall mean the latest standard code, specification, or tentative specification of the technical society, organization, or body referred to, which is in effect at the date of the Notice to Bidders.

The following is a partial list of typical abbreviations which may be used in the specifications and the organizations to which they refer:

AASHTO	- American Association of State Highway Transportation Officials
ACI	- American Concrete Institute
ACIFS	- American Cast Iron Flange Standards
AGA	- American Gas Association
AGMA	- American Gear Manufacturers Association
AIA	- American Institute of Architects
AISC	- American Institute of Steel Construction
ANSI	- American National Standard Institute
API	- American Petroleum Institute
ASCE	- American Society of Civil Engineers
ASHRAE	- American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	- American Society of Mechanical Engineers
ASTM	- American Society of Testing and Materials
AWS	- American Welding Society
AWWA	- American Water Works Association
CRSI	- Concrete Reinforcing Steel Institute
EEl	- Edison Electric Institute
Fed. Spec	- Federal Specifications
IEEE	- Institute of Electrical and Electronic Engineers
IPCEA	- Insulated Power Cable Engineers Association
ISO	- Insurance Service Offices
NBS	- National Bureau of Standards
NCDOT	- North Carolina Department of Transportation – Division of Highways
NEC	- National Electric Code
NEMA	- National Electrical Manufacturers Association
OSHA	- Occupational Safety and Health Act
UL	- Underwriters Laboratory

Contractor shall, when required, furnish evidence satisfactory to the Engineer that materials and methods are in accordance with such standards where so specified.

In the event any questions arise as to the application of these standards or codes, copies shall be supplied on site by the Contractor.

1.11 Progress Schedule

Within ten (10) calendar days after the Notice to Proceed, the Contractor shall prepare and submit, **utilizing Microsoft Project**, an electronic copy of its proposed progress schedule to the Engineer for review and approval. If so required, the schedule shall be revised until it is approved by the Engineer. **The schedule shall be updated monthly, depicting progress to the last day of the month and submit it to the Engineer no later than five (5) calendar days prior to a scheduled Monthly Progress Meeting.** The schedule shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of the work and identifying construction activities for each portion of the work.

The schedule shall be time scaled, identifying the first day of each week, with the estimated date of starting and completion of each stage of the work in order to complete the project within the Contract Times.

The updated schedule shall show all changes since the previous submission. All revisions to the schedule must have the approval of the Engineer.

[Note: Monthly Progress Payment Requests will not be reviewed or processed until the updated construction schedule has been delivered to the Engineer.]

1.12 Working Drawings

Before fabrication of any materials, the Contractor shall submit Shop Drawings to the Engineer for review. The Contractor shall be responsible for securing all of the information, details, dimensions, drawings, etc., necessary to prepare the Shop Drawings. The Contractor shall field verify all dimensions and elevations required for completeness and accuracy of the drawings.

Shop Drawings shall be submitted for the following:

- (a) Pipes and joints (all sizes and materials)
- (b) All reinforced concrete structures and manholes (including frames and covers)
- (c) Stone, silt fence, ditch linings and filter fabrics
- (d) All valves, hydrants, couplings, sleeves, etc.

SHOP DRAWINGS ON ITEMS REQUIRING PERFORMANCE AFFIDAVITS WILL NOT BE REVIEWED UNTIL ACCEPTABLE PERFORMANCE AFFIDAVITS ARE RECEIVED. ALL SUBMITTALS SHALL BE THOROUGHLY CHECKED BY THE CONTRACTOR FOR ACCURACY AND CONFORMANCE TO THE INTENT OF THE CONTRACT DOCUMENTS BEFORE BEING SUBMITTED TO THE ENGINEER AND SHALL BEAR THE CONTRACTOR'S STAMP OF APPROVAL CERTIFYING THAT THEY HAVE BEEN SO CHECKED. SUBMITTALS WITHOUT THE CONTRACTOR'S STAMP OF APPROVAL WILL NOT BE REVIEWED BY THE ENGINEER AND WILL BE RETURNED TO THE CONTRACTOR.

THE PIPE MANUFACTURER/SUPPLIER SHALL ALSO PROVIDE A DETAILED "LAYING SCHEDULE" IN AN AUTOCAD DRAWING FORMAT (24" x 36") THAT CLEARLY ILLUSTRATES WHERE EVERY PIECE OF PIPE (EACH TYPE OF PIPE JOINT AND FITTING) IS TO BE INSTALLED, INCLUDING THE PLACEMENT OF ALL VALVES, COUPLINGS, SLEEVES, ETC. THE PIPE MANUFACTURER SHALL NOT START TO FABRICATE ANY OF THE PIPE UNTIL THE LAYING SCHEDULE IS REVIEW AND APPROVED BY THE ENGINEER.

Submittals shall be transmitted in sufficient time to allow the Engineer at least thirty (30) calendar days for review and processing.

The Contractor shall transmit two (2) prints of each submittal to the Engineer for review for all Drawings greater than 11 inches x 17 inches in size, as well as two (2) copies of all other materials. All submittals shall be accompanied by a letter of transmittal, in duplicate, containing date, project title, Contractor's name, number and titles of submittals, notification of departures, and any other pertinent data to facilitate review.

If a submittal is satisfactory to the Engineer, the Engineer will annotate the submittal "Furnish as Submitted" or "Furnish as Corrected". **The return of Shop Drawings to the Contractor shall be through a digital format utilizing a project ftp site only. Hard copies of Shop Drawings will not be sent to the Contractor.** Unless noted, no further re-submittals are required if annotated as above. If a re-submittal is required, the Engineer will annotate the submittal "Revise and Resubmit" and transmit an electronic copy back to the Contractor for appropriate action. The Contractor shall revise and resubmit submittals as required by the Engineer until submittals are

acceptable to the Engineer. If a submittal is marked "Rejected," it indicates that based on the information submitted, the submission is not in conformance with the Contract Documents. The deviations from the Contract Documents are too numerous to list and a completely revised submission of the proposed equipment or materials is required. It is understood by the Contractor that the Owner may charge the Contractor for the Engineer's charges for review in the event a submittal is not approved (either "Furnished as Submitted" or "Furnish as Corrected") by the third submittal for a material, system or piece of equipment. These charges shall be for all costs associated with engineering review, meetings with the Contractor or manufacturer, etc. commencing with the fourth submittal of a material, system or type of equipment submitted for a particular Specification Section.

The acceptance of a Working Drawing by the Engineer will constitute acceptance of the subject matter for which the drawing was submitted and not for any other structure, material, equipment, or appurtenances indicated as shown.

The Engineer's review of the Contractor's submittals shall in no way relieve the Contractor of any of his responsibilities under the Contract. An acceptance of a submittal shall be interpreted to mean that the Engineer has no specific objections to the submitted material subject to conformance with the Drawings and Specifications.

The Engineer's review will be confined to general arrangement and compliance with the Drawings and Specifications only, and will not be for the purpose of checking dimensions, weights, clearances, fitting, tolerances, interference's, coordination of trades, etc.

1.13 Performance Affidavits

When required in the appropriate equipment specifications, the Contractor shall submit manufacturer's Performance Affidavits for equipment or materials to be furnished. By these affidavits, each manufacturer must certify to the Contractor and the Owner, jointly, that he has examined the Contract Documents and that the equipment, apparatus or material he offers to furnish will meet in every way the performance requirements set forth or implied in the Contract Documents. The Contractor shall transmit to the Engineer three (3) copies of the affidavit given him by the manufacturer or supplier along with the initial shop drawing submittals. The Performance Affidavit shall be signed by an officer of the basic corporation, partnership or company manufacturing the equipment and witnessed by a notary public. Shop drawings, if required, will not be reviewed prior to receipt of an acceptable Performance Affidavit, which shall have the following format:

Addressed to: (Contractor) and City of Durham, North Carolina

Reference: Southern Reinforcing Main – Phase IIB

Text: (Manufacturer's Name) has examined the Contract Documents and hereby state that the (Product) meets in every way the performance requirements set forth or implied in Section _____ of the Contract Documents.

The piping, fittings and piping materials, fully conform to the following standards: _____

Signature: Corporate Officers shall be Vice President or higher. (Unless statement authorizing signature is attached).

1.14 Equipment and Materials

All equipment, materials, instruments, or devices incorporated in this project shall be new and unused, unless indicated otherwise in the Contract Documents.

Equipment and materials to be incorporated in the work shall be delivered sufficiently in advance of their installation and use to prevent delay in the execution of the work, and they shall be delivered as nearly as feasible in the order required for executing the work.

The Contractor shall protect all equipment and materials from deterioration and damage. Any equipment or materials of whatever kind which may have become damaged or deteriorated from any cause shall be removed and replaced by good satisfactory items and at the Contractor's expense for both labor and materials.

Storage - Contractor shall store his equipment and materials at his designated storage yard in accordance with the manufacturer's recommendations and as directed by the Owner or Engineer, and in conformity to applicable statutes, ordinances, regulations, and rulings of the public authority having jurisdiction.

Contractor shall not store materials or equipment unless otherwise specified, on the job site and shall take care to prevent any structure from being loaded with a weight which will endanger its security or the safety of persons.

Materials shall not be placed within twenty (20) feet of fire hydrants. Gutters, drainage channels, and inlets shall be kept unobstructed at all times.

The Contractor shall enforce the instructions of the Owner and Engineer regarding the posting of regulatory signs for loadings on structures, fire safety, and smoking areas.

1.15 Operation and Maintenance Instructions/Manuals

Individual Instructions - The Contractor, through manufacturer's representatives or other qualified individuals, shall provide instruction of designated employees of the Owner in the operation and care of all equipment installed hereunder.

Written Instructions - The Contractor shall furnish and deliver to the Engineer, prior to the 80% completion point of construction, five (5) complete sets of instructions, technical bulletins, and any other printed matter such as diagrams, prints or drawings, containing full information required for the proper operation, maintenance, and repair of the equipment. Included in this submission shall be a spare parts diagram and complete spare parts list. These requirements are a prerequisite to the operation and acceptance of equipment. Each set of instructions shall be bound together in appropriate three-ring binders. A detailed Table of Contents shall be provided for each set. Written operation and maintenance instructions shall be required for all equipment items supplied for this project. The amount of detail shall be commensurate with the complexity of the equipment item.

Information not applicable to the specific piece of equipment installed on this project shall be struck from the submission. Information provided shall include a source of replacement parts and names of service representatives, including address and telephone number.

When written instructions include shop drawings and other information previously reviewed by the Engineer, and which accurately depict the equipment installed, shall be incorporated in the instructions. Extensive pictorial cuts of equipment are required for operator reference in servicing.

1.16 Substitutions

Whenever a particular brand or make of material, equipment, or other item is specified herein, or is indicated on the Drawings, it is for the purpose of establishing a (minimum) standard of quality, design, and type desired and to supplement the detailed Specifications. Any other brand or make which, in the opinion of the Engineer, is equivalent to that specified or indicated may be offered as a substitute to the following provisions:

- A. Contractor shall submit for each proposed substitution sufficient details, complete descriptive literature, and performance data together with samples of the materials, where feasible, to enable the Engineer to determine if the proposed substitution is equal.
- B. Contractor shall submit certified tests, where applicable, by an independent laboratory attesting that the proposed substitution is equal.
- C. A list of installations where the proposed substitution is equal.
- D. Requests for substitutions shall include full information concerning cost savings resulting from such substitutions to the Owner. **[No substitution will be considered or approved unless an appropriate cost credit is provided for review and approval.]**
- E. Where the approval of a substitution requires revision or redesign of any part of the work, all such revision and redesign, and all new drawings and details required therefore, shall be provided by the Contractor at his own cost and expense, and shall be subject to the approval of the Engineer.
- F. In the event that the Engineer is required to provide additional engineering services, then the Engineer's charges for such additional services shall be charged to the Contractor by the Owner.
- G. In all cases the Engineer shall be the sole judge as to whether a proposed substitution is to be approved. The Contractor shall abide by the Engineer's decision when proposed substitute items are judged to be unacceptable and shall in such instances furnish the item specified or indicated. No substitute items shall be used in the work without written approval of the Engineer.

The Contractor shall have and make no claim for an extension of time or for damages by reason of the time taken by the Engineer in considering a substitution proposed by the Contractor or by reason of the failure of the Engineer to approve a substitution proposed by the Contractor.

Acceptance of any proposed substitution shall in no way release the Contractor from any of the provisions of the Contract Documents.

1.17 Imperfect Work, Equipment, or Materials

Any defective or imperfect work, equipment, or materials furnished by the Contractor which is discovered before the final acceptance of the work, as established by the Certificate of Substantial Completion, or during subsequent guarantee period, shall be removed immediately even though it may have been overlooked by the Engineer and estimated for payment. Any equipment or materials condemned or rejected by the Engineer shall be tagged as such and shall be immediately removed from the site. Satisfactory work or materials shall be substituted for that

rejected.

The Engineer may order tests of imperfect or damaged work, equipment, or materials to determine the required functional capability for possible acceptance, if there is no other reason for rejection. The cost of such tests shall be borne by the Contractor; and the nature, tester, extent, and supervision of the tests will be as determined by the Engineer. If the results of the tests indicate that the required functional capability of the work, equipment, or material was not impaired, consistent with the final general appearance of the same, the work, equipment, or material may be deemed acceptable. If the results of such tests reveal that the required functional capability of the questionable work, equipment, or materials has been impaired, then such work, equipment, or materials shall be deemed imperfect and shall be replaced. The Contractor may elect to replace the imperfect work, equipment, or material in lieu of performing the tests.

1.18 Construction Permits, Easements and Encroachments

The Owner shall obtain or cause to be obtained all permanent and temporary construction easements as shown on the Drawings. The Owner shall further obtain or cause to be obtained right-of-way encroachment agreements from the North Carolina Department of Transportation. The Contractor shall verify that these agreements have been obtained and shall comply with the conditions set forth in each agreement. The Contractor shall obtain and keep current any other necessary construction permits from those authorities or agencies having jurisdiction over land areas, utilities, or structures which are located within the Contract limits and which will be occupied, encountered, used, or temporarily interrupted by the Contractor's operations unless otherwise stated. Copies shall be maintained on-site at all times for review by the appropriate agency, the Engineer and the Owner.

When construction permits are accompanied by regulations or requirements issued by a particular authority or agency, it shall be the Contractor's responsibility to familiarize himself and comply with such regulations or requirements as they apply to his operations on this project.

The Contractor shall provide a Performance and Indemnity Bond in accordance with the Encroachment Agreement between the Owner and the North Carolina Department of Transportation. The Contractor shall comply with all of the requirements included in the Encroachment Agreement. **Encroachment Agreements are included herein and are found at the end of Section 1.**

[Note: The Contractor and all subcontractors are required to obtain a City of Durham Privilege License within five (5) days after the Notice of Award for the project.]

1.19 Sanitary Regulations

Sanitary conveniences, in sufficient numbers, for the use of all persons employed on the work and properly screened from public observation, shall be provided and maintained at suitable locations by the Contractor, all as prescribed by State Labor Regulations and local ordinances, and finally removed from the site when no longer needed. The contents of same shall be removed and disposed of in a satisfactory manner, as the occasion requires. **The Contractor shall rigorously prohibit the committance of nuisances within, on, or about the work site.** The Contractor shall supply sufficient drinking water for all his employees, but only from approved sources. He shall also obey and enforce other local sanitary regulations and orders.

1.20 Temporary Services

The Contractor shall make arrangements for providing electric power, fuel, heat, water, and other

temporary services to prosecute its construction operations.

1.21 Traffic Regulation and Maintenance of Traffic

The Contractor shall obey all traffic laws and comply with all the requirements, rules, and regulations of the North Carolina Department of Transportation, the City of Durham, and local authorities having jurisdiction and to maintain adequate warning signal lights, barriers, etc., for the protection of traffic on public roadways.

The Contractor shall maintain traffic and protect the public from all damage to persons and property within the Contract limits, in accordance with the Contract Documents and all applicable State and local regulations. He shall conduct his operations so as to maintain and protect access, for vehicular and pedestrian traffic, to and from all properties adjoining or adjacent to those streets affected by his operations, and to subject the public to a minimum of delay and inconvenience. Suitable signs, barricades, railings, etc., shall be erected and the work outlined by adequate lighting at night. Danger lights shall be provided as required. Watchmen and flagmen shall be provided as may be necessary for the protection of traffic.

Warning signs shall be provided along all highways while work is in progress; and where traffic direction is required, flagmen shall be designated by the Contractor to direct traffic past the equipment, machinery, or construction operations. Barricades and lights shall be provided as required to protect traffic. Where trenches have been cut in road shoulders on which traffic may pass at times, red flags and warning signs shall be placed at frequent intervals and maintained until the shoulder is safe for travel. The traveling public shall be warned of the construction with signing that is in accordance with the latest edition of the Manual on Uniform Traffic Control Devices.

All signs and barricades shall meet the minimum requirements of and conform to the standard outline in the manual entitled Manual on Uniform Traffic Control Devices for Streets and Highways, published by the United States Department of Transportation, Federal Highway Administration, latest edition, and a sign supplement to the manual published by the North Carolina Department of Transportation, Division of Highways, Traffic Engineering Branch entitled Construction and Maintenance Operations Supplement to the Manual on Uniform Traffic Control Devices, latest edition.

During the progress of the work, driveways, sidewalks, and crossings of highways and streets shall be kept open for the passage of pedestrians and traffic and shall not be unnecessarily obstructed unless authorized by the authority having jurisdiction over the same.

The Contractor shall take such measures, at his own expense, as may be necessary to keep the streets open for traffic and shall give advance notice to the local Fire and Police Departments of his proposed street operations by calling 911, at the beginning and end of each working day.

The Contractor shall, in writing, give residents 48-72 hours advance notice of his proposed street operations to allow residents to make other arrangements for driveway and street parking and access to driveways. The Contractor shall also give at least 48 hours advance notice to the Police Department for parking spaces required to be removed for construction purposes.

The Contractor shall notify the North Carolina Department of Transportation local District Office at least five (5) working days in advance of work on NCDOT Rights-of-Way, and shall fully cooperate with the Department.

The Contractor shall construct and maintain, without extra compensation, such adequate and proper bridges over excavations as may be necessary or directed for the purpose of

accommodating pedestrians or vehicles.

All temporary means constructed by the Contractor shall be removed upon completion of work unless otherwise specified by the Engineer and any damage done to public or private property shall be made good by the Contractor.

All dirt spilled from the Contractor's trucks on existing pavements over which it is hauled or which has otherwise been deposited thereon shall be removed by the Contractor whenever in the opinion of the Engineer, North Carolina Department of Transportation, the City of Durham, or the local authorities having jurisdiction, the accumulation is sufficient to cause the formation of mud, dust, interference with traffic, or create a traffic hazard.

All construction signing shall be in strict accordance with Section 12 - Traffic Control, and as shown on the Drawings.

1.22 Weather Conditions

No work shall be done when the weather is unsuitable for construction. The Contractor shall take necessary precautions (in the event of impending storms) to protect all work, materials, or equipment from damage or deterioration due to floods, driving rain or wind, and snow storms. The Owner reserves the right, through the opinion of the Engineer, to order that additional protection measures over and beyond those proposed by the Contractor, be taken to safeguard all components of the project. The Contractor shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the Owner for damage to the work from weather elements.

The mixing and placing of concrete or pavement courses, the laying of masonry, and installation of pipelines shall be stopped during rain storms, if ordered by the Engineer; and all freshly placed work shall be protected by canvas or other suitable covering in such manner as to prevent running water from coming in contact with it. Sufficient coverings shall be provided and kept ready at hand for this purpose.

1.23 Fire Protection

The Contractor shall take all necessary precautions to prevent fires at, or adjacent to the work and to his buildings. He shall provide adequate facilities for extinguishing fires which do occur.

When fire or explosion hazards are created or exist in the vicinity of the work as a result of the locations of gas mains, fuel tanks, gas tanks, or similar hazardous utilities or devices, the Contractor shall immediately alert the local Fire Marshall, the Engineer, and the Owner of such utility, tank, or device to prevent the occurrence of fire or explosion.

1.24 Chemicals

All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant of other classifications, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions. Any spills of chemicals into adjacent bodies of water shall be promptly reported to the Engineer and Owner.

1.25 Safety and Health Regulations

The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (P.L. 91-596)

and under Section 107 of the Contractor Work Hours and Safety Standards Act (P.L. 91-54).

1.26 Cooperation

The Contractor shall allow the Owner or his agents, and other project contractors or their agents, to enter upon the work for the purpose of constructing, operating, maintaining, removing, repairing, altering, or replacing such pipes, conduits, manholes, wires, poles, or other structures and appliances now located on the site or which may be required to be installed at or in the work. The Contractor shall cooperate with all aforesaid parties and shall allow reasonable provisions for the prosecution of any other work by the Owner, or others, to be done in connection with his work, or in connection with normal use of any existing facilities.

1.27 Inspections and Tests

The Contractor shall allow the Engineer ample time and opportunity for testing materials and equipment to be used in the work. The Contractor shall advise the Engineer promptly upon placing orders for materials so that arrangements may be made, if desired, for inspection before shipment from the place of manufacture. The Contractor shall at all times furnish the Engineer and his representatives, facilities including labor, and allow proper time for inspecting and testing materials, equipment, and workmanship. The Contractor must anticipate possible delays that may be caused him in the execution of his work due to the necessity of materials and equipment being inspected and accepted for use. The Contractor shall furnish at his own expense, all samples of materials required by the Engineer for testing, and shall make his own arrangements for providing water, electric power, or fuel for the various inspections and tests of structures and equipment.

The Contractor shall furnish the services of representatives of the manufacturers of certain equipment, as prescribed in other Sections of the Specifications. The Contractor shall also place his orders for such equipment on the basis that, after the equipment has been tested, prior to final acceptance of the work; the manufacturer shall furnish the Owner with certified statements that the equipment has been installed properly and is ready to be placed in functional operation. Tests and analyses required of equipment shall be paid for by the Contractor, unless specified otherwise in the Section which covers a particular piece of equipment.

Where tests or analyses are specifically required in other sections of these Specifications, the cost shall be borne by the party (Owner or Contractor) so designated in such sections. The Owner will bear the cost of all tests, inspections, or investigations undertaken by the order of the Engineer for the purpose of determining conformance with the Contract Documents if such tests, inspection, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the Engineer as a result of such tests, inspections, or investigations, the Contractor shall bear the full cost thereof or shall reimburse the Owner for said cost. In this connection, the cost of any additional tests and investigations, which are ordered by the Engineer to ascertain subsequent conformance with the Contract Documents, shall be borne by the Contractor.

1.28 Periodic Cleanup; Basic Site Restoration

During construction, the Contractor shall regularly remove from the site of the work all accumulated debris and surplus materials of any kind which result from his operations. Unused equipment and tools shall be stored at the Contractor's yard or base of operations for the project.

When the work involves installation of sewers, drains, water mains, manholes, underground structures, or other disturbance of existing features in or across streets, rights-of-way, easements, or private property, the Contractor shall (as the work progresses) promptly backfill, compact, grade, and otherwise restore the disturbed area to the basic condition which will permit resumption of pedestrian or vehicular traffic and any other critical activity or functions consistent with the original use of the land. The requirements for temporary paving of streets, walks, and driveways, if required, are specified elsewhere. Unsightly mounds of earth, large stones, boulders, and debris shall be removed so that the site presents a neat appearance. The Contractor shall perform the cleanup work on a regular basis and as frequently as ordered by the Engineer.

Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the required facilities in that area. Furthermore, such work shall also be accomplished, when ordered by the Engineer, if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.

Upon failure of the Contractor to perform periodic cleanup and basic restoration of the site to the Engineer's satisfaction, the Owner may, upon five (5) days prior written notice to the Contractor, without prejudice to any other rights or remedies of the Owner, cause such work for which the Contractor is responsible to be accomplished to the extent deemed necessary by the Engineer, and all costs resulting therefrom shall be charged to the Contractor and deducted from the amounts of money that may be due him.

1.29 Dust Control

The Contractor shall take all necessary measures to control dust from his operations, and to prevent spillage of excavated materials on public roads.

The Contractor shall remove all spillage of excavated materials, debris or dust from public roads daily, by methods approved by the Engineer. At a minimum, the Contractor shall make available to the project a "broom" tractor and a water truck.

The Contractor shall sprinkle water at locations and in such quantities and at such frequencies as may be required by the Engineer to control dust and prevent it from becoming a nuisance to the surrounding area.

Dust control and cleaning measures shall be provided at no additional cost to the Owner.

1.30 Final Cleanup; Site Rehabilitation

Before finally leaving the site, the Contractor shall remove from the site of the work all accumulated debris and surplus materials of any kind which result from his operation, including construction equipment, tools, sheds, sanitary enclosures, etc. The Contractor shall leave all equipment, fixtures, and work, which he has installed, in a clean condition. The complete project shall be turned over to the Owner in a neat and orderly condition.

The site of the work shall be rehabilitated or developed in accordance with other sections of the Specifications and the Drawings. In the absence of any portion of these requirements, the

Contractor shall completely rehabilitate the site to a condition and appearance equal or superior to that which existed just prior to construction, except for those items whose permanent removal or relocation was required in the Contract Documents or ordered by the Engineer.

1.31 Final Inspection

Final cleaning and repairing shall be so arranged as to be finished upon completion of the construction work.

The Engineer will make his final inspection of the work during the progress of final cleaning and repairing, and any portion of the work finally inspected and accepted by the Engineer shall be kept clean by the Contractor, until the final acceptance of the entire work.

When the Contractor has finally cleaned and repaired the whole or any portion of the work, he shall notify the Engineer that he is ready for final inspection of the whole or a portion of the work, and the Engineer will thereupon inspect the work. If the work is not found satisfactory, the Engineer will order further cleaning, repairs, or replacement.

When such further cleaning or repairing is completed, the Engineer, upon further notice, will again inspect the work. The "Final Payment" will not be processed until the Contractor has complied with the requirements set forth, and the Engineer has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

1.32 Project Close Out

As construction of the project enters the final stages of completion, the Contractor shall, in concert with accomplishing the requirements set forth in the Contract Documents, attend to or have already completed the following items as they apply to its Contract.

- A. Required testing of project components.
- B. Correcting or replacing defective work, including completion of items previously overlooked or work which remains incomplete, all as evidenced by the Engineers "Punch" Lists.
- C. Notify other Contractors of completion of work such that connections and/or coordination between different projects can be made.
- D. Attend to any other items listed herein or brought to the Contractor's attention by the Engineer.

Before the Certificate of Substantial Completion is issued, the Contractor shall submit to the Engineer (or to the Owner if indicated) certain records, certifications, etc., which are specified elsewhere in the Contract Documents. Missing, incomplete, or unacceptable items, as determined by the Engineer or the Owner, shall constitute grounds for withholding Final Payment to the Contractor. A partial list of such items appears below, but it shall be the Contractor's responsibility to submit any other items which are required in the Contract Documents:

- A. Test results of project components.
- B. Performance Affidavits for equipment.
- C. Certification of equipment or materials in compliance with Contract Documents.

- D. Operation and maintenance instructions or manuals for each item of equipment.
- E. One set of neatly marked-up record drawings showing as-built changes and additions to the work under his Contract.
- F. Any special guarantees or bonds (Submit to Owner).

The Contractor's attention is directed to the fact that required certifications and information under Items A, B, and D above, must actually be submitted earlier in accordance with other sections of the Specification.

1.33 Blasting and Explosives

When blasting is utilized at the site of work, the Contractor shall take all precautions and provide all protective measures necessary to prevent damage to property and structures or injury to persons. Prior to blasting, the Contractor shall secure all permits required by law for blasting operations and shall provide any additional hazard insurance required by the Owner. The Contractor shall have a fully qualified and experienced blasting foreman in charge of all blasting operations. The Contractor shall undertake the complete drilling and blasting operations, including handling and storing of explosives, in accordance with Federal, State and Local laws and regulations in conformance with the recommendations and practices of the Institute of Makers of Explosives. No blasting shall commence without prior notification being given the Owner, Engineer, Police and Fire Departments. Blasting shall be covered or otherwise satisfactorily confined. Contractor shall be responsible for and shall bear the expense of any damage of whatever nature caused by blasting or accidental explosions.

Portions of the proposed pipe installation may require blasting in the proximity of adjacent facilities/structures/buildings/houses. In order to reduce the potential for damaging these buildings/houses, the Contractor shall notify the Engineer a minimum of 24 hours in advance of any blasting and the Owner will provide a blasting consultant to monitor each blast and to confirm that particle velocities are maintained by the Contractor within acceptable limits. Charge weights and delays for all blasts shall be selected to maintain maximum particle velocities at the nearest building/house location to not more than 2 inches/sec.

All blasts are to also be monitored with a vibration monitor capable of providing an immediate hard copy showing the date, time, and peak particle velocities in the longitudinal, transverse, and vertical directions. No blasting shall be performed in the proximity of adjacent buildings/houses without the blasting consultant being present unless specifically directed otherwise by the Engineer. The blasting consultant shall continuously plot scale distance data and this information shall be used by the Contractor to select appropriate charge weights and delays for all shots. The Contractor shall be solely responsible for selection of charge weights and delays. In no case shall the charge weight and delay selected for a shot exceed that which would theoretically maintain maximum peak particle velocities to 2 in/sec based on scale distance data developed for the project.

Prior to the first blast within 30 feet of a facilities/structures/building/house, the charge weight and delays shall be selected to limit peak particle velocities to not more than 1 in/sec until scale distance for the site is developed. The criteria may then be increased to the specification standard of 2 in/sec for all subsequent shots. If at any time during subsequent blasts, peak particle velocities exceed 2 in/sec, then subsequent blasting shall be limited to a peak particle velocity of 1 in/sec until scale distance data produces consistent results. Peak particle velocities may then be increased to 2 in/sec based on the updated scale distance data and remain at that

level as long as consistent results are maintained.

1.34 Additional Definitions

Certain Specification Sections refer to Divisions of Contract Specifications. Sections are each individually numbered portions of the Specifications (numeric) such as 8, 10, etc. The term Section is used as a convenience term meaning all Subsections within a numerical grouping. Section 1, would thus include Subsections 1.00 and 1.02. Section 12 would include Subsections 12.00 or ...08, etc.

1.35 Construction Video

The Contractor shall video the entire route utilizing a high quality DVD format. The original video media shall be turned over to the Engineer prior to beginning construction activities. The video shall clearly identify existing site conditions prior to construction.

1.36 Ultimate Disposition of Claims by One Contractor Arising From Alleged Damage by Another Contractor

During the progress of the work, other Contractors may be engaged in performing other work or may be awarded other Contracts for additional work on this project. In that event, the Contractor shall coordinate the work to be done hereunder with the work of such other Contractors and the Contractor shall fully cooperate with such other Contractors and carefully fit its own work to that provided under other Contracts as may be directed by the Engineer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor.

If the Engineer shall determine that the Contractor is failing to coordinate his work with the work of the other Contractors as the Engineer directed, then the Owner shall have the right to withhold any payments otherwise due hereunder until the Contractor completely complies with the Engineer's directions.

If the Contractor notifies the Engineer in writing that another Contractor on this project is failing to coordinate his work with the work of this Contract as directed, the Engineer must promptly investigate the charge. If the Engineer finds it to be true, he must promptly issue such directions to the other Contractor with respect thereto as the situation may require. The Owner, the Engineer, nor any of their agents shall not, however, be liable for any damages suffered by the Contractor by reason of the other Contractor's failure to promptly comply with the directions so issued by the Engineer, or by reason of another Contractor's default in performance, it being understood that the Owner does not guarantee the responsibility or continued efficiency of any Contractor.

The Contractor shall indemnify and hold the Owner and the Engineer harmless from any and all claims of judgments for damages and from costs and expenses to which the Owner may be subjected or which it may suffer or incur by reason of the Contractor's failure to comply with the Engineer's directions promptly.

Should the Contractor sustain any damage through any act or omission of any other Contractor having a Contract with the Owner for the performance of work upon the site or of work which may be necessary to be performed for the proper execution of the work to be performed hereunder, or through any act or omission of a Subcontractor of such Contract, the Contractor shall have no claim against the Owner or the Engineer for such damage, but shall have a right to recover such damage from the other Contractor under the provision similar to the following provisions which have been or will be inserted in the Contracts with such other Contractors.

Should any other Contractor having or who shall hereafter have a Contract with the Owner for the performance of work upon the site sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any Subcontractor of the Contractor, the Contractor agrees to reimburse such other Contractor for all such damages and to defend at his own expense any suit based upon such claim and if any judgment or claims against the Owner shall be allowed, the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and shall indemnify and hold the Owner harmless from all such claims.

The Owner's right to indemnification hereunder shall in no way be diminished, waived or discharged, by its recourse to assessment of liquidated damages as provided in the Contract, or by the exercise of any other remedy provided for by Contract Documents or by law.

1.37 Maintenance of Water and Sewer Facilities During Construction

All work requiring interruption of water or sewer service shall be conducted in strict accordance with the conditions set forth in this Section. The intent of this section is to minimize the extent and duration of necessary interruptions in water or sewer service and to insure that such operations are conducted in such a manner as to protect the quality of service provided to the water and sewer customers of the Owner. ***[Note: All proposed water service interruptions within the City of Durham require at least a seven (7) day advanced written notice from the Contractor to all customers that will be affected by the interruption. This provision is not optional and failure to comply with this provision will delay any proposed interruption.]***

The intent of this Section is to outline the minimum requirements necessary to provide continuous water and wastewater flow throughout the construction period, except during approved interruptions of service.

Work shall be scheduled and conducted by the Contractor so as not to impede any water or wastewater flow, or cause odor or other nuisance, except as explicitly permitted hereinafter. In performing the work shown and specified, the Contractor shall plan and schedule his work to meet the water distribution and the wastewater collection system operating requirements, and the constraints and construction requirements as outlined in this Section and as shown on the Drawings.

No discharge of raw or inadequately treated wastewater shall be allowed. The Contractor shall take all necessary precautions and provide all required means and apparatus including, but not limited to, plugs, pumps (including back-up pump), hoses, piping, power (including back-up power) to prevent the discharge of wastewater. The Contractor shall pay all civil penalties, fines, costs, assessments, etc., associated with any discharge of raw or inadequately treated wastewater associated with the Contractor's work.

The Contractor has the option of providing additional temporary facilities that can eliminate a constraint, provided it is done without cost to the Owner and provided that all requirements of these Specifications are fulfilled.

The Contractor shall provide the Engineer with a detailed water and wastewater interruption and diversion plan for approval. At a minimum, this plan shall address the following:

- A. Expected date of interruption(s) and duration of any and all interruption(s).
- B. Sequence of construction operations for any interruption(s).
- C. Procedure for flushing and disinfection of all affected water distribution piping and valves.

No interruption of service will be permitted until the foregoing plan has been approved by the Engineer.

[The Owner/Engineer reserves the right to adjust, modify, and/or alter the proposed plan to serve the best interests of the Owner at no additional cost to the Owner.]

The Contractor shall give the Owner through the Engineer, at least seven (7) calendar days advance notice of its intent to divert or interrupt any portion of the system.

All short-term system or partial system interruptions of service and diversions shall receive prior written approval from the Engineer. Long-term interruptions of service and diversions shall conform to the requirements specified herein and shall be minimized by the Contractor as much as possible. If in the judgement of the Engineer a requested interruption of service is not required for the Contractor to perform the Work, the Contractor shall utilize approved alternative methods to accomplish the Work. All interruptions of service shall be coordinated with and scheduled at times suitable to the Owner. Interruptions of service shall not begin until all required materials are on hand and ready for installation. Each interruption of service period shall commence at a time approved by the Owner. The Contractor shall proceed with the Work associated with short-term system or partial system interruptions continuously, start to finish, until the Work is completed and normal operation of service is restored, unless otherwise approved in writing by the Engineer.

The Contractor shall schedule short-term and extended interruptions of service in advance and shall present all desired interruptions of service in the 30 and 60-day schedules at the progress meetings (see Section 1). Interruptions of service shall be fully coordinated and finalized with the Engineer at least 24 hours before the scheduled interruption of service. Owner's personnel shall operate the Owner's existing water facilities involved in the short-term and extended interruptions of service.

Short term interruptions of service will be allowed for repairs to water mains, water services, and sewer service connections to existing facilities. All such interruptions of service shall be scheduled for low usage, low-flow periods and shall be limited to less than two (2) hours depending on the time of day or in the case of the sewer system, the incoming flow rate and storage volume in the collection system. The Contractor shall provide appropriate diversion facilities to be approved by the Owner, and at no additional cost to the Owner, when the sewer system cannot be interrupted for a sufficient amount of time to accomplish the required work. The Contractor may be allowed additional interruption time for short-term interruptions if he can demonstrate to the Owner and Engineer that the collection system will not surcharge or overflow during the requested interruption period. Duration of short-term interruptions allowed will depend on incoming wastewater flow rate and prevention of any discharge of raw wastewater from the collection system. The schedule and duration of short-term interruptions shall be at the discretion of the Owner.

Long-term interruptions will be allowed for replacement of the existing sanitary sewer mains and interceptors as indicated on the Drawings. The Contractor shall furnish and install all means and

apparatus including, but not limited to, plugs, pumps (including back-up pumps), hoses, piping, power (including back-up power), etc., required to bypass the existing facilities during the construction of that segment of the work. Scheduling and notification of the Owner shall be the same as that for short-term interruptions.

The Owner shall have the authority to order Work stopped or prohibited that would, in its opinion, unreasonably result in interrupting the necessary functions of the existing water and sewer facilities.

If the Contractor impairs performance or operation of the existing facilities as a result of not complying with specified provisions for maintaining service, then the Contractor shall immediately make all repairs or replacements and do all work necessary to restore the service to operation to the satisfaction of the Engineer. Such work shall progress continuously to completion on a 24-hours per day, seven working days per week basis.

The Contractor shall provide the services of emergency repair crews on call 24-hours per day.

Water service shall not be restored until the completed work, including flushing and disinfection, has been approved by the Owner.

1.38 Flushing, Testing, and Disinfection Coordination of Potable Lines Affected during Construction

The intent of this Section is to provide for a complete and comprehensive flushing, pressure testing and disinfection program.

Flushing, testing and disinfection of pipe work are specified under Section 4.

Water Supply

The Owner will provide reasonable quantities of water necessary for flushing, pressure testing, and disinfection of all facilities associated with this project. All pipelines shall be filled slowly either through an existing valve or through taps. Special care shall be exercised in loading lines to prevent damage. The Contractor shall coordinate with the Owner the operation of all existing valves. **All valve operations of existing City of Durham valves shall be done by City of Durham personnel only. It shall be the Contractor's responsibility to coordinate valve operations with the City.**

Scheduling

The Contractor shall provide the Engineer with a detailed flushing, pressure testing, and disinfection plan for approval. **The Engineer reserves the right to adjust, modify, and/or alter the proposed plan to serve the best interests of the Owner at no additional cost to the Owner.**

The Contractor shall give the Owner through the Engineer, at least 2 weeks advance notice of his intent to begin flushing any portion of the system.

All flushing, pressure testing, disinfection, shall be witnessed by the Engineer and a representative of the Owner. The Contractor shall coordinate all work with the Engineer at a time

mutually agreeable to the Owner and shall give at least 24-hours advanced notice prior to performing any work.

Flushing

The Contractor shall flush all facilities described herein in accordance with Section 4 of these Specifications. The times for flushing shall be coordinated, through the Engineer, with the Owner for their ability to provide adequate water. The Contractor shall have no claim for monetary compensation from the Owner for the inability of the Owner to provide adequate water at the proposed time of flushing. Compensation to the Contractor is limited to an extension of time to the Contract only.

The Contractor may be required to use pipe extensions, diversion dams, and other devices to direct discharge flows to the nearest storm drain to prevent excessive water from flowing on private property. Care shall be exercised to prevent the water from entering the trench or wetting the backfill material. All materials shall be furnished by the Contractor.

Pressure Testing

The Contractor shall pressure test all pipe in accordance with Section 4 of these Specifications. All pressure testing of pipe shall be limited to the distance between isolation valves as shown on the Drawings at any one time, unless otherwise approved, in writing, by the Engineer. The testing meter shall be provided by the Owner.

Disinfection

All pipe and fittings connected to and forming a part of a potable water supply shall be disinfected in accordance with the procedures described in Specification Section 1, AWWA C601, the requirements of the North Carolina Department of Environment and Natural Resources (DENR), Division of Environmental Health and the City of Durham. Disinfection shall be accomplished after the pipe has been flushed, if applicable, and passed the hydrostatic test. Such piping shall be filled with at least 50 parts per million (PPM) of chlorine and held in contact for not less than 24 hours. Final tests after 24 hours contact time shall show a minimum residual chlorine content of 10 ppm in all parts of the system. Disinfection shall be repeated as often as necessary, and as directed by the Engineer and/or DENR and/or the City, until the minimum residual chlorine content of 10 ppm has been reached. The Contractor shall furnish and install, at its own expense, all means and apparatus necessary for performing the disinfection. The chlorine solution shall be thoroughly flushed out prior to placing the new sections of pipe in service. Chlorine residual tests shall be made after flushing to assure that chlorine residual is not in excess of 1 ppm at any point in the water distribution system.

All disinfection of pipe shall be limited to the distance between isolation valves, as shown on the Drawings, at any one time, unless otherwise approved, in writing, by the Engineer. The City of Durham's Chemist will perform all biological water sampling and all chlorine residual sampling at each pipe flushing connection, stub-out, pipe ends, dead ends, or as otherwise required by the City for accurate disinfection and testing of the system. The frequency of testing shall be, at a minimum, 1 sample taken for 2 consecutive days at each location. If the samples are rejected by the City, the required procedure shall be repeated until satisfactory results are obtained at no additional cost to the City. Disinfection of the facilities shall be performed immediately following the pressure testing (time not to exceed 48 hours). Manually operated pumps shall not be used for chlorine solution injection.

Dechlorination

[All water containing chlorine including water from the City's existing water distribution system (fire hydrants, flushing water, hoses, etc.) or water containing spent chlorine solution from the Contractor's disinfection process shall all be disposed of in such a manner that the release of the chlorinated water contains less than 17 micro-grams of chlorine. A dechlorination process utilizing appropriate quantities of sodium bisulfite (NaHSO₃) may be used. An independent subconsultant to the Contractor shall be provided to perform the dechlorination process and a detailed description of the process, chemicals to be used, and a MSDS, shall be submitted to the Engineer at least two (2) weeks in advance. The Contractor shall provide all pipe, pumps, power, materials, equipment, etc., necessary to convey the spent chlorine solution to the Owner's sewer system or a suitable storm drain.]

The Contractor shall not use fire hoses or any other type of flexible piping to discharge directly into sewer manholes. Rigid pipe shall be adequately supported and suspended at least 1 foot above the manhole top, providing for an air-gap. A suitable check valve or other acceptable backflow prevention device shall be installed on the piping to prevent backflow into the potable water system.

The Contractor shall furnish, install and utilize appropriately sized taps strategically located in relation to the Owner's sewer system for disposal of the spent chlorine solution. The release of water containing spent chlorine solution shall be limited to a combined flow of 0.25 MGD into the Owner's sewer system at any one time. The Contractor shall not use the flushing connection assemblies provided for flushing the waterline, to dispose of the water containing spent chlorine solution.

Under no circumstances shall water containing spent chlorine solution be disposed of in such a way that it would be detrimental to animal, plant, or fish life. The Contractor shall pay all civil penalties, fines, costs, assessments, etc., associated with any discharge of spent chlorine solution associated with the Contractor's work.

The Contractor shall have no claim for monetary compensation from the Owner for the inability of the Owner to provide adequate water at the proposed time of disinfection or to accept water containing spent chlorine solution into the Owner's sewer system at the proposed time of release. Compensation to the Contractor is limited to an extension of time to the Contract only.

1.39 Maintenance of Access to Residents and Businesses

The work under this Contract will be performed in busy residential streets, main thoroughfares, around residential homes and commercial businesses. Traffic control, public safety, and cooperation with public authorities shall be of the utmost importance. The Contractor shall maintain access to all properties at all times throughout construction. Where driveways are disturbed or blocked, temporary driveways shall be installed until such time as the permanent driveway is replaced to service. ABC stone base shall be used to maintain temporary driveways. No additional payment shall be made for temporary driveways.

1.40 Emergency Action Plan (EAP)

The Contractor shall submit a detailed Emergency Action Plan specifically established for this project, prior to or at the pre-construction conference. The Emergency Action Plan shall be in compliance with all local, state and federal safety regulations and guidelines and shall include 24/7 emergency contact phone numbers for the contractors management staff. The Owner shall have a copy of the Emergency Action Plan before any Work will be permitted on the project.

1.41 Preliminary Record Drawings

The Contractor shall submit “preliminary” Record Drawings to the Engineer prior to each monthly Progress Payment Request. The preliminary Record Drawings shall accurately indicate the work that was performed leading up to the current payment period. ***[Monthly Progress Payment Requests will not be reviewed or processed until the “preliminary” Record Drawings are submitted to the Engineer.]***

The Engineers will make available to the Contractor a CD of the electronic Drawings. The Contractor shall assume all risks associated with the use in accordance with the following:

These electronic files are non-certified recordings of printed documents prepared by Kimley-Horn and Associates, Inc. (“KHA”). These files are provided only for the convenience of the Receiving Party and are intended solely for the exclusive use by that party for the purposes expressly authorized. In accordance with standard industry practice, only printed copies of documents conveyed by KHA may be relied upon. Any use of the information obtained or derived from these electronic files will be at the Receiving Party’s sole risk. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data’s creator, the Receiving Party agrees that it has 60 days to perform acceptance tests, after which it shall be deemed to have accepted the data thus transferred. Please check this disk for virus contamination prior to use. In order to view and/or edit this document simply turn all layers on and then turn the current layer ‘Warning’ off.”

1.42 As Built Drawings

The Contractor shall employ the services of a Professional Land Surveyor licensed in the State of North Carolina to provide accurate reproducible As-Built drawings and a Sewer System Survey Manhole Data Sheet for each manhole, to the City upon completion of construction of the installations. The As-Built Drawings and the Sewer System Survey Manhole Data Sheets shall be submitted to the Engineer for review within 30 calendar days of the Certificate of Substantial Completion. Upon checking by the Owner or the Engineer, any discrepancies will be indicated, and then these plans shall be returned to the Contractor for correction prior to final payment and final inspection.

- A. The As-Built Drawings shall conform to the As-Built Check List.
- B. Payment - No separate payment will be made for As-Built Drawings. All costs incurred by the Contractor for this work shall be included in the unit price or lump sum price for the item of work to which it pertains.
- C. The Engineers will make available to the Contractor a CD of the electronic Drawings. The Contractor shall assume all risks associated with the use in accordance with the following:

These electronic files are non-certified recordings of printed documents prepared by Kimley-Horn and Associates, Inc. (“KHA”). These files are provided only for the convenience of the Receiving Party and are intended solely for the exclusive use by that party for the purposes expressly authorized. In accordance with standard industry practice, only printed copies of documents conveyed by KHA may be relied upon. Any use of the information obtained or derived from these electronic files will be at the Receiving Party’s sole risk. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data’s creator, the Receiving Party agrees that it has 60 days

to perform acceptance tests, after which it shall be deemed to have accepted the data thus transferred. Please check this disk for virus contamination prior to use. In order to view and/or edit this document simply turn all layers on and then turn the current layer 'Warning' off.

1.43 Written Notifications to Citizens

The Contractor shall provide written notifications as follows:

- A. Prior to starting work, the Contractor shall provide a one-week advanced written Notice to all individuals, homeowners, business owners, utilities, and others who may be affected by any aspect of the Project. Such Notice shall be delivered in person door contact or by door knob hanger and shall briefly describe the nature and estimated timetable for the Project and shall provide any additional information or instructions that may be desirable or necessary. The Notice SHALL NOT be distributed more than one week in advance. The Notice shall also include the name and telephone number of the Contractor's designated contact person for further information related to the project. A proposed draft of the written Notice shall be submitted to the Engineer for approval prior to the initiation of any work.
- B. The Contractor shall give all individuals, homeowners, business owners, utilities, and others who may be affected by any aspect of the Project an adequate timeframe to remove any personal property (such as vehicles parked in the work zone) or improvements from a designated easement area, work zone, or street, that the affected party wishes to preserve. The City will provide a representative on the Project site and will be responsible for addressing any affected parties' on-site concerns.
- C. A proposed draft of the written Notice shall be submitted to the Engineer as a Shop Drawing, for approval prior to the initiation of any work.
- D. All Notices shall be written in both English and Spanish.

1.44 Payment

A Lump Sum Payment less than or equal to 3% of the Total Summation of the Unit Bid Prices, exclusive of Pay Item 1 (to include all bonds, insurance, move-on expenses, etc.) will be allowed for 'mobilization and demobilization' as a progress payment line item. The actual cost of bonds and insurance (up to the maximum payment of 3%) will be considered in the initial payment request provided that cost documentation suitable to the Engineer is furnished by the Contractor. Any outstanding balance of the mobilization and demobilization Pay Item will be payable when the Project is determined to be 10% complete as indicated by the approved progress payments (less cost of mobilization, stored materials and stored equipment).

All other costs for work incurred by the Contractor under this Section shall be included for payment in the Contractor's Unit Price for the items of work it pertains and no specific payment will be made under this Section.

END OF SECTION



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

March 9, 2012

COUNTY: Durham

SUBJECT: Encroachment Contract – City of Durham

Mr. Thomas J. Bonfield
City Manager
City of Durham
101 City Hall Plaza
Durham, North Carolina 27701

Dear Mr. Bonfield:

Attached for your files is a copy of Right of Way Encroachment Contract properly executed. This contract covers the following:

Installation of a 30" Ductile Iron Water Main and appurtenances along SR 1940 (Glover Road) between 2821 Glover Road and Angier Avenue and along SR 1926 (Angier Ave.) between Glover Road and Miami Blvd.

APPROVED SUBJECT TO: Attached Special Provisions

Sincerely,

J. Robert Memory
State Utility Agent

BY:

David West
Encroachment Agent

JRM/DW
Attachment

cc J. W. Bowman, PE, Division Engineer (copy of contract)
T. N. Johnson., PE, District Engineer (copy of contract)
✓ N. Raney, PE, Kimley-Horn and Associates, Inc. (copy of letter)

MAILING ADDRESS
NC DEPARTMENT OF TRANSPORTATION
UTILITIES UNIT
1555 MAIL SERVICE CENTER
RALEIGH NC 27699-1555

TELEPHONE: 919-707-6690
Fax: 919-250-4151

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

SPECIAL PROVISIONS

R/W 16.1

City of Durham
(11395)

1. WORK ZONE TRAFFIC CONTROL QUALIFICATIONS AND TRAINING PROGRAM

Effective July 1, 2010, all flagging operations within NCDOT Right of Way require qualified and trained Work Zone Flaggers.

Effective July 1, 2011, qualified and trained Work Zone Traffic Control Supervisors will be required on Significant Projects.

Training for this certification is provided by NCDOT approved training sources and by private entities that have been pre-approved to train themselves. If you have questions, contact our web site at

<http://www.ncdot.org/doh/preconstruct/wztc/WZTCTrainingProgram/default.html>, or contact Stuart Bourne, P.E. with NCDOT Work Zone Traffic Control Unit at (919) 662-4338 or sbourne@ncdot.gov.

2. The encroaching party shall notify the District Engineer's office at telephone (919) 220-4750 prior to beginning construction and after construction is complete.
3. An executed copy of this encroachment agreement shall be present at the construction site at all times during construction. If safety or traffic conditions warrant such an action, NCDOT reserves the right to further limit, restrict or suspend operations within the right of way.
4. NCDOT does not guarantee the right of way on this road, nor will it be responsible for any claim for damages brought about by any property owner by reason of this installation.
5. The encroaching party is required to contact the appropriate Utility Companies involved and make satisfactory arrangements to adjust the utilities in conflict with the proposed work prior to beginning construction.
6. Excavation within 500 feet of a signalized intersection will require notification by the encroaching party to the Division Traffic Engineer at telephone number (919) 220-4600. All traffic signal or detection cables must be located prior to excavation. Cost to replace or repair NCDOT signs, signals, or associated equipment shall be the responsibility of the encroaching party.
7. The encroaching party shall comply with all applicable Federal, State and local environmental regulations and shall obtain all necessary Federal, State and local environmental permits, including but not limited to, those related to sediment control, stormwater, wetland, streams, endangered species and historical sites.
8. The contractor shall not begin the construction until after the traffic control and erosion control devices have been installed to the satisfaction of the District Engineer.
9. Trenching, bore pits and/or other excavations shall not be left open or unsafe overnight.
10. The Contractor shall comply with all OSHA requirements and provide a competent person on site to supervise excavation at all times.

11. All fill areas/backfill shall be compacted to 95% density in accordance with AASHTO T99 as modified by the NCDOT. All material to a depth of 8 inches below the finished surface of the subgrade shall be compacted to a density equal to at least 100% of that obtained by compacting a sample of the material in accordance with AASHTO T99 as modified by the Department. The subgrade shall be compacted at a moisture content which is approximately that required to produce the maximum density indicated by the above test method. The contractor shall dry or add moisture to the subgrade when required to provide a uniformly compacted and acceptable subgrade.
 12. Vegetative cover shall be established on all disturbed areas in accordance with the recommendations of the Division Roadside Environmental Engineer.
 13. Proper temporary and permanent measures shall be used to control erosion and sedimentation in accordance with all local, State and Federal regulations.
 14. All materials and workmanship shall conform to the N. C. Department of Transportation's Standards and Specifications Manuals.
 15. Strict compliance with the Policies and Procedures for Accommodating Utilities on Highway Rights of Way manual shall be required.
 16. **This encroachment agreement does not authorize any installation within or encroachment onto Railroad right of way or property.**
 17. Excavation material shall not be placed on pavement. Drainage structures shall not be blocked with excavation materials. Any drainage structure disturbed or damaged shall be restored to its original condition as directed by the District Engineer.
 18. Any disturbed guardrail shall be reset according to the applicable standard or as directed by the District Engineer.
 19. All driveways altered during construction shall be returned to a state comparable with the condition of the driveways prior to construction.
-
20. Right of Way monuments disturbed during construction shall be referenced by a registered Land Surveyor and reset after construction.
 21. All roadway signs that are removed due to construction shall be reinstalled as soon as possible.
 22. The party of the second part agrees to provide traffic control devices, lane closures, road closures, positive protection and/or any other warning or positive protection devices necessary for the safety of road users during construction and subsequent maintenance. This shall be performed in conformance with the latest NCDOT Roadway Standard Drawings and Standard Specifications for Roads and Structures and amendments or supplements thereto. When there is no guidance provided in the NCDOT Roadway Standard Drawings and Standard Specifications for Roads and Structures, comply with the Manual on Uniform Traffic Control Devices for Streets and Highways and amendments or supplements thereto. Information as to the above rules and regulations may be obtained from the NCDOT Division Engineer.

23. All lanes of traffic are to be open during the hours of 6:00 A.M. to 9:00 A.M. and from 4:00 P.M. to 6:00 P.M., or as designated by the District Engineer. Traffic shall be maintained at all times.
24. Ingress and egress shall be maintained to all businesses and dwellings affected by the project. Special attention shall be paid to police and fire stations, fire hydrants and hospitals.
25. Any work requiring equipment or personnel within 5' of the edge of any travel lane of an undivided facility and within 10' of the edge of any travel lane of a divided facility shall require a lane closure with appropriate tapers.
26. Work requiring lane or shoulder closures shall not be performed on both sides of the road simultaneously within the same area.
27. No parking or material storage shall be allowed along the shoulders of any state- maintained roadway.
28. During non-working hours, equipment shall be parked as close to the right of way line as possible and be properly barricaded in order not to have any equipment obstruction within the Clear Recovery Area.
29. The utility shall be installed within 5 feet of the right of way line and outside the theoretical 1:1 slope from the edge of pavement to the bottom of the nearest excavation wall. When this is not possible, excavation inside the theoretical 1:1 slope from the existing edge of pavement to the bottom of the nearest excavation wall shall be made in accordance with the following conditions:
 - a. Positive excavation shoring, such as sheet piling, shall be installed. The design of the shoring shall include the effects of traffic loads. The shoring system shall be designed and sealed by a licensed North Carolina Professional Engineer. Shoring plans and design calculations shall be submitted to the Division Engineer for review and approval prior to construction. **Trench boxes shall not be accepted as positive shoring.**
 - b. The trench backfill material shall meet the Statewide Borrow Criteria. The trench shall be backfilled in accordance with Section 300-7 of the 2006 *NCDOT Standard Specifications for Roads and Structures*, which basically requires the backfill material to be placed in layers not to exceed 6 inches loose and compacted to at least 95% of the density obtained by compacting a sample in accordance with ASSHTO T99 as modified by DOT.
 - c. A qualified NCDOT inspector shall be on the site at all times during construction. The encroaching party shall reimburse NCDOT for the cost of providing the inspector. If NCDOT cannot supply an inspector, the encroaching party (not the utility contractor) should make arrangements to have a qualified inspector, under the supervision of a licensed North Carolina Professional Engineer, on the site at all times. The Professional Registered Engineer shall certify that the utility was installed in accordance with the encroachment agreement and that the backfill material meets the Statewide Borrow Criteria.
 - d. All trench excavation inside the limits of the theoretical one-to-one slope, as defined by the policy, shall be completely backfilled and compacted at the end of each construction day. No portion of the trench shall be left open overnight.

30. All utility access points, such as manholes, splice boxes and junction boxes shall be located at or outside the right of way line. Manholes, splice boxes, junction boxes and vaults shall not be placed in the ditch line, side slopes of the ditches or in the pavement. All manholes, splice boxes, junction boxes and vaults and covers shall be flush with the ground when located within the vehicle recovery area.
 31. All utility facilities, including manholes, valve boxes, meter boxes, splice boxes, junction boxes, vaults and access covers, within NCDOT right of way shall have been designed for HS-20 loading rated for continuous traffic. If any proposed structure is not of a design pre-approved by NCDOT, the encroaching party shall submit details and design calculations signed and sealed by a Professional Engineer for approval prior to construction.
 32. Any pavement replacement or repair required due to this installation shall be the responsibility of the encroaching party. Pavement design for repair or replacement shall be in accordance with the requirements of and to the satisfaction of the District Engineer
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DEPARTMENT OF TRANSPORTATION

RIGHT OF WAY ENCROACHMENT AGREEMENT
PRIMARY AND SECONDARY HIGHWAYS

-AND-
City of Durham

THIS AGREEMENT, made and entered into this _____ day of _____ 20____ by and between the Department of Transportation, party of the first part; and City of Durham, 101 City Hall Plaza, Durham, NC 27701

_____ party of the second part,
constructed via open cut & a 30-inch DI waterline and 48-inch steel casing pipe crossing of Angier Ave
WITNESSETH

THAT WHEREAS, the party of the second part desires to encroach on the right of way of the public road designated as Route(s) (1) SR-1940; (2) SR-1926, located (1) along Glover Rd (SR-1940) between 2821 Glover Rd and Angier Ave; (2) along Angier Ave (SR-1926) between Glover Rd and Miami Blvd

with the construction and/or erection (1) a 30-inch ductile iron waterline constructed via open cut & a 30-inch DI waterline and 48-inch steel casing pipe crossing of Angier Ave via bore & jack; (2) a 30-inch DI waterline placed via open cut w/ bore & jack crossings utilizing a 48-inch steel casing pipe of two streams & one exist. utility easement. All construction will be as shown on the plans by Kimley-Horn and Associates, Inc. dated Oct. 2011

WHEREAS, it is to the material advantage of the party of the second part to effect this encroachment, and the party of the first part in the exercise of authority conferred upon it by statute, is willing to permit the encroachment within the limits of the right of way as indicated, subject to the conditions of this agreement;

NOW, THEREFORE, IT IS AGREED that the party of the first part hereby grants to the party of the second part the right and privilege to make this encroachment as shown on attached plan sheet(s), specifications and special provisions which are made a part hereof upon the following conditions, to wit:

That the installation, operation, and maintenance of the above described facility will be accomplished in accordance with the party of the first part's latest POLICIES AND PROCEDURES FOR ACCOMMODATING UTILITIES ON HIGHWAY RIGHTS-OF-WAY, and such revisions and amendments thereto as may be in effect at the date of this agreement. Information as to these policies and procedures may be obtained from the Division Engineer or State Utility Agent of the party of the first part.

That the said party of the second part binds and obligates himself to install and maintain the encroaching facility in such safe and proper condition that it will not interfere with or endanger travel upon said highway, nor obstruct nor interfere with the proper maintenance thereof, to reimburse the party of the first part for the cost incurred for any repairs or maintenance to its roadways and structures necessary due to the installation and existence of the facilities of the party of the second part, and if at any time the party of the first part shall require the removal of or changes in the location of the said facilities, that the said party of the second part binds himself, his successors and assigns, to promptly remove or alter the said facilities, in order to conform to the said requirement, without any cost to the party of the first part.

That the party of the second part agrees to provide during construction and any subsequent maintenance proper signs, signal lights, flagmen and other warning devices for the protection of traffic in conformance with the latest Manual on Uniform Traffic Control Devices for Streets and Highways and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the Division Engineer of the party of the first part.

That the party of the second part hereby agrees to indemnify and save harmless the party of the first part from all damages and claims for damage that may arise by reason of the installation and maintenance of this encroachment.

That the party of the second part agrees to restore all areas disturbed during installation and maintenance to the satisfaction of the Division Engineer of the party of the first part. The party of the second part agrees to exercise every reasonable precaution during construction and maintenance to prevent eroding of soil; silting or pollution of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces or other property; or pollution of the air. There shall be compliance with applicable rules and regulations of the North Carolina Division of Environmental Management, North Carolina Sedimentation Control Commission, and with ordinances and regulations of various counties, municipalities and other official agencies relating to pollution prevention and control. When any installation or maintenance operation disturbs the ground surface and existing ground cover, the party of the second part agrees to remove and replace the sod or otherwise reestablish the grass cover to meet the satisfaction of the Division Engineer of the party of the first part.

That the party of the second part agrees to assume the actual cost of any inspection of the work considered to be necessary by the Division Engineer of the party of the first part.

That the party of the second part agrees to have available at the construction site, at all times during construction, a copy of this agreement showing evidence of approval by the party of the first part. The party of the first part reserves the right to stop all work unless evidence of approval can be shown.

Provided the work contained in this agreement is being performed on a completed highway open to traffic; the party of the second part agrees to give written notice to the Division Engineer of the party of the first part when all work contained herein has been completed. Unless specifically requested by the party of the first part, written notice of completion of work on highway projects under construction will not be required.

That in the case of noncompliance with the terms of this agreement by the party of the second part, the party of the first part reserves the right to stop all work until the facility has been brought into compliance or removed from the right of way at no cost to the party of the first part.

That it is agreed by both parties that this agreement shall become void if actual construction of the work contemplated herein is not begun within one (1) year from the date of authorization by the party of the first part unless written waiver is secured by the party of the second part from the party of the first part.

During the performance of this contract, the second party, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor"), agrees as follows:

- a. Compliance with Regulations: The contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the U. S. Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
- b. Nondiscrimination: The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and

leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

- c. Solicitations for Subcontracts, including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- d. Information and Reports: The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.
- e. Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to,
 - (1) withholding of payments to the contractor under the contract until the contractor complies, and/or
 - (2) cancellation, termination or suspension of the contract, in whole or in part.
- f. Incorporation of Provisions: The contractor shall include the provisions of paragraphs "a" through "f" in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Department of Transportation to enter into such litigation to protect the interests of the State, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

R/W (161) : Party of the Second Part certifies that this agreement is true and accurate copy of the form R/W (161) incorporating all revisions to date.

IN WITNESS WHEREOF, each of the parties to this agreement has caused the same to be executed the day and year first above written.

DEPARTMENT OF TRANSPORTATION

BY:

DIVISION ENGINEER

Thomas J. Bonfield

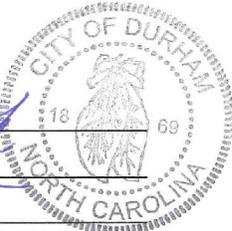
City Manager

City of Durham, NC

Second Party

ATTEST OR WITNESS:

Robert Gray
City Clerk



INSTRUCTIONS

When the applicant is a corporation or a municipality, this agreement must have the corporate seal and be attested by the corporation secretary or by the empowered city official, unless a waiver of corporate seal and attestation by the secretary or by the empowered city official is on file in the Raleigh office of the Manager of Right of Way. In the space provided in this agreement for execution, the name of the corporation or municipality shall be typed above the name, and title of all persons signing the agreement should be typed directly below their signature.

When the applicant is not a corporation, then his signature must be witnessed by one person. The address should be included in this agreement and the names of all persons signing the agreement should be typed directly below their signature.

This agreement must be accompanied, in the form of an attachment, by plans or drawings showing the following applicable information:

1. All roadways and ramps.
2. Right of way lines and where applicable, the control of access lines.
3. Location of the existing and/or proposed encroachment.
4. Length, size and type of encroachment.
5. Method of installation.
6. Dimensions showing the distance from the encroachment to edge of pavement, shoulders, etc.
7. Location by highway survey station number. If station number cannot be obtained, location should be shown by distance from some identifiable point, such as a bridge, road, intersection, etc. (To assist in preparation of the encroachment plan, the Department's roadway plans may be seen at the various Highway Division Offices, or at the Raleigh office.)
8. Drainage structures or bridges if affected by encroachment (show vertical and horizontal dimensions from encroachment to nearest part of structure).
9. Method of attachment to drainage structures or bridges.
10. Manhole design.
11. On underground utilities, the depth of bury under all traveled lanes, shoulders, ditches, sidewalks, etc.
12. Length, size and type of encasement where required.
13. On underground crossings, notation as to method of crossing - boring and jacking, open cut, etc.
14. Location of vents.

GENERAL REQUIREMENTS

1. Any attachment to a bridge or other drainage structure must be approved by the Head of Structure Design in Raleigh prior to submission of encroachment agreement to the Division Engineer.
2. All crossings should be as near as possible normal to the centerline of the highway.
3. Minimum vertical clearances of overhead wires and cables above all roadways must conform to clearances set out in the National Electric Safety Code.
4. Encasements shall extend from ditch line to ditch line in cut sections and 5' beyond toe of slopes in fill sections.
5. All vents should be extended to the right of way line or as otherwise required by the Department.
6. All pipe encasements as to material and strength shall meet the standards and specifications of the Department.
7. Any special provisions or specifications as to the performance of the work or the method of construction that may be required by the Department must be shown on a separate sheet attached to encroachment agreement provided that such information cannot be shown on plans or drawings.
8. The Department's Division Engineer should be given notice by the applicant prior to actual starting of installation included in this agreement.

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CITY OF DURHAM

Department of Public Works
101 City Hall Plaza | Durham, NC 27701
919.560.4326 | F 919.560.4316

www.durhamnc.gov

July 19, 2012

City of Durham – Dept. of Water Management
Attn: Bryant Green, P.E.
1600 Mist Lake Drive
Durham, NC 27704

Re: **Approval of Engineering Plans / Authorization to Construct
PERMIT NO. W-001416 (public water)
SOUTHERN REINFORCING MAIN- PHASE II**

Dear Sirs:

This letter approves the engineering plans and specifications for the referenced project. It also grants Authorization to Construct the referenced project, subject to the conditions listed below. **THIS LETTER SHALL BE POSTED AT THE PRIMARY ENTRANCE OF THE JOB SITE BEFORE AND DURING CONSTRUCTION.**

Pursuant to Article IX of Chapter 23 of the Durham City Code, under the authority granted by the certification of the City of Durham's permitting program by the N.C. Department of Environment and Natural Resources pursuant to the N.C. Drinking Water Act, we are forwarding herewith Permit No **W-001416**, dated **July 19, 2012**, for the construction, operation, and maintenance of **14,900 feet of 30-inch** ductile iron waterline and appurtenances. **The City of Durham has become aware of a State requirement concerning the discharge of water used to chlorinate new water lines. Please see the attached notice for our interim policy to comply with the law. You will be required to follow the procedure in effect at the time of chlorination of these waterlines.**

This permit shall be effective from the date of issuance until suspended, revoked or modified and shall be subject to the conditions and limitations specified therein. If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an administrative review upon written request within thirty (30) days of the date of this letter. One set of approved plans is being forwarded to you. **Construction may not begin until the following items have been done:**

- All inspection and frontage fees paid.*
- All permits and encroachments obtained.*
- Licensed Utility Contractor retained to perform the work.*
- Preconstruction conference held (The City of Durham Engineering Construction Division (ph. (919) 560-4326) must be notified at least 48 hours before holding the preconstruction conference).*

This permit shall be void if construction of the water distribution system is not begun within 9 months of the date of the permit. This permit shall be void if construction is not completed within 24 months of the date of the permit. Upon completion of the work, a certification by a registered Professional Engineer must be submitted to the Water & Sewer Engineering Division certifying that the facilities have been installed in accordance with these approved plans and specifications and in compliance with Section 23-218 of the City Code. Also, certified as-built drawings must be submitted prior to providing water service. If you need additional information or have questions concerning this matter, please call us at (919) 560-4326.

Sincerely,

Robert N. Joyner, Jr., PE
Development Review Group Manager
Engineering Division

cc: NCDENR Public Water Supply Section (ref. WSMP No. 99-02222, ER No. 00-00274)
Kimley-Horn & Associates, Inc.



City of Durham Public Works – Engineering
101 City Hall Plaza Durham, NC 27701
Phone: (919) 560-4326 Fax: (919) 560-4316



Water Extension Permit

Submit this **original** with 2 Sets of approved plans and submittal fee of \$450.00 in check form made payable to City of Durham.
Note: If the proposed system contains public and private water mains, separate permit forms, fees, and approved plans must be provided (i.e. one application, \$450.00 check, 2 sets of approved plans for public and one application, \$450.00 check, 2 sets of approved plans for private).

Date: _____ Permit #: W-001416 (Assigned by the City)

Project Information

- 1. Southern Reinforcing Main - Phase II
(Project Name)
- 2. 1000000
(Project Tax Map Number)
- 3. Ellis Road, Glover Road, Angier Avenue
(Project Address)
- 4. 0830-12-87-9270
(Pin#)
- 5. Public: Private:

Developer Information

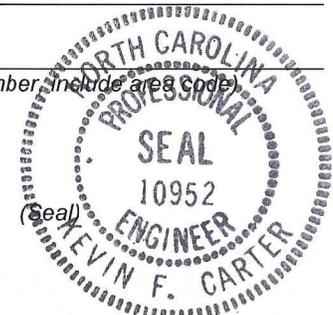
- 6. City of Durham
(Developer's Company Name)
- 7. 1600 Mist Lake Drive
(Developer's Address)
- 8. (919) 560-4381 *35268
(Developer's Telephone Number, include area code)
- 9. (919) 560-4479
(Developer's Fax Number, include area code)
- 10. Bryant Green, P.E.
(Print or Type Name of Developer's Representative)
- 11. Civil Engineer III
(Title)
- 12. [Signature]
(Signature)
- 13. 7/16/2012
(Date)

14. The developer listed above is herewith making application to the City of Durham for the approval of said plans and specifications for the installation, construction or alteration of (give brief description of proposed project):
Installation of 30-inch waterline along Ellis Road, cross country to Glover Road, Glover Road, and Angier Avenue.
The waterline will serve as a transmission main between the existing Ellis Road EST and the new Angier Ave EST.

Engineer Information

The undersigned engineer certifies that said plans and specifications have been prepared in compliance with all applicable requirements.

- 15. Kevin F. Carter, P.E.
(Engineer's Name)
- 16. Kimley-Horn and Associates, Inc.
(Engineer's Company Name)
- 17. 3001 Weston Parkway Cary, NC 27513
(Engineer's Company Address)
- 18. (919) 678-4078
(Engineer's Telephone Number, include area code)
- 19. (919) 677-2050
(Engineer's Fax Number, include area code)
- 20. kevin.carter@kimley-horn.com
(Engineer's Email)
- 21. [Signature]
(Engineer's Signature)
- 22. 7/16/2012
(Date)
- 23. _____
(Seal)



PERMIT

This section to be completed by the City of Durham

The plans and specifications cited in the foregoing application are hereby approved pursuant to Article IX of Chapter 23 of the Durham City Code, under the authority granted by the certification of the City of Durham's permitting program by the North Carolina Department of Environmental, Health and Natural Resources pursuant to the North Carolina Drinking Water Act.

By: [Signature] Title: CE II Date: 7/18/12

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DEPARTMENT OF PUBLIC WORKS
101 CITY HALL PLAZA • DURHAM, NC 27701
919.560.4326 • fax 919.560.4316
www.ci.durham.nc.us

- Engineering
- Roadway Appearance
- Storm Water Services
- Street Maintenance
- Transportation
- Water & Sewer Maintenance

NOTICE

From: City of Durham

The City of Durham recently became aware of a state requirement concerning the discharge of water used to chlorinate new water lines. The procedure below is our interim policy to comply with the law. We are developing the permanent policy.

WATER MAIN CHLORINATION AND RESIDUAL CHLORINE DISPOSAL

The North Carolina Department of Environmental Management limits the amount of chlorinated water that may be allowed to enter a live stream, creek, etc. or other body of water (lake, pond, etc.). The acceptable level of residual chlorine is less than 0.017 mg/l. The Licensed Utility Contractor is responsible for either reducing the residual chlorine to the acceptable level or arranging to dispose of it in the sanitary sewer system owned by the City of Durham. New or existing sanitary sewer mains may be available in some areas at the time of chlorination. If manholes are located within 300 linear feet of the blow offs, the Contractor will furnish piping to discharge the water to the manholes. The Public Works Department will allow water with a residual of 100 parts per million or less to be discharged into the sanitary sewer system. The contractor will be required to flush and remove the chlorine from the main 24 hours after initial chlorination. The maximum discharge rate into a manhole shall be limited to 200 GPM, unless specifically approved by the City in writing. This is an interim procedure and in the near future a charge for the volume of the discharge into the manhole will be payable to the City. The Contractor will monitor the flow levels in the next three (3) downstream manholes to verify that the sewer pipes are not surcharged and the sewer capacity has not been exceeded. The Engineer may monitor additional downstream manholes at critical flow locations. At the time of construction, the Engineer may reduce the approved discharge rate, based on site conditions in the downstream sewer mains.

In lieu of disposal into the City sanitary sewer system, the Contractor may dechlorinate the water on site and discharge on the adjacent ground. The Contractor must provide adequate erosion control measures.

The discharge shall be tested at 15-minute intervals to confirm the discharge is less than the acceptable level. Discharge shall be immediately stopped if any elevated chlorine readings are observed. The dechlorination system shall be the Pollard LPD-250 Diffuser and Dechlorination System or an approved equal.

The dechlorination agent and process shall be as approved by the Engineer and the City of Durham.

COPY



North Carolina Department of Environment and Natural Resources
Division of Land Resources
Land Quality Section

James D. Simons, PG, PE
Director and State Geologist

Beverly Eaves Perdue, Governor
Dee Freeman, Secretary

December 21, 2011

LETTER OF APPROVAL WITH MODIFICATIONS

City of Durham
ATTN : Don Greeley, Director, Water Mgmt
1600 Mist Lake Dr
Durham, NC 27704

RE: Project Name: Southern Reinforcing Main-Phase 2
Project ID: DURHA-2012-008 Acres Approved: 13.00
County: Durham, Ellis R, Glover Rd, Angier Ave, Durham
River Basin: Neuse Stream Classification: Other
Submitted By: Nolan Raney, Kimley-Horn & Associates
Date Received by LQS: 10/12/11;12/8/11
Plan Type: New

Dear Sir or Madam:

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable with modifications and hereby issue this letter of Approval with Modifications. The Modifications Required for Approval are listed on the attached page. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as is required by Title 15A NCAC 4B .0129.

Please be advised that Title 15A NCAC 4B .0118(a) requires that a copy of the approved erosion control plan be on file at the job site. Also, you should consider this letter to give the Notice required by G.S. 113A-61.1(a) of our right of periodic inspection to insure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Program is performance-oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to insure compliance with the Act.

Letter of Approval With Modifications
Project : Southern Reinforcing Main-Phase 2
December 21, 2011
Page 2 of 3

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations, and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

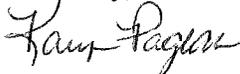
Please be aware that your project will be covered by the enclosed NPDES General Stormwater Permit NCG01000 (Construction Activities). You should first become familiar with all of the requirements for compliance with the enclosed general permit.

Due to the location of this project, it should be noted that a rule to protect and maintain existing buffers along watercourses in the Neuse River Basin became effective on July 22, 1997. The Neuse River Riparian Area Protection and Maintenance Rule (15A NCAC 2B .0233) applies to all perennial and intermittent streams, lakes, ponds and estuaries in the Neuse River Basin with existing vegetation on the adjacent land or "riparian area". In riparian areas with existing vegetation in the first 30 feet directly adjacent to the stream, the rule prohibits land disturbance or new development within the first 30 feet of land next to the water (the remaining 20 feet of the total buffer must be revegetated upon completion of any proposed land-disturbing activity). In riparian areas with existing vegetation that is less than 30 feet wide, the rule prohibits land disturbance or new development within the area that contains the existing vegetation (but not the entire 50 foot riparian area). For more information about this riparian area rule, please contact the Division of Water Quality's Wetland/401 Unit at 919-733-1786, or a Division of Water Quality representative at this regional office.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you have provided. You are requested to file an amended form if there is any change in the information included on the form. In addition, it would be helpful if you notify this office of the proposed starting date for this project. Please notify us if you plan to have a preconstruction conference.

Your cooperation is appreciated.

Sincerely,



Karyn Pageau, EIT, CPESC
Assistant Regional Engineer
Land Quality Section

Enclosures: Certificate of Approval
Modifications Required for Approval
NPDES Permit

cc: Nolan Raney, PE, Kimley-Horn & Associates, PO Box 33068, Raleigh, NC 27636-3068
Danny Smith, DWQ – SWP Supervisor, Raleigh Regional Office

Letter of Approval With Modifications
Project : Southern Reinforcing Main-Phase 2
December 21, 2011
Page 3 of 3

MODIFICATIONS REQUIRED FOR APPROVAL

Project Name: Southern Reinforcing Main-Phase 2
Project ID: DURHA-2012-008
County: Durham

Statutory Time Frame has expired.

1. Provide note that ditch shall be provided with groundcover at end of every working day or sediment storage trapping device provided.
2. No temporary stream crossing are permitted. Provide note on drawings that streams are not to be crossed and access only along permitted limits of disturbance.

Raney, Nolan

From: KNOTT, DAVID <DKNOTT@SCANA.com>
Sent: Monday, January 23, 2012 8:38 AM
To: Raney, Nolan
Subject: RE: Southern Reinforcing Main - Phase 2 - Gas Line Crossing

Thanks for the Info, this looks to be a adequate crossing of the right of way and two pipelines as noted in this drawing. Look forward to working with your contractor on this crossing.
Thanks, David

From: Nolan.Raney@kimley-horn.com [<mailto:Nolan.Raney@kimley-horn.com>]
Sent: Thursday, January 19, 2012 12:09 PM
To: KNOTT, DAVID
Subject: Southern Reinforcing Main - Phase 2 - Gas Line Crossing

David,
Kimley-Horn and Associates is currently in the process of designing the Southern Reinforcing Main – Phase 2 project for the City of Durham Department of Water Management. The project involves the installation of a 30-inch waterline connecting an existing Elevated Water Storage Tank on Ellis Road to a proposed Elevated Water Storage Tank near the intersection of Miami Blvd and Angier Ave. The proposed waterline travels along Angier Avenue, and crosses two existing high-pressure (8-inch and 12-inch) gas lines between Wrenn Road and Glover Road. Attached is an aerial map showing the crossing location, as well as a plan sheet showing the proposed design in the area. As shown on the plan sheet, the crossing will be via bore and jack, and 5' (Min) clearance will be required between the gas line and the casing pipe. Please let me know if you have any questions/concerns regarding the project, or if you need any additional information. Thanks!

Nolan Raney, P.E.
Kimley-Horn and Associates, Inc.
3001 Weston Parkway
Cary, North Carolina 27513
Direct: (919) 653-6625
Nolan.Raney@kimley-horn.com

 **Kimley-Horn
and Associates, Inc.**
<http://www.kimley-horn.com/water-utilities>



North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

November 7, 2011

DWQ Project # 11-810
Durham County

Bryant J. Green, PE
City of Durham Public Works Department
1600 Mist Lake Drive
Durham, NC 27704

Subject Property: **Southern Reinforcing Main – Phase II**
UT to Northwest Creek [030605, 16-41-1-17-(0.7), WS-IV; NSW]
UT to Little Lick Creek [030401, 27-9-(2), WS-IV; NSW]

**Neuse River Buffer Rule (15A NCAC 02B .0233) Authorization Certificate and
Jordan Lake Water Supply Watershed Riparian Buffer Protection Rules (15A NCAC 2B .0267)
Authorization Certificate with additional conditions**

Dear Mr. Green:

You have our authorization, in accordance with 15A NCAC 02B .0233 and 15A NCAC 02B .0267 and any conditions listed below, to impact approximately 955 ft² of Zone 2 (temporary impacts) and 6,991 ft² of Zone 2 (permanent impacts) of the protected riparian buffers for the purpose of constructing a 30-inch waterline, as described within your application dated August 29, 2011, received by the Division of Water Quality (DWQ) on August 30, 2011 and additional information received on October 17, 2011 and November 7, 2011. In addition, you should obtain or otherwise comply with any other required federal, state or local permits before you go ahead with your project including (but not limited to) Erosion and Sediment Control, Non-discharge regulations.

This authorization certification is for the purpose and design that you described in your application. If you change your project, you must notify us and you may be required to send us a new application. If the property is sold, the new owner must be given a copy of this authorization letter and is thereby responsible for complying with all conditions. This authorization requires you to follow the conditions listed below.

The Additional Conditions of the Certification are:

1. Impacts Approved

The following impacts are hereby approved as long as all of the other specific and general conditions of this Certification (or Isolated Wetland Permit) are met. No other impacts are approved including incidental impacts:

	Amount Approved (Units)	Plan Location or Reference
Zone 2 Buffers	955 (square ft.) temporary impacts	Project Summary Sheet revised 11-7-11
Zone 2 Buffers	6,991 (square ft.) permanent impacts	Project Summary Sheet revised 11-7-11



2. Erosion & Sediment Control Practices

Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:

- a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
- b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
- c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
- d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

3. No Waste, Spoil, Solids, or Fill of Any Kind

No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the Pre-Construction Notification. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices, shall be performed so that no violations of state water quality standards, statutes, or rules occur.

4. No Sediment & Erosion Control Measures w/n Wetlands or Waters

Sediment and erosion control measures shall not be placed in wetlands or waters without prior approval by the Division. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, design and placement of temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or stream beds or banks, adjacent to or upstream and down stream of the above structures. All sediment and erosion control devices shall be removed and the natural grade restored within two (2) months of the date that the Division of Land Resources or locally delegated program has released the project.

5. Diffuse Flow Plan Approval

All stormwater shall be directed as diffuse flow at non-erosive velocities through the protected stream buffers and will not re-concentrate before discharging into the stream as identified within 15A NCAC 2B .0233 and 15A NCAC 2B .0267.

6. Protective Fencing

The outside buffer, wetland or water boundary and along the construction corridor within these boundaries approved under this authorization shall be clearly marked with orange warning fencing (or similar high visibility material) for the areas that have been approved to infringe within the buffer, wetland or water prior to any land disturbing activities to ensure compliance with 15A NCAC 2B .500.

7. Certificate of Completion

Upon completion of all work approved within this authorization, and any subsequent modifications, the applicant is required to return the attached certificate of completion to the Wetlands, Buffers, Stormwater, Compliance and Permitting Unit, North Carolina Division of Water Quality, 1650 Mail Service Center, Raleigh, NC, 27699-1650.

Any disputes over determinations regarding this Authorization (associated with the approved buffer impacts) shall be referred in writing to the Director within thirty (30) days of receipt of this notice for a decision.

You can contest the Director's decision as provided in Articles 3 and 4 of G.S. 150B. To contest the Director's decision you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission. The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-733-2698, Facsimile: (919)-733-3478

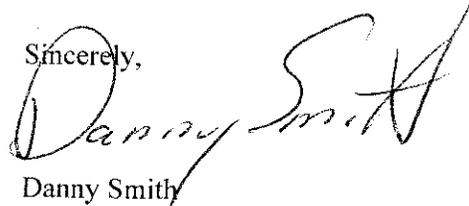
A copy of the petition must also be served on DENR as follows:

Ms. Mary Penny Thompson, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center
Raleigh, NC 27699-1601

This Authorization shall expire five (5) years from the date of this letter.

This letter completes the review of the "No Practical Alternatives" determination under 15A NCAC 2B .0233 and 15A NCAC 2B .0267. If you have any questions please call Lauren Witherspoon at (919) 791-4251. This letter does not authorize any impacts to either Waters of the United States or Waters of the State. Please contact the US Army Corps of Engineers (USACE) or NC Division of Water Quality (DWQ) if any impacts are proposed to waters on this project.

Sincerely,

A handwritten signature in black ink that reads "Danny Smith". The signature is written in a cursive style with a large initial "D" and "S".

Danny Smith
Surface Water Protection Section Supervisor
Raleigh Regional Office

Enclosures: Certificate of Completion

cc: USACE Raleigh Regulatory Field Office
DWQ Central Office – WeBSCaPe – 1650 Mail Service Center
RRO File Copy
DLR RRO
Nolan Raney – Kimley-Horn and Associates, Inc., 3001 Weston Parkway, Cary, NC 27513

Filename: 11-810_Southern Reinforcing Main Phase II_JBR_NBR_Approval

COPY

U.S. ARMY CORPS OF ENGINEERS
Wilmington District

Action ID: SAW- 2011-02001 County: Durham

NO DEPARTMENT OF THE ARMY AUTHORIZATION REQUIRED

Project Proponent City of Durham,
Dept. of Water Management
Attn: Mr. Bryant Green
Address 1600 Mist Lake Drive
Durham, NC 27704
Telephone: 919-560-4381

Agent Kimley-Horn and Associates, Inc
Attn: Mr. Nolan Raney
3001 Weston Parkway
Cary, NC 27513
919-653-6625

Size and Location of Property (waterbody, Highway name/number, town, etc.): Crossing UT's to Northeast Creek and Little Lick Creek, roughly paralleling Ellis Road, Glover Road, and Angier Avenue, from the northern end of Ellis Road at NC 147, to Angier Avenue just east of S. Miami Boulevard, southeast of Durham, NC.

Description of Activity: Southern Reinforcing Main, Phase II: Approx. 14,900 lf of new waterline to connect an existing water storage tank on Ellis Road, and a new water storage tank east of S. Miami Boulevard, using jack and bore to cross under streams and a non-wooded wetland.

Your work as proposed does not require Department of the Army authorization for the following reason(s):

- There are no jurisdictional waters or wetlands within the boundaries of the property.
- The proposed project (as described and shown on plans submitted on 8/30/2011), does not impact jurisdictional waters or wetlands.
- The proposed project is exempt from Department of the Army regulation.
(Specify) _____

This Department of the Army determination does not relieve the permittee of the responsibility to obtain any other required Federal, State, or local approvals/permits. The permittee may need to contact appropriate State and local agencies before beginning work.

Any changes in the above described work must be coordinated with the Corps of Engineers prior to commencement. If you have any questions regarding the Corps of Engineers regulatory program, please contact Eric Alsmeyer at telephone number (919) 554-4884, extension 23.

Regulatory Project Manager Signature 

Date 10/25/2011 Expiration Date 10/25/2013

SURVEY PLATS, FIELD SKETCH, WETLAND DELINEATION FORM, ETC., MUST BE ATTACHED TO THE YELLOW (FILE) COPY OF THIS FORM, IF REQUIRED OR AVAILABLE.

CF: Agent: Kimley-Horn

SECTION 2 - SURVEYS AND LAYOUT

2.00 General

All work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings or as directed by the Engineer. The Contractor *shall be responsible for all the horizontal layout and vertical control of the facilities to be constructed* under this Contract including connection to new and existing facilities and other items necessary for completion of the Contract.

2.01 Information Provided to the Contractor

- (A) The Engineer will furnish the Contractor dimensioned plans (Drawings) showing the location of the proposed interceptor(s) and appurtenances to be constructed under this Contract relative to the survey baseline, indicating the distances, offsets, or N.C. Grid Coordinates for all ground control points. In some instances, the control points will be referenced and dimensioned with respect to existing landmarks. The locations of the new facilities are based upon an actual field survey and it is possible that some of the original control points are in place although no expressed or implied warranty is given as to the presence or correctness of any of these points. The Contractor shall be responsible for all other ground control.
- (B) All elevations refer to the mean sea level datum as established by the U. S. Geological Survey.
- (C) Elevation of existing ground, structures, and appurtenances are believed to be reasonably correct but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stake-out survey shall be referred immediately to the Engineer for interpretation or correctness.
- (D) The Contractor shall make minor adjustments to the proposed pipeline alignment, far enough in advance to allow enough room to install valve manholes, etc., adjacent to existing parallel utilities. All adjustments shall be approved by the Engineer prior to the work.

2.02 Contractor's Layout Work

The Contractor shall furnish all personnel, materials, and equipment necessary for the layout work required for work under this Contract.

The Contractor shall be solely responsible for all locations, dimensions, and levels, and shall field verify all elevations and dimensions. No data other than the information contained in the Drawings and Specifications, and written orders of the Engineer shall justify departure from the dimensions or levels required by the Drawings.

The Contractor's layout work shall be done by a Registered Land Surveyor licensed to practice in North Carolina and capable of interpreting the survey data furnished and control points established on the ground for the purpose of laying out his work both horizontally and vertically. The Contractor shall furnish the Engineer with the name of the proposed Registered Land Surveyor, prior to commencing work.

Contractor shall establish all base lines for the location of the principal component parts of the work together with a suitable number of benchmarks adjacent to the work. Based upon the information provided by the Drawings, the Contractor shall develop and make all detail surveys necessary for construction including permanent and temporary construction easements, boundary staking and flagging at 50 feet o.c. maximum spacing, slope stakes, stakes for all working points, alignment and elevations.

Contractor shall have the responsibility to carefully preserve the benchmarks, reference points and stakes; and in the case of destruction thereof by the Contractor or resulting from his negligence, the Contractor shall be charged with the expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points, and stakes.

Existing or new control points, property markers, and monuments that will be or are destroyed during the normal causes of construction shall be reestablished by the Contractor; and all reference ties recorded therefore shall be furnished to the Engineer. All computations necessary to establish the exact position of the work shall be made and preserved by the Contractor.

The Contractor shall exercise special care of pipe alignment where future connections are indicated to insure that future connections can be made without major alterations and realignments.

At the final completion of the work, the Contractor shall furnish Record Drawings indicating the final location of all structures, piping, property lines, new roads and pavements, curbs, drainage ditches, etc. The Record Drawings shall also show the size and elevation of all piping, finished grades, invert in and invert out and top elevation of all structures.

2.03 Checking by the Engineer

The Engineer may check all or any portion of the layout work, at any time during construction. The Contractor shall afford all necessary assistance to the Engineer in carrying out such checks. Any necessary corrections to the work shall be immediately made by the Contractor. Such checking by the Engineer shall not relieve the Contractor of any responsibilities for the accuracy or completeness of his work.

2.04 Payment

Work specified under this Section shall be included for payment in the Contractor's Unit Price items for Section 4. No specific payment will be made under this Section.

END OF SECTION

SECTION 3 - SITE PREPARATION

3.00 General

The Contractor shall be responsible for all site preparation necessary for the work shown on the Drawings and specified herein. This includes, but is not limited to the proper removal and storage of topsoil, the proper removal and disposal of all spoil and refuse materials, and the removal and reinstallation of any items such as driveways, culverts, storm drains, paved ditches, signs, pavements, walks, fences, mailboxes, etc. as may be necessary for carrying out the work. The restoration of surfaces shall be done in accordance with the requirements of Section 7.

The removal of signs shall be done in accordance with and subject to the approval of the North Carolina Department of Transportation – Division of Highways, and the City of Durham. Temporary signs shall be furnished and installed by the Contractor as necessary and as required. All regulatory signs shall be replaced immediately following backfilling or at the end of each day, whichever occurs first.

Where removal of existing structures (such as driveway culverts, storm drains, etc, and/or utilities) is required in order to carry out the work, the Contractor shall be responsible for re-installing these items to their original condition and functional capacity.

The Contractor shall provide adequate means to prevent any sediment from entering any storm drains, ditches, streams, or bodies of water downstream of any area disturbed by construction. Excavated materials shall be placed upstream of any trench or other excavation to prevent sedimentation of offsite areas. In areas where a natural buffer area exists between the work area and the closest stream or watercourse, this area shall not be disturbed. All streets and driveways shall be scraped and swept as necessary (minimum daily) to prevent the accumulation of dirt and debris.

At the completion of the work at this site each day, the Contractor shall remove all debris and excess construction materials, and the site shall be left clean and presentable.

3.01 Clearing, Grubbing and Pavement Removal

The Contractor shall clear and grub the **entire width** of any proposed permanent easements as shown on the Drawings and specified herein. Exceptions to clearing limits are noted in sensitive areas such as buffers. In these areas, clearing limits shown on the drawings shall be strictly adhered to. The Contractor shall also clear and grub such portions of the highway or street rights-of-way required for placement of the waterline. The Contractor shall notify the Engineer of any clearing and grubbing that is required outside the proposed easement, and shall obtain the Engineer's approval of the proposed limits of the areas to be cleared and grubbed prior to starting any work.

Clearing shall consist of cutting, removal, and satisfactory disposal of all trees in their entirety, fallen timber, brush, bushes, rubbish, sanitary landfill material, fencing, and other organic, perishable and objectionable material within the designated clearing limits.

Grubbing shall consist of the removal and disposal of all stumps, roots, logs, sticks, and other organic and perishable materials to a depth of at least 6 inches below the ground surface. Topsoil shall be stripped from the work area and kept in stockpiles until needed for final grading.

Pavement removal shall consist of the removal and proper disposal of all asphalt or concrete, etc., road surfaces, driveways or sidewalks as may be necessary for carrying out the work.

ALL ASPHALT SHALL BE RECYCLED. The Contractor shall transport all asphalt removed as a part of the construction work to an asphalt recycling facility for recycling. Under no circumstances shall recycled asphalt be used as utility trench backfill material.

Recycled rubblized concrete can be recycled and reused as utility trench backfill material; however it shall comply with the NCDOT Standard Specifications for crushed aggregate base course (CABC). Recycled CABC shall be free of organics and asphalt materials.

In order to comply with the project specifications requirements for density, the Contractor shall that the proposed material meets the grading and plasticity requirements for CABC in accordance with NCDOT Standards for Roads and Specifications Section 1010-1, Table 1, Column B. Quality control sampling for gradation shall be performed by the Contractor through a certified testing laboratory and in accordance with NCDOT Section 1010-2. The Contractor shall constantly monitor control of the quality and grading of the material and shall perform a minimum of one gradation and one Atterberg Limit (LL/PL) for every 2,000 tons of recycled concrete material placed. Gradation results shall be submitted to the Engineer for review and acceptance prior to placement

In temporary construction easement locations, only those trees and shrubs shall be removed which are in actual interference with excavation or grading work under this Contract, and removal shall be subject to approval by the Engineer. However, the Engineer reserves the right to order additional trees and shrubs removed at no additional cost to the Owner, if such, in his opinion, are too close to the work to be maintained or have become damaged due to the Contractor's operations.

3.02 Disposal of Cleared and Grubbed Material

All trees, stumps, roots, bushes, refuse, heavy oils, asphaltic or concrete materials, items containing natural or synthetic rubber or any unsuitable materials shall be removed from the site and disposed of by the Contractor. Off-site disposal areas are subject to approval by the Engineer. Exceptions to this handling and removal are noted on the drawings.

3.03 Payment

The Contractor shall be responsible for all site preparation necessary for the Work shown on the Drawings and specified herein. Work specified under Section 3 and as shown on the Drawings, shall be paid for as a Lump Sum Pay Item.

For completing the work specified under this Section and shown on the Drawings, the Contractor shall be paid the unit price bid for the Pay Item stipulated below:

Pay Item	Description	Unit
3	Site Preparation	LS

END OF SECTION

SECTION 4 - PIPE MATERIALS AND APPURTENANCES

4.00 General

The Contractor shall furnish all labor, materials, equipment, tools and services required for the furnishing and installation of all piping and appurtenances as shown on the Drawings and specified in this Section. Piping shall include all fittings, adapter pieces, couplings, bolts, gaskets, supports and other associated appurtenances for required connections to existing valves, piping, structures and manholes.

4.01 Performance Affidavit and Shop Drawings

The Contractor shall advise the Engineer in writing of the pipe material, pipe joints, and the details of fittings. The Engineer shall review the submittal and approve its conformance with the Specifications before the pipe material is ordered.

The Contractor shall furnish to the Owner (through the Engineer) a Performance Affidavit stating that the pipe material provided is in compliance with the pipe material specified herein. Specifically, the affidavit shall state compliance with the applicable standards (ASTM, AWWA, etc.) for fabrication and testing. The format used for Performance Affidavits shall be as specified in Section 1.

4.02 Pipe Materials

Special care in handling shall be exercised during delivery, distribution, and storage of pipe to avoid damage and unnecessary stresses. Damaged pipe will be rejected and shall be replaced at the Contractor's expense. Pipe and specials stored prior to use shall be stored in such a manner as to keep the interior free from dirt and foreign matter.

Testing of pipe before installation shall be as described in the applicable standard specifications listed in the following Sections. Testing after the pipe is installed shall be as specified in Paragraph 4.18.

Ductile Iron Pipe - All specials and every length of pipe shall be marked with the manufacturer's name or trademark, size, weight, thickness class, the date of manufacture, and the word "Ductile".

Copper Pipe - All copper pipe and fittings shall be marked with the manufacturer's name on trademark, size, thickness class and shall conform to ASTM B88.

Poly Vinyl Chlorine Pipe - All specials and every length of pipe shall be marked with the manufacturer's name on trademark, size, thickness class and the word "PVC".

4.03 Ductile Iron Pipe and Fittings

Ductile iron pipe (DIP) of the sizes shown or specified shall conform to ANSI A21.51 (AWWA C151), Grade 60-42-10 for ductile iron pipe centrifugally cast in metal molds or sand-lined molds. All ductile iron pipe shall conform to ANSI A21.50 (AWWA C150) for **thickness design indicated in the Piping Schedule in Subsection 4.20** and shall be supplied in 18 or 20 foot nominal lengths, unless otherwise indicated on the Drawings. Fittings and specials shall be cast iron or ductile iron, conforming to the requirements of ANSI A21.10 (AWWA C110) or ANSI A21.53 (AWWA C153) and shall have a minimum rated working pressure of 250 psi, and minimum iron strength of 30,000 psi. Joints shall be a push-on type conforming to ANSI A21.11 (AWWA C111), unless otherwise specified or shown on the Drawings.

Pipe and fittings shall be of the Class that equals or exceeds the pipe Class indicated on the Drawings or as indicated in the Piping Schedule located herein. Minimum thickness design Class 53 pipe shall be used for all flanged pipe and spools.

Interior Linings for Sewer Mains, Interceptors and Sewer Service Pipe

All DIP sewer mains, interceptors and sewer service pipe and fittings shall be lined with an amine cured novalac ceramic epoxy containing at least 20% by volume of ceramic quartz pigment. The lining material shall have a permeability rating of zero when tested in accordance with Method A – ASTM E-96-66, Procedure A with a test duration of 30 days. The lining shall be applied by a competent firm with a successful history of applying linings to the interior of ductile iron pipe and fittings. After the surface preparation and within 8 hours of surface preparation, the interior of the pipe shall receive 40 mils nominal DFT. No lining shall take place when the substrate or ambient temperature is below 40°F. The surface shall also be dry and dust free. The lining shall not be used on the face of flanges.

Due to the tolerances involved, the gasket area and spigot end up to 6-inches back from the end of the spigot end must be coated with 6 mils nominal, 10 mils maximum of Protecto Joint Compound. The Joint Compound shall be applied by brush to ensure coverage. Care should be taken that the Joint Compound is smooth without excess buildup in the gasket seat or on the spigot ends. Coating of the gasket seat and spigot ends shall be done after the application of the lining.

The number of coats of lining material applied and the touch-up and repair of the lining shall be as recommended by the manufacturer. The pipe manufacturer shall provide a certification in accordance with Section 1, attesting to the fact that the application meets or exceed the requirements of these Specifications.

Lining material shall be **PROTECTO 401**, or equal.

Coatings for Force Mains, Sewer Mains, Interceptors and Sewer Service Pipe

All DIP and fittings shall have a bituminous coating on the exterior surfaces in accordance with ANSI A21.51 (AWWA C151), except that the last 8" of the spigot shall be coated with 8 mils of coal tar epoxy.

Interior Linings for Potable Water and Reuse Water Pipe and Fittings

All pipe and fittings shall be cement mortar lined. Linings shall conform to American Standard Specifications for Cement Mortar Lining for Cast Iron Pipe and Ductile Iron Pipe and Fittings, ANSI A21.4 (AWWA C104) and shall be standard thickness. The mortar lining shall be protected with the bituminous seal coat.

Exterior Coatings for Potable Water Pipe and Fittings

All pipe and fittings shall have a bituminous coating on the exterior surface in accordance with ANSI A21.15 (AWWA C151).

Exterior Identification for Reuse Water Pipe and Fittings

All reuse water pipe and fittings shall be color-coded, taped, or otherwise marked to identify the source of the water as being reuse water. All reuse piping and appurtenances shall be either colored purple (Pantone 522) and embossed or integrally stamped or marked “**REUSE WATER – DO NOT DRINK**” or be installed with a purple (Pantone 522) identification tape or polyethylene vinyl wrap. The warning shall be stamped on opposite sides of the pipe and repeated every 3 feet or less.

All reuse outlets shall be marked “REUSE WATER – DO NOT DRINK”.

Identification tape shall be at least 3-inches wide and have white or black lettering on purple (Pantone 522) field stating “REUSE WATER – DO NOT DRINK”. Identification tape shall be installed on top of reuse pipelines, fastened at least every 10 feet to each pipe length and run continuously the entire length of the pipe.

Existing underground distribution systems retrofitted for the purpose of distributing reuse water shall be taped or otherwise identified as indicated above. This identification need not extend the entire length of the distribution system, but shall be incorporated within 10 feet of crossing any potable water supply line or sanitary sewer line.

Polyethylene Encasement

ALL DUCTILE IRON PIPE AND FITTINGS ON THIS PROJECT SHALL BE WRAPPED WITH POLYETHYLENE ENCASEMENT. Polyethylene encasement shall conform to ANSI/AWWA C105/A21.5. Polyethylene encasement shall be provided in tube rolls, accordion bundles or sheets, and shall be manufactured of virgin polyethylene material conforming to ANSI/ASTM D1248. The specified nominal thickness for low-density polyethylene film is 0.008 in. (8 mils). The specified nominal thickness for high-density cross-laminated polyethylene film is 0.004 in. (4 mils). The minus thickness tolerance shall not exceed 10% of the nominal thickness on both material types. Joints in the polyethylene encasement shall be taped. Installation of polyethylene encasement shall conform to ANSI/AWWA C105/A21.5 and DIPRA's "Polyethylene Encasement" brochure.

Push-On Joints

Push-on joint includes a single rubber gasket which fits into the bell end of the pipe. The gasket shall be wiped clean, flexed and then placed in the socket. Any bulges in the gasket which might interfere with the entry of the plain end of the pipe shall be removed. A thin film of lubricant shall be applied to the gasket surface which will come into contact with the spigot end of the pipe. The lubricant shall be furnished by the pipe manufacturer.

The plain end of the pipe, which is tapered for ease of assembly, shall be wiped clean and a thick film of lubricant applied to the outside. The pipe shall be aligned and carefully entered into the socket until it just makes contact with the gasket. The joint assembly shall be completed by entering the pipe past the gasket until it makes contact with the bottom of the socket. The pipe shall be pulled "home" with an approved jack assembly as recommended by the pipe manufacturer. If assembly is not accomplished by reasonable force, the plain end shall be removed and the condition corrected.

All joints and joint accessories shall conform to the requirements of ANSI A21.11 (AWWA C111).

Restrained Joints

Restrained joints shall be provided on all bends and on pipe joints as specified herein and shown on the Drawings. Restrained joints shall be installed on both the upstream and downstream side of each bend for the linear distance shown or as otherwise indicated on the Drawings. The linear distance shall be a minimum requirement and all pipe sections within this linear distance shall be full standard lengths of pipe unless otherwise noted. Restrained joints shall be made up similar to that for push-on joints.

Restrained pipe and fittings shall consist of either bolted retainer rings and welded retainer bars or the boltless type which includes ductile iron locking segments and rubber or neoprene retainers. Restrained joint pipe shall be the Flex-Ring® Joint or the Lok-Ring® Joint as manufactured by American Ductile Iron Pipe Company, TR Flex® Joint as U.S. Pipe Company, or equal.

Restrained plugs shall be installed as shown on the Drawings. These plugs shall be watertight and capable of withstanding the test pressure specified herein. After testing, the plug shall remain in place.

Bolts for restrained joints (if applicable) shall be as recommended by the manufacturer.

Ball Joints

Ball joints shall be provided with a boltless flexible accurately machined spherical ball and spherical socket joint for use in subaqueous pipeline construction. The pipe joint shall make provisions for liberal changes in alignment with available joint deflection of 15 degrees in any direction. Extra metal thickness shall be provided at the juncture of the ball and the barrel for additional strength to withstand the stress induced when the joint is subjected to metal binding at maximum deflection. The ductile iron spherical socket shall be manufactured in accordance with applicable material requirements of ASTM A536 and threaded onto the ductile iron pipe barrel with threads conforming to ANSI B2.1 adapted to standard ductile iron pipe diameters. The pipe shall meet the applicable requirements or ANSI/AWWA C151/A21.51. The ductile iron bell, ball and retainers shall conform to applicable requirements or ANSI/AWWA C110/A21.10. The joint shall be accurately machined to provide constant compression of the gasket through the entire range of deflection. Ball joint pipe shall be the Flex-Lok Boltless Ball Joint pipe as manufactured by American Cast Iron Pipe Company, USIFLEX as manufactured by US Pipe and Foundry Company, or equal.

Bolted Mechanical Joints

Mechanical joints shall be made up with gaskets, glands and bolts. When a joint is to be made up, the bell or socket and plain end shall be cleaned and washed with a solution or mild soap in water; the gland and gasket shall be slid onto the plain end and the end then entered into the socket until it is fully "home" on the centering ring. The gasket shall then be painted with soapy water and slid into position, followed by the gland. All bolts shall be inserted and made up hand tight and then tightened alternately to bring the gland into position evenly.

Excessive tightening of the bolts shall be avoided and torsion wrenches shall be used if needed to prevent excessive tightening. Care shall be taken to assure that the pipe remains fully "home" while the joint is being made up.

Gaskets for all mechanical joints, including valves and fittings, shall be an approved rubber gasket conforming to the requirements of ANSI A21.11 (AWWA C111).

Bolts for mechanical joints shall be carbon steel minimum ASTM A307 Grade B, tee-bolts with hexagonal nuts conforming to ANSI B18.2.

Flanged Joints

Flanged joints and fittings shall be minimum Class 250 with 125 lb. American Standard flanges. All flanges and fittings shall conform to the requirements of ANSI B16.1.

Flanges shall be threaded or screw-on type. The face of the flange shall be machined after installation of the flange to the pipe. No raised surface shall be allowed on flanges. Flanged pipe shall conform to the requirements of ANSI A21.15 (AWWA C115). Pipe lengths shall be fabricated to meet the requirements of the Drawings.

Flanged joints shall be brought to exact alignment and all gaskets and bolts or studs inserted in their proper places. Bolts or studs shall be uniformly tightened around the joint. Where stud bolts are used, the bolts shall be uniformly centered in the connections and equal pressure applied to each nut on the stud. Pipes in all lines subject to temperature changes shall be cut short and cold sprung into place to compensate for expansion when hot. Gaskets shall be the "Ring Gasket" type, 1/8-inch minimum thickness, cloth inserted rubber or neoprene or the Toruseal® Flange Gasket as manufactured by American Ductile Iron Pipe Company. Flat face gaskets will not be acceptable. Bolts shall be of the size and length called for and in accordance with the "American Standard" and comply with the requirements of the ANSI/AWWA Standards. The bolts for flanged joints shall be a minimum ASTM A307; Grade B carbon steel and be in accordance with ANSI A21.10 (AWWA C 110). The bolts shall have hexagonal heads and nuts, no washers shall be used.

MJ Solid Sleeve Couplings and MJ Transition Sleeve Couplings

MJ Solid Sleeve Couplings shall be used to connect ductile iron piping to ductile iron and MJ Transition Sleeve Couplings shall be used to connect ductile iron pipe to cast iron pipe for buried service, where shown on the Drawings. Solid sleeves shall be ductile iron and conform to the requirements of ANSI A21.10 (AWWA C110). MJ Solid Sleeve Couplings shall be Style A11760, and MJ Transition Sleeve Couplings shall be Style A10766, as manufactured by American Cast Iron Pipe Co., or equal.

Mechanical Joint Restraints

The Mechanical Joint Restraints shall be Mega-Lug Series 1100 (or variation thereof), as manufactured by EBAA Iron, Inc., and specifically selected for the appropriate application. The gland body, wedges and wedge actuating components shall be cast from 65-45-12 ductile iron in accordance with ASTM A536. The gripping wedges shall be heat treated within a range of 370 to 470 BNH.

No additional payment will be made for the Mechanical Joint Restraints where shown on the Drawings or required herein, as these costs are already included for payment under the Unit Price Bid for other Pay Items.

4.04 Poly Vinyl Chloride Pipe and Fittings

Polyvinyl Chloride Pipe (PVC) (8" – 15" Gravity Sewers)

Type PSM polyvinyl chloride (PVC) pipe and fittings shall conform to the requirements of ASTM D3034 with a maximum SDR of 35. Joints shall conform to the requirements of ASTM D3212. Reruns of reclaimed materials shall not be accepted. The pipe shall have bell and spigot ends with

push-on, O-ring rubber gasket, compression type joints conforming to the requirements of ASTM 2677. Elastomeric gaskets shall conform to the requirements of ASTM F477. Minimum cell class shall be 12454B. PVC shall be supplied in 13 feet lengths.

Polyvinyl Chloride Pipe (PVC) (18" – 24" Gravity Sewers)

Polyvinyl chloride (PVC) pipe and fittings shall conform to the requirements of ASTM F679 (wall thickness T-1). Joints shall conform to the requirements of ASTM D3212. Reruns of reclaimed materials shall not be accepted. The pipe shall have bell and spigot ends with push-on, O-ring rubber gasket, compression type joints conforming to the requirements of ASTM 2677. Elastomeric gaskets shall conform to the requirements of ASTM F477. Minimum cell class shall be 12454B. PVC shall be supplied in 13 feet lengths.

Poly Vinyl Chloride (PVC/CPVC) Scheduled Piping shall be manufactured in accordance with ASTM D1785, D1784 and F441, "normal impact" pipe, Schedule 40 or 80 as specified.

Fittings used with this pipe shall be socket type or flanged type as specified herein or indicated on the Drawings. Plastic piping shall be installed in full accordance with the manufacturer's recommendations for the specific installation. No field bending or distortion of the pipe will be permitted.

PVC pipe shall be Type 1 Grade 1 conforming to ASTM D 1784 and D 1785 fittings shall conform to the following standard specifications:

Socket Type	(Schedule 40); ASTM D 2466
Socket Type	(Schedule 80); ASTM D 2467

CPVC pipe shall be Type 4, Grade 1, Schedule 80, conforming to ASTM D1784 and ASTM F441. CPVC fittings shall be socket type conforming to ASTM F439. Provide flanged fittings of the same material as the specified pipe and material conforming to ANSI B16.5 at all valves and equipment with Teflon filled or natural rubber gaskets. Bolts shall be Type 316 stainless steel for flanged joints.

Solvent cement for socket type joints shall conform to ASTM D2564 for PVC pipe and fittings and ASTM F493 for CPVC pipe and fittings.

C900-Class 200 shall be in sizes between 4 inches and 12 inches and shall meet the requirements of AWWA C900 "Poly Vinyl Chloride (PVC) Pressure Pipe" and shall conform to all the requirements of ASTM D1784 and ASTM D2241. The pipe shall be a minimum of DR 14 and shall be capable of withstanding the overburden pressures determined by the depth of burial in the field.

Pipe material shall be made from clean, virgin, NSF approved Class 12454-A PVC compound conforming to resin specification ASTM D1784. Standard laying lengths shall be 20-feet (± 1 inch). Random lengths of not more than 15% of the total footage of each size may be shipped in lieu of the standard lengths. Reruns of reclaimed material shall not be accepted.

The pipe shall have bell and spigot ends with push-on, O-ring rubber gasket, compression type joints conforming to the requirements of ASTM 2672. Elastomeric gaskets shall conform to the requirements of ASTM D1869 and ASTM F477.

Minimum pipe stiffness (F/dY) at 5% deflection shall be 914 psi for all sizes when tested in accordance with D2241.

The pipe shall be designed to pass a quick burst test pressure of 985 psi applied in 60 to 70 seconds when tested in accordance with ASTM D1599, as referenced in ASTM D2241.

Fittings for C900-Class 200, DR 14 shall be ductile iron, bolted mechanical joint.

C900-Class 150 shall be in sizes between 4 inches and 12 inches and shall meet the requirements of AWWA C900 "Poly Vinyl Chlorine (PVC) Pressure Pipe" and shall conform to all the requirements of ASTM D1784 and ASTM D2241. The pipe shall be a minimum of DR 18 and shall be capable of withstanding the overburden pressures determined by the depth of burial in the field.

Pipe material shall be made from clean, virgin, NSF approved Class 12454-A PVC compound conforming to resin specification ASTM D1784. Standard laying lengths shall be 20-feet (± 1 inch). Random lengths of not more than 15% of the total footage of each size may be shipped in lieu of the standard lengths. Reruns of reclaimed material shall not be accepted.

The pipe shall have bell and spigot ends with push-on, O-ring rubber gasket, compression type joints conforming to the requirements of ASTM 2677. Elastomeric gaskets shall conform to the requirements of ASTM D1869 and ASTM F477.

Minimum pipe stiffness (F/dY) at 5% deflection shall be 435 psi for all sizes when tested in accordance with D2241.

The pipe shall be designed to pass a quick burst test pressure of 755 psi applied in 60 to 70 seconds when tested in accordance with ASTM D1599, as referenced in ASTM D2241.

Fittings for C900-Class 150, DR 18 shall be ductile iron, bolted mechanical joint.

PVC Pressure Rated Pipe (PR 160) shall be in sizes between 1 1/2 inches and 12 inches and shall conform to all the requirements of ASTM D1784 and ASTM D2241 and shall be a minimum of SDR 26 and shall be capable of withstanding the overburden pressures determined by the depth of burial in the field.

Pipe material shall be made from clean, virgin, NSF approved Class 12454-A PVC compound conforming to resin specification ASTM D1784. Standard laying lengths shall be 20-feet (± 1 inch). Random lengths of not more than 15% of the total footage of each size may be shipped in lieu of the standard lengths. Reruns of reclaimed materials shall not be accepted.

The pipe shall have bell and spigot ends with push-on, O-ring rubber gasket, compression type joints conforming to the requirements of ASTM 2672. Elastomeric gaskets shall conform to the requirements of ASTM D1869 and ASTM F477.

Minimum pipe stiffness (F/dY) at 5% deflection shall be 135 psi for all sizes when tested in accordance with ASTM D2241.

The pipe shall be designed to pass a quick burst test pressure of 500 psi applied in 60 to 70 seconds when tested in accordance with ASTM D1599, as referenced in ASTM D2241.

The pipe shall be designed to pass for 1000 hours a sustained test pressure of 340 psi when tested in accordance with ASTM D1598, as referenced in ASTM D2241.

Fittings for PR 160, SDR 26 shall be PVC and designed for the pipe being supplied.

Solvent or Adhesive Welded Joints in plastic piping shall be accomplished in strict accordance with the pipe manufacturer's recommendations, including necessary field cuttings, sanding of pipe ends, joint support during setting period, etc. Care shall be taken that no droppings or deposits of adhesive or material remain inside the assembled piping. Solvent or adhesive material shall be

compatible with the pipe itself, being a product approved by the pipe manufacturer. Unions are required adjacent to valves and equipment.

4.05 Copper Pipe, Fittings and Tubing

All buried copper pipe and fittings shall be Type K, unless otherwise shown on the Drawings.

Type K copper piping shall be seamless, soft temper and shall conform to ASTM B 88. Fittings used with this pipe shall be flare or compression type fittings as manufactured by Swagelok, or equal, and shall conform to ANSI B16.26.

4.06 Excavation of Pipe Trench

All excavation shall be made in such a manner and to such widths as will provide ample room for properly installing and inspecting the pipe and permit thorough compaction of backfill around the pipe and structures. The minimum trench widths shall be in strict accordance with the "Trench Width Excavation Limits" as shown on the Drawings. All excavation and trenching shall be done in strict accordance with these specifications and all applicable parts of the OSHA Regulations, 29CFR 1926, Subpart E.

ALL EXCAVATION REQUIRED BY THIS CONTRACT SHALL BE UNCLASSIFIED. NO ADDITIONAL PAYMENT WILL BE MADE FOR ROCK EXCAVATION REQUIRED FOR THE INSTALLATION OF PIPE OR STRUCTURES SHOWN ON THE DRAWINGS.

Enlargements of the trench shall be made as needed to give ample space for operations at pipe joints. The width of the trench shall be limited to the maximum dimensions shown on the Drawings, except where a wider trench is needed for the installation of and work within sheeting and bracing. Except where otherwise specified, excavation slopes shall be flat enough to avoid slides which will cause disturbance of the subgrade, damage to adjacent areas, or endanger the lives or safety of persons in the vicinity.

Hand excavation shall be employed wherever, in the opinion of the Engineer, it is necessary for the protection of existing utilities, poles, trees, pavements, or obstructions.

No greater length of trench in any location shall be left open, in advance of pipe laying, than shall be authorized or directed by the Engineer and, in general, such length shall be limited to approximately one hundred (100) feet.

The Contractor shall excavate the trenches to the full depth, width and grade indicated on the Drawings including the relevant requirements for bedding. The trench bottoms shall then be examined by the Engineer as to the condition and bearing value before any pipe is laid or bedding is placed.

If, in the opinion of the Engineer, the trench requires excavation below the requirements for bedding to provide a sound base, the Engineer will direct the Contractor to perform the additional excavation. It is the intent that unsatisfactory subgrade materials for pipe be removed. Additional excavation shall be in accordance with the requirements of Section 8. Backfill for additional excavation shall be crushed stone as specified in Section 8. Payment for additional excavation and crushed stone shall be as specified in Section 8.

4.07 Repair of Existing Water and Sewer Services

Where excavations by the Contractor require the removal and replacement of existing water services, the Contractor shall perform such work in a manner satisfactory to the Engineer and the Owner. The Contractor shall demonstrate extreme care not to "RIP" water or sewer services out during excavation of the trench.

The Contractor shall replace existing sewer services with ductile iron pipe (DIP) of the appropriate size and in accordance with the requirements and procedures as recommended by the manufacturer. All DIP shall conform to the standards established in Section 4. Pipe class shall be PC 350. Connection to existing sewer pipe shall be done with flexible coupling connectors of the correct size for the pipes to be joined and shall be installed properly to provide a watertight connection. Flexible couplings shall be provided with stainless steel clamp bands and screw. Flexible couplings shall be as manufactured by the Fernco Joint Sealer Company, or equal.

The Contractor shall replace/repair existing water services with Type K (soft) copper pipe of the appropriate size and using repair clamps with stainless steel panels, stainless steel bolts and nuts and malleable or ductile iron lugs. Clamps shall be Clow No. 3121 or No. 3122, Smith-Blair No. 226 or No. 237, or equal. The Contractor shall be required to maintain, on the job site at all times, a sufficient supply of water service pipe and repair clamps for each size of pipe expected to be encountered during construction. The Contractor shall demonstrate to the Engineer that these supplies are on the job site and the Contractor shall re-stock each day to maintain an adequate supply on hand.

The cost for performing all such work shall be borne by the Contractor.

4.08 Storage and Disposal of Excavated Materials

Materials removed from the trenches shall be stored and disposed of in such manner that they will not interfere unduly with traffic on streets, sidewalks, and driveways, and will provide free access to any existing utilities adjacent to the construction. **SUFFICIENT MATERIAL SUITABLE FOR SELECT BACKFILL AND BACKFILL SHALL BE STORED AND HAULED AS NECESSARY TO REPLACE EXCAVATED MATERIAL WHICH IS UNSUITABLE FOR BACKFILL.** Excess materials and materials unsuitable for backfill shall be removed and disposed of at the Contractor's expense immediately after backfill has been placed.

4.09 Removal and Disposal of Water

All excavation and placement of backfill shall be carried out in the dry. The Contractor shall furnish, install and operate all necessary machinery, appliances and equipment to keep excavations free from water during construction, and shall dewater and dispose of the water so as not to cause injury to public or private property, or to cause a nuisance or a menace to the public. The Contractor shall control surface runoff so as to prevent entry or collection of water in excavations. The dewatering systems shall be installed and operated so that the ground water level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property. Before dewatering is started, the Contractor shall obtain acceptance by the Engineer for the method, installation and operation of the dewatering system he proposes to use. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted fill or backfill and prevent flotation or movement of any structures, pipelines and sewers.

If any subgrade or underlying material is disturbed by movement or groundwater, surface water, or any other reason, it shall be replaced at the Contractor's expense with NCDOT #67 crushed

stone to the satisfaction of the Engineer.

4.10 Protection of Subgrade for all Excavations

The Contractor shall provide positive protection against penetration of frost into materials below the bearing level during winter months. This protection can consist of a temporary blanket of straw or salt hay covered with a plastic membrane, the addition of a thick granular working mat, or the delay of final excavation to subgrade until favorable weather. The Contractor will not be allowed to place bedding, pipe, or backfill on top of any subgrade that is or has been frozen. The Contractor shall, at his own expense, remove all subgrade material that is or has been frozen to a depth so as to provide a suitable bearing surface, as ordered by the Engineer. The subgrade shall be refilled to grade with crushed stone bedding as specified in Section 4.12 at no additional cost to the Owner.

4.11 Sheeting and Bracing (Shoring System)

The Contractor shall furnish all labor, equipment and materials and perform all operations in connection with the design and installation of trench shoring. Trenches and other excavations shall be properly sheeted and braced where necessary to keep excavations within the easement/Right-of-Way limits, or other limits shown on the Drawings, prevent shifting of materials, damage to pavements, structures, pipe and utilities, and to provide safe working conditions. All sheeting shall be in accordance to the requirements of the State of North Carolina labor laws. The Contractor shall be responsible for the adequacy of all sheeting and bracing used and for all damage resulting from sheeting and bracing failure or from placing, maintaining and removing it. Furnishing, placing and withdrawal of all sheeting (if required) shall be included in the Unit Price of the pipe or structure, for payment.

The Contractor shall submit detailed plans of sheeting and bracing for review by the Engineer before approval is given to proceed. If the Engineer is of the opinion that sufficient or proper supports have not been provided, he may order additional supports to be put in at the expense of the Contractor.

All sheeting and bracing in excavations shall be withdrawn as the refilling is being done, unless otherwise shown on the Drawings. Where sheeting and bracing is to be removed, it shall be carefully pulled to prevent damage to the structure or pipe. Voids remaining after sheeting has been pulled shall be filled with suitable material as approved by the Engineer. The Engineer may order the whole or a part of such sheeting and bracing to be left in place or he may permit it to be left in place at the request and expense of the Contractor. Compensation for sheeting and bracing ordered left in place shall be paid for as a negotiated Extra Work Item. Unless otherwise directed, all sheeting and bracing left in place shall be cut off at least 2-feet below the finished surface of the ground or pavement.

The Contractor shall be responsible for the structural design of the shoring system and coordinating work in this Section with related work specified elsewhere in this Contract so as to provide all hardware and accessories for a complete installation.

ACTIVE SHORING SYSTEM - The shoring system located within NCDOT Rights-of-Way when excavation is inside of the theoretical 1:1 slope from the existing edge of pavement to the bottom of the nearest excavation wall shall be designed as "active shoring" and shall comply with standards set forth in the "Policies and Procedures for Accommodating Utilities on Highway Rights of Way" from the N.C. Department of Transportation, Division of Highways (Latest Revision).

All parts of the materials furnished shall be amply designed, manufactured and constructed for the maximum stresses occurring during fabrication and erection. All materials shall be new and both

workmanship and materials shall; be of the very best quality, entirely suitable for the service to which they will be subjected and shall conform to all applicable sections of these Specifications.

The Contractor shall be responsible for the final structural design of the shoring system. The Contractor shall submit detailed calculations and a certification that the shoring system has been designed to resist all loads implied and reasonably anticipated.

[NOTE: FOR THE ACTIVE SHORING SYSTEM, THE CERTIFICATION SHALL ALSO STATE THAT THE DESIGN OF THE ACTIVE SHORING SYSTEM HAS BEEN PERFORMED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. DESIGN CALCULATIONS AND CERTIFICATIONS SHALL BE SENT BY THE CONTRACTOR DIRECTLY TO THE NCDOT LOCAL DISTRICT OFFICE AT LEAST FOUR TO EIGHT WEEKS PRIOR TO THE START OF WORK. NO CONSTRUCTION ACTIVITIES SHALL BE PERMITTED WITHIN NCDOT RIGHTS-OF-WAY UNTIL THE NCDOT HAS APPROVED THE SHORING SYSTEM SUBMITTED.]

4.12 Bedding and Backfill Materials

All structures and pipes shall be backfilled with the type of materials shown on the Drawings and as specified herein. Where not shown on the Drawings, the material shall be select backfill.

Typical trench cross-sections are shown on the Drawings.

Crushed Stone Bedding Material shall be gravel-sand mixture free from organic material and meeting all the requirements of the North Carolina Department of Transportation for No. 67 stone.

When tested according to ASTM D422, the bedding material shall conform to the following:

Sieve	Percent Passing (by Weight)
1"	100
3/4"	90-100
3/8"	20-55
No. 4	0-10
No. 8	0-5
No. 200	0-0.6

Stone bedding shall be spread in layers and shall be compacted in place to the proper grade to provide a solid bed for the pipe or structures for the full width of the excavation.

Select Backfill shall contain no man-made or organic materials and shall be free of rocks, clods, or other materials larger than 2-inches in nominal diameter. Materials from on-site excavations may be used for select backfill provided they meet the following specified requirements.

- A. Soils from the excavations capable of being compacted to the specified densities, with the exceptions of topsoil and organic material, meeting the requirements stipulated in Paragraph B below, may be used in specified locations as select fill for backfilling. Materials shall be compacted at a moisture content satisfactory to the Engineer, which shall be approximately that required to produce the maximum density except that the moisture content shall not be more than 3% above or below the optimum moisture content for the particular material tested as determined by ASTM D698. The Contractor shall dry or add moisture to the material when required to provide a uniformly compacted and stable backfill. When air drying of excavated material is necessary, the Contractor may spread, disc, windrow, etc. Where excavated material does not meet the requirements specified herein for select backfill, the

Contractor shall furnish off site borrow material meeting the specified requirements for select fill. Backfill material borrowed off site shall be of a nature meeting the requirements stipulated herein.

- B. The materials shall not be expansive and shall be free of organic materials, and shall meet the following requirements:
1. Maximum Liquid Limit shall not exceed 50 as determined by ASTM D423.
 2. Maximum Plasticity Index shall not exceed 25 as determined by ASTM D424.

IF SUFFICIENT ON-SITE SELECT BACKFILL MATERIAL IS NOT AVAILABLE, THE CONTRACTOR SHALL SECURE ACCEPTABLE MATERIALS FROM AN OFF-SITE BORROW AREA AT NO ADDITIONAL COST TO THE OWNER. Off-site borrow areas shall be approved by the Engineer before any material is transported to the work area.

Backfill shall be free of all organic materials and shall not contain any rocks larger than 2-inches in nominal diameter. Materials from on-site excavations may be used for backfill provided they meet the specified requirements indicated for Select Backfill indicated above. **IF SUFFICIENT ON-SITE BACKFILL MATERIAL IS NOT AVAILABLE, THE CONTRACTOR SHALL SECURE ACCEPTABLE MATERIALS FROM AN OFF-SITE BORROW AREA AT NO ADDITIONAL COST TO THE OWNER.** Off-site borrow areas shall be approved by the Engineer before any material is transported to the work area.

Concrete Encasement shall be provided at the locations shown on the Drawings or as requested by the Engineer. Concrete encasement shall be in addition to the normal bedding and shall consist of completely surrounding the pipe with a minimum of 6 inches of Class B concrete as shown on the Drawings. Class B concrete shall be as specified in Section 6.

Concrete Arch shall be provided at the locations shown on the Drawings or as requested by the Engineer. Concrete arch bedding shall be in addition to the normal bedding and shall consist of a monolithic arch of Class B concrete extending from the midpoint of the pipe to 6-inches above the pipe and 6-inches on each side of the pipe as shown on the Drawings. Class B concrete shall be as specified in Section 6.

Concrete Thrust Blocking shall be provided at plugs, tees, bends, and at other locations as requested by the Engineer. The blocking shall be in general, of such shape and form that the load due to the thrust shall not exceed 2000 lbs/sq. ft. against earth when the water pressure in the line is carried at the design pressure. The excavation at such locations shall receive special attention with such undisturbed materials within as short a distance as possible from the pipe or fitting. Blocking shall be in accordance with the details and schedule as shown on the Drawings. Class B concrete shall be as specified in Section 6.

Concrete Thrust Collars shall be provided at the locations shown on the Drawings or as requested by the Engineer. The excavation at such location(s) shall receive special attention with such undisturbed materials within as short a distance as possible from the pipe. Concrete Thrust Collars shall be installed in accordance with the Detail 0222119, as shown on the Drawings. The ductile iron pipe manufacture shall provide a section of pipe with a welded-on thrust collar that is welded 360° around the barrel of the pipe. The welded-on thrust collars shall not be spaced any closer than 5-feet relative to each other on a single joint of pipe. Class A concrete and Grade 60 reinforcing steel shall be as specified in Section 6. The welded-on thrust collar shall meet the following minimum requirements and dimensions:

Pipe Size (inches)	Collar O.D. (inches)	Collar Thickness (inches)	Allowable Load per Collar (lbs)
4	8.00	½	4,500
6	10.00	½	9,300
8	12.50	½	16,000
10	14.50	½	24,000
12	16.50	½	34,000
14	19.50	¾	46,000
16	21.75	¾	59,000
18	23.75	¾	75,000
20	25.75	¾	92,000
24	30.25	¾	130,000
30	36.50	1	200,000
36	43.00	1	290,000
42	49.50	1¼	390,000
48	56.50	1¼	510,000
54	63.00	1½	650,000
60	70.25	1½	745,000

The cost for furnishing and installing Concrete Thrust Collars shall be included for payment under the Unit Price Bid for Pay Item 4r and 4s, unless the Concrete Thrust Collars are included for payment under the Unit Price Bid for other Pay Items.

Concrete Anti-Seepage Collars shall be provided at the locations shown on the Drawings or as requested by the Engineer. The excavation at such location(s) shall receive special attention with such undisturbed materials within as short a distance as possible from the pipe.

Concrete Anti-Seepage Collars shall be in accordance with the detail shown on the Drawings. Class B concrete and reinforcing steel shall be as specified in Section 6.

Flowable Fill shall be provided at the locations shown on the Drawings or as requested by the Engineer. Flowable fill shall be in addition to the normal bedding and shall consist of completely surrounding the pipe with a minimum of 6-inches of flowable fill as shown on the Drawings. Flowable fill shall be as specified in Section 6.

4.13 Installation of Pipe

All piping shall be installed by skilled workmen and in accordance with the best standards for piping installation. Proper tools and appliances for the safe and convenient handling and installation of the pipe and fitting shall be used. Great care shall be taken to prevent any pipe coating from being damaged on the inside or outside of the pipe and fittings. All pieces shall be carefully examined for defects, and no piece shall be installed which is known to be defective. If any defective pieces should be discovered after having been installed, it shall be removed and replaced with a sound one in a satisfactory manner by the Contractor at his own expense. Pipe and fittings shall be thoroughly cleaned before they are accepted in the complete work.

All exposed piping shall be installed with vertical and horizontal angles properly related to adjoining surfaces or pipes to give the appearance of good workmanship.

All piping shall be installed to the correct line and grade, with no abrupt changes in line or grade and as shown on the Drawings. **JOINT DEFLECTION SHALL NOT EXCEED 75 PERCENT OF THE MANUFACTURERS RECOMMENDED DEFLECTION.**

All gravity sewer pipe shall be run in straight lines and a uniform slope between elevations shown. All gravity sewer pipe shall be laid upgrade beginning at the lower end of the pipe, with the bell end of each joint upgrade. Changes in pipe material shall only be made at manholes. Excavation and backfilling shall conform to the requirements of this Section. Maximum trench widths shall conform to the Trench Width Excavation Limits shown on the Drawings.

Following proper preparation of the trench subgrade, pipe and fittings shall be carefully lowered into the trench so as to prevent dirt and other foreign substances from gaining entrance into the pipe and fittings. Proper facilities shall be provided for lowering sections of pipe into trenches. **UNDER NO CIRCUMSTANCES SHALL ANY OF THE PIPE MATERIALS BE DROPPED OR DUMPED INTO THE TRENCH.**

The full length of each section of pipe shall rest solidly upon the bed of the trench, with recesses excavated to accommodate bells, couplings, joints, and fittings.

Pipe that has the grade or joint disturbed after laying shall be taken up and re-laid by the Contractor at his own expense. Pipe shall not be laid in water or when trench conditions are unsuitable for work. Water shall be kept out of the trench until jointing and backfilling are completed. When work is not in progress, open ends of pipe, fittings, and valves shall be securely closed so that no water, earth, or other substance will enter the pipes, fittings, or valves. Pipe ends left for future connections shall be valved, plugged, or capped, and anchored as required. All piping shall be installed in such a manner that it will be free to expand and/or contract without injury to itself or to structures to which it is connected. During the laying of pipe, each pipe manufacturer shall provide his own supervisor to instruct the Contractor's pipe laying personnel in the correct procedure to be followed.

Before joints are made, each pipe shall be well bedded on a solid foundation; and no pipe shall be brought into position until the preceding length has been thoroughly bedded and secured in place.

Proper and suitable tools and appliances for the safe convenient handling and laying of pipe shall be used and shall in general agree with manufacturer's recommendations. At the time of laying, if the pipe is discovered to be defective after being laid, it shall be removed and replaced with sound pipe by the Contractor at his expense.

Ordinarily only full lengths of pipe (as furnished by the pipe manufacturer) shall be used. Exceptions: (closure pieces at manholes and areas where joint deflection is required):

For gravity sewer installations, the Contractor shall use a laser device to maintain the trench and pipe alignment. The laser device shall be re-checked for correct elevation and pipe alignment prior to pipe installation if the device is left in the pipe overnight. Corrected invert elevations at each manhole and any adjustments will be coordinated with and approved by the Engineer.

AT THE CLOSE OF WORK EACH DAY THE END OF THE PIPE SHALL BE TIGHTLY SEALED WITH A CAP OR PLUG SO THAT NO WATER, DIRT, OR OTHER FOREIGN SUBSTANCE MAY ENTER THE PIPE, AND THIS PLUG SHALL BE KEPT IN-PLACE UNTIL PIPE LAYING IS RESUMED.

Ductile Iron Pipe - Ductile Iron Pipe (DIP) shall be installed in accordance with the requirements of the Ductile Iron Pipe Handbook published by the Cast Iron Pipe Research Association, and AWWA C600.

Where it is necessary to cut ductile iron pipe in the field, such cuts shall be made carefully in a neat workmanlike manner using approved methods to produce a clean square cut. The outside of the cut

end shall be conditioned for use by filing or grinding a small taper, at an angle of approximately 30 degrees.

PVC Pipe - Polyvinyl chloride (PVC) pipe shall be laid and joints assembled according to the respective manufacturer's recommendations and applicable Sections of the Uni-Bell PVC Pipe Association recommended Standard Specifications, and in accordance with these specifications.

Flexible Coupling Connectors – All flexible coupling connectors and transition couplings for non-pressure gravity sewer pipe shall be of the correct size for the pipes to be joined and shall be installed properly to provide a watertight connection. Flexible couplings shall be rubber gaskets with a 300 series stainless steel sheer ring and four (4) stainless steel clamp bands and screws. Flexible couplings shall be as manufactured by the Fernco Joint Sealer Company, or equal.

Detector Tape (NOT USED FOR REUSE PIPE, SEE SPECIAL REQUIREMENTS) shall be installed 12 inches below final grade and directly above all buried piping. The tape shall be blue for water and green for sewer, and shall be clearly and permanently labeled "WATER" or "SEWER" as the case may be. Detector tape shall be Lineguard III as manufactured by Lineguard, Inc., or equal. NOTE: All PVC pipe installed shall also have an appropriate gauge "tracer wire" placed directly on the top to the pipe.

4.14 Construction Installation Tolerances

Allowable Slope Tolerances:

All gravity sewers shall be installed within the following tolerances:

- a. Non-High Priority Sewer Lines: 10% of design slope
- b. High Priority Sewer Lines: 5% of design slope

Note:

High Priority sewers are defined as sewer pipes that have been designed at slopes less than the NCDENR minimum design criteria and are deemed "High Priority" in the NCDENR Wastewater Permit.

- c. Within the easement or rights-of-way limits as indicated in the Contract Documents or with a sufficient distance for maintenance as determined by the City.

The Contractor shall check the elevation of each manhole in the presence of the Owner's representative as a preliminary verification that the manhole was set within the allowable tolerances prior to installation of the next manhole on that run of sewer.

A stop work order will be issued immediately at the locations where installed sewers are not within the specified tolerances. Both pipe and manhole installations shall cease at these locations until the work is corrected and the sewer is corrected to within the allowable tolerances. **Any sewer pipe installed flatter than the allowable tolerance shall be replaced by the Contractor at no additional cost to the Owner. The Contractor shall not be entitled to a time extension to its Contract Time as a result of sewer lines having to be replaced under this Subsection.**

In the determination of compliance of a sanitary sewer project the Contractor shall perform post construction surveys and prepare Manhole Data Sheets that are prepared by a Registered Land Surveyor.

4.15 Trench Backfill Procedures

All structures and pipe trenches shall be backfilled as soon as practical after installation. Backfill materials shall be as previously described in paragraph 4.12 and as shown on the Drawings.

Backfill materials shall be placed in maximum 8-inch lifts and thoroughly compacted with mechanical tamps or by hand tamping as required to achieve the specified compaction densities. Compaction densities shall be as follows:

Material Classifications		AASHTO-T99 Density
Crushed Stone Bedding		95% Standard Proctor
Select Backfill		96% Standard Proctor
Backfill		95% Standard Proctor
Backfill (Top 12 inches)		98% Standard Proctor
Aggregate Base Course (ABC)		100% Standard Proctor
Backfill Around Structures		96% Standard Proctor

Exception:

All backfill materials placed under State, City, County or Town roads (paved or unpaved), streets and driveways shall be compacted to at least 96% Standard Proctor AASHTO-T99 density for the full length.

The Engineer may require compaction tests by an approved testing lab in order to verify that the required compaction densities are being achieved. Such tests, where required by the Engineer, will be provided by the Owner at his expense.

When excavations are within State, City, County or Town roads, density tests shall be performed every 100 feet of trench length and every 8-inches of fill placed. Density tests for aggregate base course material (ABC) shall be performed every 200 feet of trench length. Density tests at other locations shall be at the discretion of the Engineer. The Contractor shall allow adequate time for such tests to be performed.

Where sheeting/shoring is used, the Contractor shall use all reasonable measures to prevent the loss of support of the pipe or backfill when the sheeting is removed. If significant volumes of soil cannot be prevented from clinging to the extracted sheets, the voids shall be continuously backfilled as rapidly as possible. The Contractor shall thereafter limit the depth below subgrade that sheeting will be driven in similar soil conditions or employ other appropriate means to prevent a loss of pipe support. Methods for backfilling shall be approved by the Engineer.

4.16 Change of Trench Location

If the Engineer directs that the location of a trench be changed from that shown on the Drawings or if a changed location shall be authorized upon the Contractor's request, the Contractor shall not be entitled to extra compensation or to a claim for damage, provided that the change is made before the excavation is begun. If, however, such change made at the direction of the Engineer involves the abandonment of excavation already made, such abandoned excavation will be classed as additional excavation and payment for additional excavation shall be included for payment under Section 8. Refill in this event shall be a negotiated extra work item. In the event that the trench is abandoned in favor of a new location at the Contractor's request, the abandoned excavation and refill shall be at the Contractor's expense. Any refill shall conform to the specification for backfill under this Section.

4.17 Typical Sanitary Sewer Service Installation

The Contractor shall furnish and install sanitary sewer services as specified herein and as shown on the Drawings including all pipe, fittings, transition pieces, couplings, cleanouts (if required) and appurtenances for a complete and operable installation.

Wherever used in the Contract Documents, the term sewer service shall mean a gravity flow pipe connecting a residence or building wastewater collection system to the sanitary sewer main. All services shall be 4-inch diameter, PROTECTO 401 lined ductile iron pipe, unless otherwise noted on the Drawings. Installation of a sewer service pipe shall be from the sanitary sewer main to the extents indicated in the Typical Sanitary Sewer Lateral Connection [Detail 0260106], shown on the Drawings, except as otherwise directed by the Engineer. Pipe materials, joints, and connections shall be as specified herein and as shown on the Drawings.

Sanitary sewer laterals shall be connected to the sanitary sewer main by means of a ductile iron WYE fitting rotated at an angle of forty-five degrees (45°) with respect to horizontal and the direction of flow. The cost for furnishing and installing the WYE fitting and the appropriate transition coupling shall be included in the cost for the Sanitary Sewer Service Lateral Fitting under the Unit Price Bid for Pay Item 4e.

The cost for furnishing and installing the 4" sanitary sewer pipe and fittings located between the sanitary sewer main WYE and the right-of-way, shall be paid for under the Unit Price Bid for Pay Item 4d.

The cost for furnishing and installing each sanitary sewer service lateral cleanout shall also include all required fittings, pipe, nipples, adapters, cleanout and cap, and concrete collar from the right-of-way to the cleanout as shown in Detail 0260106. The cost of furnishing and installing the Sanitary Sewer Service Lateral Cleanout for each service shall be paid for under the Unit Price Bid for Pay Item 4f.

The Contractor shall be responsible for identifying and locating the existing sewer services and locating the Sanitary Sewer Service Lateral Fitting in the most appropriate location to make the connection. All sanitary sewer service lateral fitting locations shall be reviewed and approved by the City of Durham and the Engineer prior to installation.

4.18 Flushing and Testing

The Owner will provide reasonable quantities of water necessary for flushing, pressure testing, and disinfection of all facilities associated with this project. All pipelines shall be filled slowly either through an existing valve or through taps. Special care shall be exercised in loading lines to prevent damage. The Contractor shall coordinate with the Owner the operation of all existing valves. **ALL CITY VALVE OPERATIONS SHALL BE DONE BY CITY OF DURHAM PERSONNEL ONLY.**

The Contractor shall furnish and install all means and apparatus necessary for getting the water into the pipe and flushing and testing; including pumps, gauges, and meters, any necessary plugs and caps, and any temporary blow off piping required to discharge water, etc., complete with any necessary reaction blocking to prevent pipe movement during the flushing and testing. All pipe shall be flushed and tested in such lengths or sections as agreed upon among the Owner, Engineer, and Contractor. The Contractor shall give the Owner and Engineer reasonable notice of the time when he intends to test portions of the pipe. The Engineer reserves the right, within reason, to request flushing and testing of any section or portion of the pipe. Raw water or non-potable water may be used for flushing and testing pipe not connected to the potable water system. **ONLY POTABLE WATER SHALL BE USED FOR FLUSHING AND TESTING POTABLE WATER SYSTEMS.** The

Contractor shall provide a means of preventing any silt or sand from being introduced into the pipe during flushing and testing if stream water (raw water) is to be used, and the method must be approved by the Engineer prior to use.

(A) Pipelines and Force Mains

- (1) Flushing - At the conclusion of the installation work, the Contractor shall thoroughly clean all new pipe by flushing with water to remove all dirt, stones, pieces of wood, etc., which may have entered the pipe during the construction period. If after this cleaning any obstructions remain, they shall be corrected by the Contractor, at his own expense, to the satisfaction of the Engineer. Pipelines shall be flushed until no evidence of debris remains and for a duration suitable to the Engineer.
- (2) Pressure and Leakage Tests - After flushing, all pipelines shall be hydrostatically tested for leakage at the test pressure indicated in the Piping Schedule (\pm 5 psi as specified by AWWA). Each pipeline shall be filled with water for a period of no less than 24 hours and then subjected to the specified test pressure for three (3) hours. The Contractor shall ensure that the pipe is full of water and that the air has been removed before testing. During this test, the rate of leakage for buried pipe shall not exceed the allowable rate as specified by AWWA C600. Exposed pipe shall show no leakage. The procedure used for the hydrostatic test shall be in accordance with the requirements of AWWA C600 as modified herein. The Contractor shall take all necessary precautions to prevent any joints from drawing while the pipe or its appurtenances are being tested. Any leaks or defective pipe disclosed by the hydrostatic test shall be repaired or replaced by the Contractor, at his own expense, and the test repeated until all such piping shows tight.
- (3) Cost of Testing and Repairs - Any and all work necessary to bring the pipe into conformance with the leakage specifications shall be performed by the Contractor at no extra cost to the Owner. All apparent sources of leakage shall be repaired in a manner approved by the Engineer.

(B) Gravity Sewers and Interceptors

- (1) Obstruction - After backfilling, all sewers shall be inspected for obstructions and shall be flushed with water, or in the case of larger diameter interceptor, shall be cleaned by manually sweeping, pressure washing, or blown out with compressed air. Sewers shall be cleaned until no evidence of debris remains and is acceptable to the Engineer. Cleaning shall remove all dirt, stones, pieces of wood and other debris which accumulated in the sewer during construction. The Contractor shall provide a means acceptable to the Engineer for removal of debris flushed from each section of sewer. If after cleaning, any obstructions remain, they shall be removed at the Contractor's expense.
- (2) Visual Inspection – The Contractor shall perform a video camera inspection of all sewers installed under this Contract and provide the Engineer with a video tape or DVD which clearly identifies each segment of the sewer being inspected. The video camera inspection shall be performed upon completion of the cleaning and potable water shall be introduced into the segment of the sewer to be tested to aid in the detection of defects. The maximum depth of water that will be permitted to “pond” in the pipe at any location along the tested segment shall be 0.5”. All defects in the sewers and appurtenances shall be remedied by the Contractor at no additional cost to the Owner and will be re-inspected as outlined above after corrections have been made. Sewers which do not exhibit a true line and grade or have structural defects

shall be corrected to meet these qualifications. Acceptance of any deviation from these requirements is at the sole discretion of the Owner.

- (3) Leakage - Sewers shall be tested for leakage. The program of testing shall fit the conditions as mutually determined by the Engineer and the Contractor. The Contractor shall take all necessary precautions to prevent any joints from drawing while the sewers or their appurtenances are being tested. The Contractor shall, at his own expense, correct any excess leakage and repair any damage to the pipe and their appurtenances, or to any structures resulting from or caused by these tests.
- (4) Interceptor Leakage Testing - Each joint of pipe 30-inches and larger shall be tested in accordance with ASTM C1103, by the joint test method and shall be performed as the pipe is being installed. Testing shall be done with a Cherne Joint Tester, or equal. The Contractor shall:
 - a. Roll tester to the joint to be tested. Visual inspection of the condition of the pipe for cracks, holes, etc., should be made at this time. If none are observed, any defects may be assumed to be at the joint.
 - b. Position tester over joint as recommended by the manufacturer.
 - c. Attach air hose and inflate end element tubes to a maximum of 25 psi.
 - d. Pressure joint test area to 4.0 psi.
 - e. Observe pressure gauge. If pressure holds, or drops less than 2 psi in 10 seconds, the joint is considered good. This joint test is essentially a "go no-go" test.
 - f. Deflate end element tubes and move joint tester to the next joint.
 - g. Contractor shall observe all precautions and safety measures recommended by the joint tester manufacturer.
 - h. In addition to the pressure test, the Contractor shall perform a leakage test by measuring the rate of infiltration using a suitable weir or other measuring device approved by the Engineer. The allowable leakage shall not exceed 100 gallons per day per inch of pipe diameter per mile of interceptor being tested. Test lengths shall not exceed 2,000 feet, unless otherwise approved by the Engineer.
 - i. Where the actual leakage exceeds the allowable, the Contractor shall discover the cause and correct it before the sewer will be accepted.
- (5) Low Pressure Compressed Air Test – All gravity sewer pipe less than 30-inches shall be considered acceptable, when tested and accepted in accordance with the Air Test Table and the Air Test Form found in the Standard Forms Section of these Specifications. The Engineer shall be notified at least 48 hours in advance of any testing and shall be present for all testing.

Where the actual leakage exceeds the allowable, the Contractor shall discover the cause and correct it before the sewer will be accepted. For the purpose of this subsection, a section of sewer is defined as that length of sewer between successive manholes or special structures or stub-outs for future connections.

- (6) Low Pressure CAT Leakage Test Procedure – The low pressure air test shall be performed before all laterals or stubs are installed on the line and after the main has been backfilled to finished grade. Plugs shall be installed at each manhole to seal off the test section. The line shall be pressurized with a single hose and monitored by a separate hose connection from the plug. Air shall then be slowly introduced into the sealed line until the internal air pressure reaches 4.0 psig. The air pressure shall then be allowed to stabilize for 2 minutes at no less than 3.5 psig (plus groundwater pressure, if any). When the pressure reaches 3.5 psig, the time required for the pressure to drop 1.0 psi will be observed and recorded. The pipe shall be considered acceptable, when tested and accepted in accordance with the Air Test Table and the Air Test Form found in the City of Raleigh Standard Forms Section of these Specifications. The Engineer shall be notified at least 48 hours in advance of any testing and shall be present for all testing.

Where the actual leakage exceeds the allowable, the Contractor shall discover the cause and correct it before the sewer will be accepted. For the purpose of this subsection, a section of sewer is defined as that length of sewer between successive manholes or special structures or stub-outs for future connections.

- (7) Deflection Testing – No sooner than thirty (30) days after final backfill installation, each section of pipe shall be checked for vertical deflection using an electronic deflectometer or a rigid “go-no-go” device. Vertical deflection shall not exceed 5% for flexible pipe or 3% for semi-rigid pipe. The Contractor shall supply all testing equipment. Where the deflection exceeds the allowable, the Contractor shall discover the cause and correct it before the pipe will be acceptable. For the purpose of this subsection, a section of sewer is defined as that length of sewer between successive manholes or special structures or stub-outs for future connections.
- (8) Cost of Testing and Repairs - Any and all work necessary to bring the line into conformance with the infiltration and deflection specifications shall be performed by the Contractor at no extra cost to the Owner. All apparent sources of infiltration and excessive deflection shall be repaired by the Contractor.

The Contractor shall provide all plugs, hoses, pumps, equipment, etc. necessary for the proper cleaning/flushing and testing of the sewers.

4.19 Disinfection

All pipe and fittings connected to and forming a part of a potable water supply shall be disinfected in accordance with the procedures described in Specification Section 1, AWWA C601, the requirements of the North Carolina Department of Environment and Natural Resources (DENR), Division of Environmental Health and the City of Durham. The Contractor shall furnish and install, at its own expense, all means and apparatus necessary for performing the disinfection. The chlorine solution shall be thoroughly flushed out prior to placing the new sections of pipe in service. Chlorine residual tests will be made after flushing to assure that chlorine residual is not in excess of 1 ppm at any point in the water distribution system.

4.20 Piping Schedule

Piping requirements for this Section are indicated on the Drawings, and in the Piping Schedule. In the absence of a specified test pressure, pipe shall be tested at a pressure 50 percent greater than the normal operating pressure as determined by the Engineer or 10 psig, whichever is greater unless the Schedule indicates that no test is required.

If the pipe material is not shown on the Piping Schedule or otherwise specified, the following materials shall be used:

Designation/ Pipe Size	Material	Type of Joint	Class/Design	Test Pressure	Restraint System Design Pressure*
Potable Waterlines and Reuse Pipelines 30-in and larger	DIP	Flanged (Exposed)	53	200 psi	350 psi
		All Push-On and Restrained (Buried)	PC 250		
Potable Waterlines and Reuse Pipelines 14-in through 24-in	DIP	Flanged (Exposed)	53	200 psi	350 psi
		All Push-On and Restrained (Buried)	PC 350		
Potable Waterlines and Reuse Pipelines less than 14-in	DIP	Flanged (Exposed)	53	200 psi	350 psi
		All Push-On and Restrained (Buried)	PC 350		
All Gravity Sewers and Services	DIP	Push-On	PC 350	See Section 4.18	N/A
Water Services	Copper	Flared		200 psi	N/A
(1) Test at 150 percent or normal operating pressure or 10 psi, whichever is greater					

* **RESTRAINT SYSTEM DESIGN PRESSURE SHALL BE USED TO DETERMINE THE SIZE, NUMBER, MATERIAL AND DIMENSIONS OF TABS AND THREADED RODS FOR PIPING SPECIFIED OR SHOWN TO HAVE THREADED RODS FOR THRUST RESTRAINT.**

4.21 (NOT USED)

4.22 Miscellaneous Connections:

The Work shall include the total amount of pipe, fittings, valves, couplings, sleeves, transition pieces, plugs, rodding, concrete, excavation and backfill, and appurtenances shown on the Drawings and as required for a complete and operable installation. All piping and fittings shall be ductile iron.

All other work required to complete the connections shall be considered as incidental to the project and no specific payment will be made.

4.23 Payment

Quantities of pipe included for payment under this item shall be based on the actual laying length of the pipe installed measured continuously along a horizontal line from center of manhole to center of manhole for sewers; or in the case of stubs for future service connections from the center of the sewer main to the end of the pipe installed. For waterlines, force mains and reuse pipelines it shall be based on the actual laying length of the pipe installed measured continuously along a horizontal line, plus the laying length of any partial joints or shown fittings. **No additional payment will be made for special linings, or coatings or polyethylene wrapping required.**

The Unit Price shall also include the excavation, sheeting (if required), installation, backfilling and testing and disinfection (potable water only) of the pipe.

ALL EXCAVATION SHALL BE UNCLASSIFIED.

The cost for furnishing, placing and compacting bedding and backfill materials, as specified herein and as shown on the Drawings, shall be included in the Unit Price Bid for Furnishing and Installing the pipe. No specific payment will be made for bedding and backfill, except as specified in Section 4.16 and Section 8. Unless there are significant changes in the location of the pipe as directed by the Engineer or the Contractor can demonstrate that the depth of cut is significantly greater than 2'-0" over the depth indicated by the Drawings, then the Drawings shall be used to establish the depth for the Pay Item. Additional stone bedding used to replace unsatisfactory earth and soils removed as additional excavation specified under Section 8, shall be paid for under Section 8.

The cost of providing concrete encasement, concrete arch bedding, concrete thrust blocks, and concrete seepage collars and flowable fill, as specified and shown on the Drawings or as directed by the Engineer shall be paid for under Pay Item 6.

For completing the work specified under this Section and shown on the Drawings, the Contractor shall be paid the Unit Prices Bid for the respective Pay Items stipulated in the Proposal.

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Pay Item	Description	Unit
4a(1)	Furnish and Install 30-Inch DIP Push-On Waterline	LF
4a(2)	Furnish and Install 30-Inch DIP Restrained Joint Waterline	LF
4b	Furnish and Install Thrust Collars for 30-Inch DIP [Not included in other Pay Items]	EA
4c	Furnish and Install 8-Inch DIP Sanitary Sewer	LF
4d	Furnish and Install 4-Inch DIP Sanitary Sewer Service	LF
4e	Furnish and Install 8" x 4" Sanitary Sewer Service Lateral Fitting	EA
4f	Furnish and Install 4" Sanitary Sewer Service Lateral Cleanout	EA
4g	Remove and Replace 3" DI Force Main	LF
4h	Furnish and Install Sheeting	LF

END OF SECTION

SECTION 5 - VALVES AND APPURTENANCES

5.01 General

Under this Section the Contractor shall furnish and install the valves, assemblies and accessories as shown on the Drawings and specified herein including all fittings, transition pieces, and appurtenances required for a complete and operable installation

All reuse valves and appurtenances shall be color-coded, taped, or otherwise marked to identify the source of the water as being reuse water in accordance with the City of Durham's Reuse Standards and Section 4.

5.02 Performance Affidavit and Shop Drawings

The Contractor shall furnish to the Owner, through the Engineer, a Performance Affidavit for each item specified herein utilizing the format specified in Section 1.

Performance tests shall be conducted in accordance with the latest revision of AWWA C500 and affidavits shall conform to the requirements of Section 1.

The Contractor shall submit to the Engineer Shop Drawings for each equipment item specified herein. Submittals shall include the equipment item, details of installation, fittings and any transition pieces required for a complete installation. Complete operation and maintenance manuals and installation instructions shall be submitted to the Engineer after approval of the valves and accessories in accordance with Section 1. The manufacturer(s) shall delete all information which does not apply to the equipment being furnished.

5.03 Valves - General

Valves shall be in the quantity, quality, types and size indicated on the Drawings and specified herein.

Materials and Construction - All valves shall be constructed of first-quality materials which have strength, wearing, and corrosion resistance characteristics entirely suitable for the types of service for which the individual valves are designated. Except where noted otherwise, valves designated for water service shall conform to pertinent sections of the latest revision of AWWA C500 Specifications. Cast iron valve bodies and parts shall meet the requirements of the latest revision of ASTM Designation A-126, "Standard Specifications for Gray Iron Castings for Valves, Flanges, and Pipe Fittings, Class B."

All valve body castings shall be clean, sound, and without defects of any kind. No plugging, welding, or repairing of defects will be allowed.

All valves shall be operated as shown on the Drawings. Buried valves shall have a two inch square AWWA operating nut. Valve boxes shall be installed with all buried valves as shown on the Drawings. All operators shall turn counter-clockwise to open and have the open direction clearly and permanently marked on exposed valves. Valve operators shall be designed so that the force required to operate the handwheel does not exceed 80 pounds applied at the extremity of the handwheel. Nut operators shall be designed to produce the required operating torque with a maximum input of 150 ft-lb. Handwheels shall not be less than 12-inches in diameter. Manual operators shall be permanently lubricated and watertight.

Valves shall have flanged ends for exposed service and mechanical joint ends for buried service, unless otherwise shown on the Drawings. Flanged ends shall be flat-faced conforming to ANSI B16.1, Class 125. All bolt heads and nuts shall be hexagonal of American Standard size. Non-ferrous alloys of various types shall be used for parts of valves as specified. All valves of one type shall be the product of one manufacturer.

All valves shall be lubricated, manually opened and closed before installation to check their operation; and the interior of the valve shall be cleaned. Valves shall be placed in the positions shown on the Drawings. Joints shall be made as directed under the piping specifications. The valves shall be so located that they are easily accessible for operating purposes and shall bear no stresses due to loads from the adjacent pipe. The Contractor shall be responsible for coordinating connecting piping.

5.04 Butterfly Valves

- A. Butterfly valves (water service) shall be of the rubber-seated, tight-closing type conforming to the latest revision of AWWA C504 Specifications. The manufacturer shall have a minimum of 5 years experience in manufacturing butterfly valves of the sizes required in accordance with AWWA C504 Specifications. All butterfly valves shall be the product of one manufacturer. Butterfly valves shall be as manufactured by Pratt, Mueller Co., or equal. Each valve shall be performance and leak tested as specified in AWWA C504 revised as follows: ***[In addition to the testing requirements of AWWA C504, each butterfly valve shall be thoroughly cleaned and opened and closed at least three (3) times prior to factory testing. Certified copies of the test results shall be submitted to the Engineer for approval prior to shipment of the valve.]***
- B. Butterfly valves shall be Class 150B of short body design with mechanical joint or flanged (restrained valves) ends as shown on the Drawings. Butterfly valves shall be designed for a minimum working pressure of 150 psi and a test pressure of 300 psi.
- C. Valve bodies shall be epoxy coated cast iron conforming to ASTM A-126, Grade B, ASTM A-48, Class 40 or Ductile Iron ASTM A536, Grade 65-45-12. Where required to meet design operating conditions, valve bodies shall be manufactured of higher strength materials. Valve bodies shall have integral hubs for housing shaft bearings and seals.
- D. Butterfly valves shall be of the concentric or eccentric shaft types. Valve discs shall be constructed of epoxy coated ductile iron, ASTM A536, Grade 65-45-12. Disks shall be of the "offset" design to provide a full 360 degree seating surface with no external ribs transverse to flow, and shall comply with the latest revision of AWWA C504 Specifications. The valve manufacturer shall furnish Shop Drawings which include end clearance dimensions when the disc is in the full open position.
- E. The resilient valve seat shall be synthetic rubber designed to seat against a pressure differential of 150 psi on either side of the valve, unless otherwise indicated. The resilient seat shall be mechanically attached to the valve disc or valve body. Any required seat attachment hardware shall be stainless steel. The resilient seat shall be capable of being adjusted or replaced in the field without moving the valve disc along the shaft axis, or removing the valve from the line. The mating seat surface shall be stainless steel or Monel. The seats shall be factory tested as per AWWA C504 at a test pressure of 150 psig, unless otherwise indicated, and post adjusted for differential pressures indicated herein.

SPECIAL NOTE: THESE VALVES WILL BE FIELD TESTED AT 200 PSI FOR THE DURATION SPECIFIED IN SECTION 4.18 - FLUSHING AND TESTING. THE MANUFACTURER SHALL INCORPORATE ANY SPECIAL DESIGN REQUIREMENTS TO MEET THIS TESTING PRESSURE.

- F. Valve shafts shall be one-piece or two-piece units of stainless steel construction suitably sized to transmit the torques required to operate the valves under the conditions listed in the valve schedule with appropriate safety factor. Shafts shall be securely attached to valve disc by means of conservatively sized corrosion-resistant taper pins, threaded at one end and secured with lockwashers and nuts (i.e.: mechanically attached). Provide O-ring seal on taper pin if required to prevent leakage. Shaft key shall be constructed of corrosion-resistant material.
- G. Shaft bearings shall be contained in the integral hubs of the valve body and shall be the permanently self-lubricated, corrosion resistant, sleeve type of teflon or heavy-duty bronze. The valve assembly shall be furnished with a factory set two-way thrust bearing designed to center the valve disc in the valve seat at all times. End cover bolts shall be of stainless steel construction.
- H. The shaft seal shall be either the bronze cartridge type with at least two O-rings, monolithic V-Type, or pull down packing type. If monolithic V-Type or pull down packings are utilized, it shall be self-adjusting, self-compensating type. Packing shall be as manufactured by Chevron, or equal. Butterfly valves with pull down packings shall be designed with an extension bonnet so that repacking can be done without removal of the actuator. For buried valves with pull down packing the packing gland cover assembly shall be heavy duty, soil and water resistant. Stuffing boxes for pull down packing shall have a depth sufficient to accept at least four rings of self-compensating type packing specifically selected for the operating pressures to be encountered. Stuffing box bolts, studs and nuts shall be stainless steel.
- I. The "O" ring type shaft seal shall be contained in a removable bronze cartridge. The bronze cartridge shall be manufactured from ASTM B505 copper alloy UNS #C93200 and shall meet the requirements of AWWA C504 for bronze, Grade E. The "O" ring material shall be nitrile, BUNA-N rubber, as intended for use with potable water or wastewater and per ASTM D-2000 with a hardness of 70 Shore A Durometer.
- J. Manual operators for butterfly valves 18-inches in diameter or larger shall be the worm gear type conforming to AWWA C504. Operators shall be equipped with adjustable AWWA limit stops, shall be sized according to Table IV for Class 150B, and shall require a minimum of 15 turns for 90 degrees or full stem valve travel. The capacity of the manual operator shall be adequate to drive the valve under the differential pressure of 150 psi and maximum anticipated flow of 25,000 gpm, unless otherwise indicated in the appropriate valve schedule.
- K. The manufacturer shall certify that the butterfly valves are capable of operating in continuous duty service under these pressures and flow conditions.
- L. Each valve shall be hydrostatically tested and tested for bubble tightness after the operator has been mounted and adjusted. Copies of the hydrostatic and leakage test certification and certification of conformance shall be submitted to the Engineer prior to shipment.
- M. All internal and external ferrous components and surfaces of the valves, with the exception of stainless steel and finished or bearing surfaces, shall be shop painted with two coats (10 mils min. dry film thickness) of the manufacturer's premium epoxy for corrosion resistance.

Damaged surfaces shall be repaired in accordance with the manufacturer's recommendations.

5.05 Gate Valves

All gate valves between 2 inches and less than 4-inches shall be cast iron or bronze body, bronze or stainless steel trimmed, wedge disc, and minimum 150 psi non-shock cold water pressure rating. Exposed valves shall be of the outside screw and yoke (OS&Y), ANSI B-16.1, 125 pound flanges and shall be as manufactured by the Crane Company, Jenkins Bros. Corp., or equal.

Gate valves less than 2 inches shall be of bronze body, rising stem, wedge disc and minimum 300 psi non-shock cold water pressure rating. Valves shall have screwed ends or as specified otherwise.

Gate valves 4-inches through 24-inches shall fully comply with the requirements of AWWA C515 for resilient-seated gate valves and shall be the Metroseal 250 as manufactured by U.S. Pipe and Foundry Co., Series 2500 as manufactured by American Flow Control, or equal. Gate valves shall be designed for a minimum working pressure of 250 psi and a test pressure of 500 psi.

Gate valve body and bonnet shall be ductile iron with resilient seat gate and O-ring seals. The gate shall be cast iron with a vulcanized rubber coating with no metal to metal contact when in the fully closed position and a smooth unobstructed waterway when in the fully opened position.

Gate valves larger than 24-inches shall fully comply with the requirements of AWWA C500 and shall be double disc parallel seat with bypass and inside screw spur geared operator, unless otherwise specified or shown on the Drawings. Valves shall be American Darling, Mueller, or equal.

Gate valves shall be flanged or mechanical joint as shown on the Drawings, with **non-rising stems**, and 2-inch square standard AWWA operating nuts unless otherwise shown on the Drawings or specified herein.

All internal and external ferrous components and surfaces of the valves, with the exception of stainless steel and finished or bearing surfaces, shall be shop painted with two coats (10 mils min. dry film thickness) of the manufacturer's premium epoxy for corrosion resistance. Damaged surfaces shall be repaired in accordance with the manufacturer's recommendations.

5.06 Pressure Air Release Valve

The pressure air release valve shall be constructed of cast iron with stainless steel trim and stainless steel float, and all working parts shall be bronze, brass, stainless steel, or other corrosion resistant material. The valves shall be designed for a minimum working pressure of 150 psi and a test pressure of 300 psi. All valves shall be provided with seating material to provide drip-tight closure at pressures greater than 65 psig. **All valves shall be provided with a vacuum check.**

All internal and external ferrous components and surfaces of the valves, with the exception of stainless steel and finished or bearing surfaces, shall be shop painted with two coats (10 mils min. dry film thickness) of the manufacturer's premium (NSF approved) epoxy for corrosion resistance. Damaged surfaces shall be repaired in accordance with the manufacturer's recommendations.

The pressure air release valve shall be the following types and models as manufactured by the Crispin Valve Division of Multiplex Manufacturing Co., or equal.

PRESSURE AIR RELEASE VALVE

Location	Size	Orifice	PRV Discharge Capacity @ 50 psi	Model #	Connection
All	2"	5/16"	59 SCFM	PL20/V5	Screwed

5.07 NOT USED

5.08 Fire Hydrant (City of Durham Standard)

All fire hydrants shall be hub end, triple nozzle, approved AWWA type with two (2) 2½-inch hose nozzles and one (1) 4½-inch steamer nozzle with American National Standard hose threads and shall be Starz cut starting ¼" from the end of the nozzle, and have a 6-inch bottom mechanical connection. Fire hydrants shall be supplied with appropriate length hydrant extensions as required for the hydrant to be set at the correct elevation above grade as indicated on the Drawings. The cost for fire hydrant extensions shall be included in the cost for the fire hydrant assembly and no additional compensation will be made.

The hydrants furnished under this Contract shall be painted Safety Red #B54R38 in high gloss enamel, as manufactured by Sherwin Williams. Any paint other than that manufactured by Sherwin Williams, shall be approved in advance by the Engineer.

Hydrants shall have a 4½-inch valve opening and shall be built in accordance with AWWA C502. Hydrants shall open left and have a National Standard Pentagon type operating nut (1½-inch point to flat). Hydrants shall have a safety flange and a safety coupling on the valve stem. All hydrants shall be Mueller Centurion #A-421 with bronze bushed shoe, American-Darling Mark-73, or Kennedy K81-A Dry Top with bronze bushed shoe.

5.09 Valve Box and Floor Boxes

The Contractor shall furnish and install valve/floor boxes as shown on the Drawings and specified herein.

Valve Boxes (Floor Boxes) shall be provided for all nut operated or floor accessed valves. Valve boxes shall be of the adjustable, sliding type, cast iron, suitable to withstand heavy traffic, as manufactured by James B. Clow & Sons, Kennedy Valve Mfg. Co., or equal. The covers shall be marked with appropriate designations of piping contents (i.e.: WATER, SEWER, REUSE) and bases shall be the round type. All nut operated valves in this Section shall be clearly identified by stainless steel or laminated plastic identification tags. The tags shall be permanently affixed to the inside of the floor boxes, under grating, etc. and shall bear the embossed letters which clearly identify each valve by its appropriate designation.

Two (2) valve operating wrenches shall be supplied in 4-foot lengths with tee handles for each size nut supplied. Valve wrenches shall be Model No. F-2520 as manufactured by James B. Clow & Sons, Kennedy Valve Mfg. Co., Figure No. 122, or equal.

Valve Box - The Contractor shall furnish and install valve boxes as shown on the Drawings and specified herein.

All valve boxes shall be placed so as not to transmit shock or stress to the valve and shall be centered and plumb over the operating nut of the valve. The ground in the trench upon which the valve boxes rest shall be thoroughly compacted to prevent settlement. The boxes shall be fitted together securely and set so that the cover is flush with the finished grade of the adjacent surface. A concrete pad as detailed on the Drawings shall be provided around the valve box, sloped outwards.

All valve boxes shall be 2-piece cast iron, sliding type, 5¼" shaft, with heavy duty traffic weight collar and the lid marked with the appropriate carrier product (i.e.: WATER, SEWER, REUSE). Boxes shall be as manufactured by James B. Clow & Sons, Kennedy Valve Mfg. Co., Charlotte Pipe and Foundry Company, or equal.

5.10 Corporation Stops

Corporation stops shall be of bronze with tapered male iron pipe threads on the inlet and outlets. Terminal outlets shall have screwed bronze hex head dust plugs or caps. Unions shall be used on all corporation stop outlets with connecting piping. Corporation stops shall have a minimum working pressure rating of 250 psi and shall be as manufactured by Mueller Co., Hays Mfg. Div. of Zurn Industries, or equal.

5.11 Tapping Sleeves and Tapping Saddles

Tapping Sleeves - shall be similar to Mueller Outlet Seal, American Uniseal, Kennedy Square Seal, or Rockwell. All sleeves shall have a minimum of 150 psi working pressure. All sleeves larger than twelve (12)-inches shall be ductile iron. All taps shall be machine drilled--no burned taps will be allowed.

Tapping Saddles - may be used on mains sixteen (16) inches and larger. Tapping saddles shall be manufactured of ductile iron providing a factor of safety of at least 2.5 at a working pressure of 250 psi. Saddles shall be equipped with a standard AWWA C-110-77 flange connection on the branch. Sealing gaskets shall be "O" ring type, high quality molded rubber having approximately seventy Durometer hardness, placed into a groove on the curved surface of the tapping saddles. Straps shall be of alloy steel. The tapping saddle shall be as manufactured by American, U.S. Pipe, Rockwell, or equal. All taps shall be machine cut, no burned taps will be allowed. Saddles may be used for taps one-half the size of the main or less (i.e. 8-inch tapping saddle for use on a 16-inch main).

5.12 Flanged Coupling Adapters (FCA)

The flanged coupling adapters shall be furnished as required and as shown on the Drawings.

All flanged adapters, 12-inches in diameter and smaller, except as shown on the Drawings or directed by the Engineer, shall be locking type flanged coupling adapters.

Pressure and service shall be the same as the connected piping.

Materials shall be cast iron for pipes up to 12-inch diameter and high strength steel for pipes larger than 12-inch diameter.

All internal and external ferrous components and surfaces with the exception of stainless steel and finished or bearing surfaces, shall be shop painted with two coats (10 mils min. dry film thickness) of the manufacturer's premium epoxy for corrosion resistance. Damaged surfaces shall be repaired in accordance with the manufacturer's recommendations.

Bolts and nuts shall be alloy steel, corrosion-resistant and prime coated.

Flanged coupling adapters larger than 12 inches in diameter shall be harnessed by tying the adapter to the nearest pipe joint flange using threaded rods and rod tabs. The threaded rods and rod tabs shall be as shown on the Drawings.

Flanged coupling adapters shall be Style FCA 501 or FC 400, as manufactured by Romac Industries, Inc., Style 912 Omni or 913, as manufactured by Smith-Blair Corporation, or equal. It shall be the Contractors responsibility to verify that the flanged coupling adapters selected are fully compatible with the valves and piping being connected to, including the necessary clearances associated with the installations associated with Details 1516401, 1516402, 1516403, 0264001R, and 0264006. The Contractor shall, at no additional cost to the Owner, modify the connection details as necessary to accommodate the flanged coupling adapter selected. All such adjustments are subject to the Engineers review and approval prior to installation.

5.13 Valve Operators

The valve operator shall be designed to unseat, open or close, and seat the valve under the most adverse operating condition to which the valve will be subjected. The capacity of the operator shall be adequate to drive the valve under the differential pressure and flow specified under each individual valve type subheading. All gearing shall be totally enclosed, sealed and permanently lubricated.

Operator mounting arrangements shall be as shown on the Drawings or as directed by the Engineer. Operators shall be furnished with conservatively sized extension bonnets, stainless steel extension stems, or stainless steel torque tubes, and all required appurtenances as required for a complete installation. The valve operators shall be the full and undivided responsibility of the valve manufacturer in order to ensure complete coordination of the components and to provide unit responsibility.

Manual Operators - Except where noted otherwise herein, all interior valves shall be handwheel or lever operated if the centerline of the valve is 6-feet or less above the floor or platform from which it is to be operated and chain operated if the distance is greater than 6-feet. Nut operators shall have standard 2-inch square AWWA operating nuts and shall be provided where specified or shown on the Drawings. All operators shall turn counter-clockwise to open and shall have the open direction clearly and permanently marked. Valve operators shall be designed so that the force required to operate the handwheel, lever, or chain does not exceed 80 pounds applied at the extremity of handwheel or chainwheel operator. Nut operators shall be designed to produce the required operating torque with a maximum input of 150 ft.-lb. Handwheels on valves 4-inches and larger shall not be less than 12-inches in diameter.

Unless otherwise indicated in the individual valve specification, manual operators shall be of the worm gear, or NRS type.

Quarter turn operators shall be equipped with adjustable AWWA input limit stops and shall require a minimum of 15 turns for 90° or full stem valve travel and shall be equipped with a valve position indicator.

Manual operators shall be rigidly attached to the valve body unless otherwise specified or shown on the Drawings.

Manual operators on direct buried service valves shall be specially constructed for buried service. All valve operators shall be permanently lubricated and watertight under an external water pressure

of 10 psi. Unless otherwise shown or specified, buried service operators shall be furnished with Standard AWWA nut operator and valve box.

5.14 Valve Assemblies

- A. Butterfly Valve Assemblies – [Detail 0264006 and 0222125R] The Contractor shall furnish and install butterfly valve assemblies at the locations shown on the Drawings and as specified herein. Butterfly valve assemblies shall include butterfly valve with operator, manhole, flanged coupling adapter, threaded rods, rod tabs, piping, valve box, thrust collars, concrete, etc., and all appurtenances required for a complete and operable installation.
- B. Gate Valve Assemblies – [Details 0264001R and 0264013] The Contractor shall furnish and install gate valve assemblies at the locations shown on the Drawings and as specified herein. Gate valve assemblies shall include gate valve with operator, manhole, flanged coupling adapter, threaded rods, rod tabs, piping, valve box, thrust collars, concrete, etc., and all appurtenances required for a complete and operable installation.
- C. Flushing Connection Assemblies – [Detail 0260118 and 1516405] The Contractor shall furnish and install flushing connection assemblies at the locations shown on the Drawings and as specified herein. Flushing connection assemblies shall include butterfly valve assembly, all piping as shown on the Drawings, fittings (including main fitting), concrete thrust blocking, stone, concrete slab, manhole frame and cover, orifice plate, piping extension to direct water to discharge point, etc., and all appurtenances required for a complete and operable installation.
- D. Pressure Air Release Valve Assemblies for Potable Water [Detail 1509419R] - The Contractor shall furnish and install pressure air release valve assemblies at the locations shown on the Drawings and as specified herein. Pressure air release valve assemblies shall include pressure air release valve with vacuum check, gate valve, manhole, piping, corporation stop, tapping sleeve/service saddle, fittings, and all appurtenances required for a complete and operable installation. All connecting parts (nipples, bends, etc.) shall be brass.
- E. Fire Hydrant/ARV Assemblies – [Detail 1553000R] The Contractor shall furnish and install fire hydrant/ARV assemblies at the locations directed by the Engineer and as specified herein. Fire hydrant/ARV assemblies shall include fire hydrant, gate valve, valve box, all required piping, fittings (including main fitting), concrete, concrete thrust blocking, mechanical restraint system, stone, etc., and all appurtenances required for a complete and operable installation.
- F. Waterline Drain Assemblies – [Detail 1553000R-2] The Contractor shall furnish and install waterline drain assemblies at the locations shown on the Drawings and as specified herein. Waterline drain assemblies shall include a butterfly valve, manhole, ring and cover, all required piping, fittings (including main fitting), concrete, concrete thrust blocking, threaded rods, rod tabs, stone, etc., and all appurtenances required for a complete and operable installation.
- G. Blank Valve Boxes - The Contractor shall furnish and install blank valve boxes at the locations shown on the Drawings and as specified herein. The blank valve

boxes shall include valve box as specified in Subsection 5.09, and all appurtenances required for a complete and operable installation.

Note: *Furnishing and installing the disinfection points and sampling points are considered incidental to the overall project scope and no additional payment will be made for these items.*

5.14 Payment

For completing the work specified under this Section and shown on the Drawings, the Contractor shall be paid the Unit Prices Bid for the respective Pay Items stipulated below:

Pay Item	Description	Unit
5a	Furnish and Install 30-Inch Butterfly Valve Assemblies	EA
5b	Furnish and Install 30" X 20" Flushing Connection Assemblies	EA
5c	Furnish and Install Pressure Air Release Valve Assembly	EA
5d	Furnish and Install Fire Hydrant/ARV Assemblies	EA
5e	Furnish and Install Water Service Connections	EA
5f	Furnish and Install Waterline Drain Assemblies	EA
5g	Furnish and Install Blank Valve Boxes	EA

END OF SECTION

SECTION 6 - CONCRETE

6.00 General

Class A concrete shall be used for structures requiring relatively precise formwork and accurate placement for reinforcing steel.

Class B concrete shall be used for pipe encasement, concrete arches, and thrust blocks.

Reinforcing steel incorporated with Class A or Class B concrete shall conform to ASTM A615, grade 60.

6.01 Concrete Materials

Cement shall conform to standard specifications of ASTM C150 for Type 1 Portland Cement. Fine aggregate shall be well graded natural sand and coarse aggregate shall be crushed stone or gravel. They shall conform to standard specifications of ASTM C33 for concrete aggregates. Coarse aggregate shall be of designated size 1-inch to No. 4 in accordance with the gradation for that range of sizes in the ASTM specification referred to above. For the purpose of this work, only water from a potable water system or another approved source may be used.

6.02 Ready-Mixed Concrete

Ready-mixed concrete shall be used on this project. The facilities shall comply with Standard Specifications for Ready-Mixed Concrete, ASTM C94. The plant shall certify that materials and strengths meet the requirements stated herein and shall be subject to the approval of the Engineer. Batch deliveries shall not exceed the rated capacity specified for the mixer by the equipment manufacturer.

6.03 Proportioning

The following specifications shall apply:

	Class A Concrete		Class B Concrete
Minimum cement content, sacks per cu. yd. with rounded course aggregate	6.0		5.0
Minimum cement content, sacks per cu. yd. with angular course aggregate	6.5		5.5
Maximum water-cement ratio gal. per sack	5.67		6.8
Slump range	2" to 4"		2" to 4"
Minimum strength - 28 days psi.	3,500		2,500

It shall be noted that the above specifications are minimum rather than design strengths. The mix shall be approximately 1 part cement, 2 parts sand, and 2 parts coarse aggregate for Class A concrete and approximately 1-3-4, respectively, for Class B concrete by weight, with adjustments made to give the best workability while maintaining the specified water-cement ratios. If necessary to obtain proper workability, cement in addition to the minimum specified sacks per cubic yard of concrete shall be added. The Contractor shall submit affidavits from the Ready-Mixed Concrete

supplier certifying that the proposed mix to be supplied has been proven to satisfy the above specifications. Such affidavits shall be subject to the approval of the Engineer and, in lieu of the same, the Contractor shall have test cylinders made of the concrete mix he proposes to use and submit strength test certificates of an approved laboratory prior to placing concrete.

6.04 Formwork

Forms for concrete shall be sound, true and tight, and sufficiently rigid to prevent displacement and sagging between supports. For Class A concrete, no form ties shall be used that will leave metal within 1-inch of the finished surface of the concrete, and lumber used for exposed faces shall be of seasoned stock which has been coated with an approved lubricant.

Forms shall be left in place until the concrete has set sufficiently to permit their removal without danger to the structure. No forms shall be removed until permission to do so has been given by the Engineer. For Class B concrete, where the concrete is not required to be placed against undisturbed material, it shall be contained by sand bags, stones, brick, or lumber to provide the required shape.

6.05 Mixing and Placing Concrete

Concrete shall be mixed in an approved rotating type mixer for at least 1½ minutes after all ingredients are assembled. It shall be deposited immediately after mixing and compacted by use of approved mechanical vibrators supplemented by spading. Forms shall be thoroughly clean and wet before concrete is placed. Forms shall not be removed until the concrete has hardened sufficiently to prevent injury. All exposed finished surfaces shall be kept moist and covered for a period of at least 8 days.

6.06 Nonshrink Grout

Non-shrink grout shall be non-staining and shall be mixed, placed and cured in accordance with the manufacturer's recommendations. Non-shrink grout shall conform to CRD-C 621 and ASTM C 1107, Grade B or C when tested at a maximum fluid consistency of 30 seconds per CDC 611/ASTM C939 at temperature extremes of 45°F and 90°F and an extended working time of 15 minutes. Grout shall have a minimum 28-day strength of 7,000 psi. Non-shrink grout shall be, "Euco N-S" by the Euclid Chemical Company, "Masterflow 713" by Master Builders, "Sikagrout 212" by Sika Corporation.

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6.07 Flowable Fill

Flowable fill shall only be used where shown on the Drawings and shall consist of a lean concrete mix conforming to the following requirements:

Compressive strength (28-day)	80 psi min.
	120 psi max.
Total Cementitious Material (lbs/c.y.)	365
Cement	65
Fly Ash	300
Fine Aggregate (NCDOT, Standard Size 2S)	2635
SSD (lbs/c.y)	
Water (lbs/c.y.)	500

Other mixes resulting in the same compressive strength range may be submitted to the Engineer for approval. Periodic testing by the Engineer for verification of strength, unit weight, slump and air content will be made.

6.08 Pumpable Flowable Fill

Pumpable flowable fill shall be specifically designed by the manufacturer for filling existing pipes that are being abandoned. The cement shall be composed of Portland Cement conforming to ASTM C150, Type I. Water used in the mixing shall be clean and free from injurious amounts of oil, salts, and other deleterious substances and shall not contain more than 1,000 ppm of chlorides. The fine aggregates shall consist of clean, durable particles of natural sand and shall conform to the requirements of ASTM C33. Fly ash or natural pozzolans shall comply with the requirements of ASTM C618, Class C. Chemical admixtures may be used if approved by the Engineer and shall conform to the requirements of ASTM C494. Pumpable flowable fill shall be plant batched and transit mixed. The water amount shall be as required to achieve desired consistency without compromising strength requirements. The minimum compressive strength at 28 days shall be 250 psi. The mix design shall be proportioned to produce a pumpable flowable fill mixture without segregation. Material for one cubic yard, absolute volume, shall be as follows:

Cement	90-100 lbs
Fly Ash	280-360 lbs
Sand	Variable to equal one cubic yard
Water	± 65 gallons

Pumpable flowable fill shall be placed quickly and continuously, shall completely fill the space to be filled and be thoroughly compacted and free of air pockets. The pumpable flowable fill shall be pumped with equipment adequate designed to transfer to the pumpable flowable fill into the pipelines and to the distances indicated on the Drawings.

The Contractor shall submit the mix design from the selected batch plant to the Engineer for review of compliance with these Specifications. The submitted mix design shall consist of the weights of all components of the proposed mix (water and admixtures may be measured by volume) and the certified test results for flow and unit weight.

6.09 Payment

Payment shall be made under this Section only for providing concrete ballast for manholes, concrete arch, concrete encasement, concrete thrust blocking, concrete thrust collars, concrete seepage collars, and flowable fill. Payment for non-shrink grout and pumpable flowable fill shall be included in the Unit Price Bid for other pay items of this Contract. The quantity of concrete to be measured under this Section shall be the number of cubic yards of concrete installed within the limits shown on the Drawings and as directed by the Engineer.

For completing the work specified under this Section and shown on the Drawings, the Contractor shall be paid the Unit Prices Bid for the respective Pay Items stipulated below:

Pay Item	Description	Unit
6	Furnish and Install Concrete Encasement, Concrete Arch, Concrete Ballast, Concrete Thrust Blocking, Concrete Seepage Collars, and Flowable Fill (not pumpable flowable fill or non-shrink grout)	CY

END OF SECTION

SECTION 7 - SURFACE RESTORATION

7.00 General

The Contractor shall furnish all labor, equipment and materials required to perform and complete the restoration of all surfaces in the excavation and work area. The Contractor shall remove all surface materials of whatever nature and shall properly store, guard, and preserve as much material as may be required for restoration of disturbed areas. Topsoil or loam, where encountered, shall be stockpiled separately from other excavated materials to prevent mixing and shall be backfilled to a compacted depth equal to the original condition.

Depressions that occur along the line of excavation, due to the settlement, shall be brought to grade, restoring the surface to its original condition. Where trenches cross or disturb improved or unimproved driveways the ground surface shall be returned to its original condition by the Contractor at his own expense.

7.01 Final Grading and Finished Grade Adjustments

All areas disturbed during the course of the work shall be brought to the original grade of the adjacent ground surfaces. The surface shall be graded smoothly with all stones and debris removed. Where called for in the Drawings, the Contractor shall provide all labor and materials necessary to perform any adjustments in grade needed to obtain minimum cover.

Excess fill material from the project excavation may be used for grade adjustments provided that it is free of rocks, roots or other objectionable materials. The fill material shall be spread evenly and compacted to 85 percent Standard Proctor density in lifts not to exceed one (1) foot in depth. A minimum of 6-inches of good quality topsoil shall be provided for all areas that require surface restoration. Surface restoration shall be as specified under this Section.

In the event that sufficient fill material or topsoil is not available, the Contractor shall supply all such material at its own expense.

7.02 Maintenance and Restoration of Unpaved Surfaces

- A. Grasses and Natural Areas - all grassed and natural areas (including shoulders of roads) disturbed during the course of the work shall be reseeded. The topsoil shall be replaced and raked to an even grade with all stones, and debris removed.

All grass, fertilizer and mulch applications shall be furnished and placed in accordance with the following table:

Item	Application Rate
Kentucky	80 lbs/ac.
Kenblue	10 lbs./ac.
Reliant Hard Fescue	10 lbs./ac.
Korean or Kobe Lespedeza	20 lbs./ac.
Small Grain Straw	2,000 lbs./ac.
Agri Lime	4,000 lbs./ac.

Item	Application Rate
Fertilizer (Choose One)	
12-24-24	400 lbs./ac.
10-20-20	500 lbs./ac.
5-10-10	1,000 lbs./ac.

After seeding, the area shall be rolled and mulched with fine grain straw at the application rate specified. An asphaltic tack coat, or an approved equal treatment shall be used to hold the mulch in place.

Seeded areas that fail to establish a vigorous stand of grass adequate to restrain accelerated erosion shall be reseeded at the Contractor's expense. The Contractor shall not be eligible for Final Payment until a vigorous stand of grass has been established for all disturbed areas.

The season for grass seeding shall be from March 1 to June 1, and from September 1 to December 15. Rye grain shall be added to the seed mixture at a minimum rate of 25 pounds/acre for the period from November through February and millet or sudan shall be added to the seed mixture at a minimum rate of 35 pounds/acre for the period from July through August. In addition, the application rate for emulsified asphalt tack should be specified at about 250 gal./acre. Seeded areas that fail to establish a vigorous stand of grass adequate to restrain erosion shall be promptly reseeded at the Contractor's expense. Seeding at any other time must be requested in writing and approved by the Engineer.

- B. Unpaved Roads and Driveways - on all unpaved roads and driveways, the Contractor shall strip and stockpile the existing crushed stone base. After construction, the Contractor shall restore the crushed stone base to its original condition. Additional crushed stone shall be provided by the Contractor at his expense if a suitable surface cannot be established.
- C. Ditch and Swale Erosion Protection – on all ditches and swales shown on the Drawings to receive erosion protection, shall be lined with an erosion retention blanket as shown on the Drawings and as specified under Section 9. Blanket staples shall be made of wire, 0.091-inch in diameter or greater, "U" shaped with legs 6-inches in length and a 1-inch crown. The area to be covered shall be properly graded and prepared, fertilized, and seeded before the blanket is applied. Unroll blanket so that the netting is on top and the fibers are in contact with the soil. Install in direction of water flow. Staple ends and sides one (1) row alternately spaced down the center or as otherwise recommended by the manufacturer. The staples shall be driven vertically into the ground. Payment for this work shall be included under the Unit Prices Bid in Section 9, Erosion and Sedimentation Controls.
- D. Landscaped Areas – in all areas shown on the Drawings to receive landscaping, the Contractor shall engage the services of a local certified Landscaping Contractor to perform this work. The Landscaping Contractor shall examine the substrate surfaces to receive plantings, and evaluate associated work and conditions under which work will be installed. The Landscaping Contractor shall not proceed until unsatisfactory conditions have been corrected in a manner complying with the Contract Documents and acceptable to the Owner. Starting of work within a particular landscaping area will be construed as the Contractor's acceptance of surface conditions.

Bedding materials may be spread at the option of the Contractor at any time that will not cause a disruption of other construction or site improvement operations, provided that it is thoroughly loosened to its full depth, and brought to a friable, mellow condition immediately prior to the start of planting operations. New bedding material, including mulch, shall be spread over all areas that have been disturbed in any manner during construction or other site improvement operations. Use equipment and conduct all finished grading operations in such a manner as to avoid the lifting of subsoil or other unsuitable material. Do not place mulch or any other cover material until the entire area to be covered has been shaped, trimmed, and cleaned up, and all construction or site improvement work in the area has been completed. Final spot grades and new contours are not indicated on the Drawings in landscaped areas. The finished grade shall be uniformly level or sloping between points for which elevations are given or contours are shown.

7.03 Restoration of Paved Surfaces

Where trenches cross or disturb paved streets, driveways, parking areas, sidewalks and curbs, the Contractor shall remove where necessary and shall replace all portions of pavements, curbs, sidewalks, and driveways destroyed or damaged by his operation. The Contractor shall take all precautions to protect the existing pavement from damage by his equipment during construction. It is the intent of these specifications that the Contractor leave all paved surfaces affected by the construction work equal to or better than the original condition and that all work be done in conformance with approved practice.

The Contractor shall be advised, when concrete sub-base is encountered under existing pavement, it shall be replaced with the flexible base pavement as described herein, unless specifically indicated otherwise on the Drawings.

The Contractor shall not begin final restoration work until the subgrade has been inspected and approved by the agency having authority over the rights-of-way. All pavement and road restoration within State or City owned rights-of-way shall be done as specified herein and as detailed on the Drawings, to the requirements of the North Carolina Department of Transportation Standard Specification, latest edition and to the approval of the North Carolina Department of Transportation – Division of Highways, District Engineer and the City of Durham.

NOTE: Only Prime Contractors or Subcontractors that are ‘pre-qualified’ to work on NCDOT roadway and paving construction projects are permitted to perform the asphalt surface restoration work on NCDOT roadways associated with this project

Depressions that occur along the line of the excavation, due to settlement, shall be brought to grade, restoring the base course to its original condition, prior to final pavement restoration.

Final flexible pavement restoration shall be deferred at least two (2) weeks after the trench area has been backfilled and exposed to traffic, but shall not be left unpaved longer than three (3) weeks, unless otherwise approved in writing by the Engineer.

The existing pavement shall be cut back with a pavement saw and squared off in a neat and workmanlike manner as directed by the Engineer. **The pavement saw shall be Vermeer Model #RTX1250, or equal.** In general, the base for bituminous pavements shall extend at least one (1) foot on undisturbed subgrade.

The following NCDOT technical specification shall be applied in it's entirety, except as specifically modified by the Contract Documents:

The published volume entitled “North Carolina Department of Transportation, Raleigh, Standard

Specifications for Roads and Structures, July 2006” with all current amendments and supplements thereto, is by reference incorporated into and made a part of this Contract as it relates to asphalt replacement. Work associated with pavement removal, milling, repaving, traffic loop detectors, re-striping, etc., included in the Contract Documents for this section of Work are to be done in accordance with the specifications contained in said volume, and current amendments and supplements thereto, under the direction of the Engineer.

The following are the minimum pavement specifications that will be accepted under this Contract:

A. Asphaltic Surfacing with Flexible Base Pavements

Typical Pavement Replacement – Typical pavement replacement [See also DETAIL 0251307R] shall be used for all **City of Durham** streets associated with this project. Section "A" pavement replacement shall be as described herein and as shown on the Drawings. Materials and work shall be as follows:

Base Course - The Contractor shall place an asphalt concrete base course to a compacted depth of the original base (full depth base replacement) or 6-inches, whichever is more. Placement of the asphalt concrete base course shall not exceed 3-inch lifts. No paving shall be done unless the temperature is above 50°F. Rolling shall be done with an approved 10-ton roller. Special care shall be taken that the new base abuts directly against the existing pavement base. Asphalt concrete base course shall conform to NCDOT TYPE B25.0B.

Surface Course - Hot plant mix asphalt concrete surface course conforming to NCDOT TYPE S9.5B. No paving shall be done unless the temperature is above 50°F. Rolling shall be with an approved 10-ton roller. The asphalt concrete surface course shall be a minimum of 2-inches thick after rolling. The wearing surface course shall cover the area as indicated on the Drawings or as otherwise directed by the Engineer. The Contractor shall prepare the existing pavement by milling the pavement to accommodate the thickness of the surface course so abutment to the existing pavement is smooth.

Overlay Course - Hot plant mix asphalt concrete surface course overlay conforming to NCDOT TYPE S9.5B. No paving shall be done unless the temperature is above 50°F. Rolling shall be with an approved 10-ton roller. The asphalt concrete surface course overlay shall be a minimum of 1½ -inches thick after rolling. The wearing surface course overlay shall cover the area as indicated on the Drawings, or as otherwise directed by the Engineer. The Contractor shall prepare the existing pavement by milling the pavement to accommodate the thickness of the wearing surface course overlay so abutment to the existing pavement is smooth.

Typical NCDOT Pavement Replacement – Typical pavement replacement [See also DETAIL 0251307R-1) shall be used for general pavement patching and along NCDOT streets as shown on the Drawings. Typical pavement replacement shall be as described herein and as shown on the Drawings. Materials and work shall be as follows:

Base Course - The Contractor shall place an asphalt concrete base course to a compacted depth of the original base (full depth base replacement) or 11-inches, whichever is more. Placement of the asphalt concrete base course shall not exceed 5½ -inch lifts. No paving shall be done unless the temperature is above 50°F. Rolling shall be done with an approved 10-ton roller. Special care shall be taken that the new base abuts directly against the existing pavement base. Asphalt concrete base course shall conform to NCDOT TYPE B25.0B.

Surface Course - Hot plant mix asphalt concrete surface course conforming to NCDOT TYPE S9.5B. No paving shall be done unless the temperature is above 50°F. Rolling shall be with an approved 10-ton roller. The asphalt concrete surface course shall be a minimum of 2½-inches thick after rolling. The wearing surface course shall cover the area as indicated on the Drawings, or as otherwise directed by the Engineer. The Contractor shall prepare the existing pavement by milling the pavement to accommodate the thickness of the surface course so abutment to the existing pavement is smooth.

Overlay Course - Hot plant mix asphalt concrete surface course overlay conforming to NCDOT TYPE S9.5B. No paving shall be done unless the temperature is above 50°F. Rolling shall be with an approved 10-ton roller. The asphalt concrete surface course overlay shall be a minimum of 1½-inches thick after rolling. The wearing surface course overlay shall cover the area as indicated on the Drawings, or as otherwise directed by the Engineer. The Contractor shall prepare the existing pavement by milling the pavement to accommodate the thickness of the wearing surface course overlay so abutment to the existing pavement is smooth.”

B. Bituminous Macadam and Asphalt Driveways and Asphalt Sidewalks

Special attention shall be given to the restoration of all driveways and sidewalks damaged by the construction work. Work, materials, grading, and finish shall be of a higher quality and standard than the original. See also DETAIL 0251305.

1. Flexible Base

Base - Aggregate base course conforming to NCDOT Item 910-1, (TYPE ABC).

Base thickness - Same as original, 8 inches minimum

Prime coat - Rapid-curing cut asphalt, 0.5 gallons per square yard.

Wearing surface - 1 course, NCDOT TYPE S9.5B, 2-inch minimum thickness after rolling.

2. Rigid Base

Rigid base - Class B concrete

Base thickness - Same as original, 5 inches minimum

Tack coat - Rapid-curing liquid asphalt or quick breathing emulsified asphalt, 0.2 gallons per square yard

Wearing surface - 1 course, NCDOT TYPE S9.5B, 2-inch minimum thickness after rolling.

C. Portland Cement Concrete

Driveways and Sidewalks with Driveway Path - The existing concrete shall be cut-back with a pavement saw to the next joint beyond the Trench Excavation Limits and shall be replaced to the full length (as measured parallel to the roadway). Existing concrete driveways that do not have existing joints shall be cut-back (saw cut) to the Trench Excavation Limit (minimum) or to a width sufficient to

remove concrete damaged by construction or equipment on the property line side of the trench and to the edge of the highway pavement on the highway side of the trench and to the full length (as measured parallel to the highway). No patching shall be allowed.

The existing concrete shall be cut-back and squared off in a neat and workmanlike manner as directed by the Engineer. Concrete and work shall be as follows:

Concrete - Class A

Thickness - 6 inches

Finish - as directed

Reinforcement* - Steel mesh shall be 6 x 6 - W2.0 x W2.0 WWF (6 x 6 - 8 x 8 WWF)

Placement of Reinforcement - as directed

Joint Material - Bituminous premolded filler type; ½-inch thick for expansion joints against all structures surrounded by driveway. One-inch thick where concrete abuts against existing pavements or structures.

Sidewalks - Sidewalks shall be replaced to the next joint beyond the Trench Excavation Limits and to the full width of the sidewalk. Concrete and work as follows:

Concrete - Class A

Thickness - 4 inches

Finish - Floated or broomed to match adjacent concrete

Reinforcement – None Required

Joint Material - Bituminous premolded filler type; ½-inch thick for expansion joints against all structures surrounded by walk. One-inch thick where walks abut against other pavements or structures.

Expansion joint spacing - Approximately 20 feet or as directed by the Engineer

Curbs - Curbs shall be rebuilt to original lines, grade, cross-section and finish. Any curbing that has settled or shifted shall be relaid.

Concrete - Class A

Joints - As directed

Expansion - ½-inch bituminous expansion joint material, matching cross-section, at ends of replacement sections

*Reinforcement required even when original had none.

7.04 Traffic Loop Detectors

Where trenches cross or disturb paved streets containing traffic signal loop detectors, the Contractor shall replace all traffic loops damaged during construction, and installation shall be in accordance with the North Carolina Department of Transportation, Division of Highways Traffic Signal Specifications and the City of Durham Transportation Department, as applicable.

The Contractor shall take all precautions to protect the traffic loops from damage by his equipment during construction. Traffic loops shall be replaced in any pavement that is to be overlaid.

In areas where traffic control measures have been moved or are not currently being employed, the Contractor shall provide a temporary repair to the traffic signal loop detectors or other means approved by the Engineer, for controlling traffic signals, until final pavement and traffic loop restoration is completed.

Traffic signal loop detectors shall be installed utilizing a diamond blade saw providing a clean well-defined 0.250" width cut without damage to adjacent areas. The saw cuts shall be overlapped to provide full depth at all corners. All slots requiring a right angle turn of the wire shall be cut at a diagonal to prevent sharp wire bends, and shall be cut 12" to 18" from the corners of the loop.

The loop lead-in wires shall be carried through the pavement by a 1-inch drilled hole approximately 3 to 6-inches from the edge of pavement. Where curbing is involved the loop lead-in wires shall be carried through by a 1-inch drilled hole.

Prior to installation of the wire, the saw cuts shall be checked for the presence of jagged edges or protrusions and cleaned and dried removing all cutting dust, grit, oil, moisture or other contaminants in the saw cut.

The sealer shall be of the flexible imbedding type and used in accordance with the manufacturer's instructions. Prior to placing the sealer, the loop lead-in wire shall be checked for continuity and resistance and the integrity of the insulation shall be checked by applying a megger between each end of the loop lead-in and the nearest reliable electrical ground. The megger reading shall be in excess of 10-M-OHMS under all conditions.

All traffic signal loop detectors shall be subject to inspection by the N.C. Dept. of Transportation and the City of Durham, prior to acceptance.

7.05 Pavement Markings and Striping

Where trenches cross or disturb paved streets containing pavement markings, the Contractor shall replace all pavement markings and striping removed or damaged during construction. Pavement markings and striping shall be replaced to their original configuration immediately following final pavement restoration, unless otherwise approved by the Engineer. Pavement markings and striping shall be replaced in accordance with the Specifications and requirements of the North Carolina Department of Transportation District Engineer and the City of Durham, as they apply to the authority having jurisdiction over the roadway segment involved.

Pavement markings and striping shall be replaced on any pavement that is to be overlaid.

All pavement markings and striping shall be subject to inspection and approval by the North Carolina Department of Transportation and the City of Durham prior to acceptance.

In areas where traffic control measures have been moved or are not currently being employed, the Contractor shall provide temporary regulatory and warning pavement markings or other means approved by the Engineer, for controlling traffic, until final pavement restoration is completed.

7.06 Removal and Replacement of Manhole Ring and Covers and Valve Boxes and Lids

Where pavement removal or the Contractor's pavement process requires that an existing manhole ring and cover, or valve box and lid, regardless of the owner of the utility, must be removed the Contractor shall remove and replace these items as specified herein. The reinstallation shall produce a smooth and flush installation to the adjacent pavement surface. All manhole ring and cover or valve box and lid replacements shall be subject to inspection by NCDOT and the City of Durham, prior to acceptance. Payment for this work shall be included under Pay Item 7e.

7.07 Asphalt Milling

The removal of the existing asphalt to the limits shown on the Drawings, through a milling process, shall be performed in accordance with NCDOT Section 607 – Milling Asphalt Pavement Standard Specifications for Roads and Structures, July 2006.”

7.08 Payment

The quantities to be measured under this Section shall be the actual units of each item installed under Section 7, as specified herein, and as described in Section 00301 – Measurement and Payment.

For completing the work specified under this Section and shown on the Drawings, the Contractor shall be paid the Unit Prices Bid for the respective Pay Items stipulated below:

Pay Item	Description	Unit
7a	Maintenance and Restoration of Unpaved Surfaces	LS
7b	Restoration of Sub-Base (Type ABC)	TON
7c	Restoration of Asphalt Concrete Base Course (Type B25.0B)	TON
7d	Restoration of Asphalt Concrete Surface Pavement (Type S9.5B)	TON
7e	Miscellaneous Surface Restoration (not included in other Pay Items)	LS
7f	Asphalt Binder for Plant Mix PG64-22	TON
7g	Owner Asphalt Price Adjustment	LS
7h	Milling Asphalt Pavement, 1½-Inch Depth	SY

END OF SECTION

SECTION 8 - ADDITIONAL EXCAVATION AND CRUSHED STONE BEDDING

8.00 General

Under this Section, the Contractor shall do all additional excavation specifically requested by the Engineer and shall furnish all labor, equipment, and materials for the placement and compaction of additional crushed stone bedding as herein specified or as directed by the Engineer.

Payment for stone bedding for the pipe (Type B bedding as shown on the Drawings) shall be included for payment under Section 4. Payment for stone bedding for manholes shown on the Drawings shall be included for payment under the Unit Price Bid for other Pay Items of this Contract. No payment for these materials will be made under this Section.

Payment shall be made under this Section only for stone bedding used to replace unsatisfactory earth soils removed as additional excavation or for stone bedding requested by the Engineer and not shown on the Drawings or specified under other sections.

Additional excavation in any trench or other excavation is defined as excavation to a depth greater than 6 inches below the depths shown on the Drawings.

This Section is intended to provide for the removal of unsatisfactory subgrade materials for pipe and manholes. Backfill for additional excavation shall be crushed stone bedding as described herein.

Any and all work done under this Section shall be at the direction of the Engineer.

8.01 Excavation Work

The Contractor shall do such additional excavating work as the Engineer shall direct. Such excavations shall be subject to the same conditions and requirements as specified for trench excavation. Excavation work shall include soil (dirt) only. Additional excavated rock shall be a negotiated Extra Work Item.

8.02 Bedding Material and Placement

Bedding material shall be No. 67 stone meeting the requirements of the North Carolina Department of Transportation and furnished from an approved source. When tested according to the ASTM D422, the bedding material shall conform to the following gradation:

<u>Sieve</u>	<u>Percent Passing (by weight)</u>
1"	100
¾"	90-100
⅜"	20-55
No. 4	0-10
No. 8	0-5
No. 200	0-0.6

Stone bedding shall be spread in layers and shall be compacted in place to the proper grade to provide a solid bed for the pipe or structures for the full width of the excavation.

8.03 Payment

For completing the work specified under this Section, the Contractor shall be paid unit prices bid for the respective Pay Items stipulated below:

Pay Item	Description	Unit
8a	Perform Additional Excavation	CY
8b	Furnish and Place Additional Compacted Stone Bedding	CY

END OF SECTION

SECTION 9 - EROSION AND SEDIMENTATION CONTROLS

9.00 General

It is the intent of this Specification that the Contractor conducts the construction activities in such a manner that erosion of disturbed areas and off site sedimentation be absolutely minimized.

All work under this Contract shall be done in conformance with and subject to the limitations of the North Carolina Rules and Regulations for Erosion and Sedimentation Control as adopted by the North Carolina Sedimentation Control Commission (15 NCAC, Chapter 4) with the following exception:

- The following excerpts are from the regulations:
 - 1) ...slopes left exposed will, within 15 working days of completion of any phase of grading, be planted or otherwise provided with ground cover, devices, or structures sufficient to restrain erosion...(Section 6b)
 - 2) ...a ground cover sufficient to restrain erosion must be planted or otherwise provided within 15 working days on that portion of the tract (disturbed area) upon which further active construction is not being undertaken...(Section 6c)
- For this project and per the NCDENR DLQ permit approval and letter modification, slopes and ground cover will be **restored within 5 working days** (rather than 15 mentioned in Section 6b and 6c).

Erosion and sedimentation controls applicable to this project shall include but not be limited to the following items of work:

1. Temporary diversion ditches shall be constructed adjacent to disturbed areas as shown on the Drawings to collect surface runoff from disturbed areas and direct the runoff to the temporary sediment basins. All such temporary diversion ditches shall terminate with temporary sediment basins as shown on the Drawings.
2. Erect silt fence at locations shown on the Drawings and at other locations directed by the Engineer.
3. Provide temporary or permanent ground cover adequate to restrain erosion on erodible slopes or other areas that will be left unworked for periods exceeding 30 calendar days.
4. The Contractor shall be responsible for developing suitable erosion control measures for all off site waste and borrow areas to the satisfaction of the Engineer. The Contractor is also advised that off site borrow areas more than one acre in size shall comply with all provisions of N.C. Mining Act.
5. Construct 100 foot gravel buffers at entrances from public roads to all unpaved access roads used by the Contractor. The Contractor shall maintain the gravel buffers for the Contract duration or until final pavement, where applicable, has been constructed.
6. Provide other types of erosion and sedimentation control devices at the locations shown on the Drawings, or as specified herein.

9.01 Silt Fence

Silt fences shall be erected as shown on the Drawings and specified herein. The silt fences shall be erected and maintained to the satisfaction of the Engineer until a vegetative ground cover has been established. Proper maintenance shall include, but not be limited to, the periodic removal of trapped sediments and replacement of the filter fabric should it deteriorate to a point that in the opinion of the Engineer it will no longer provide an adequate runoff filter. Replacement of the filter fabric, if required by the Engineer, will be at the Contractor's expense.

Posts: Posts for silt fence shall be steel and shall have the following properties:

ASTM Designation:	ASTM 702
Length:	5-Feet Long (T-Type)
Weight:	1.25#/Foot (min.)
Area of Anchor Plate:	14 Sq. In.

Note: Five (T) Fasteners shall be furnished with each post.

Wire Fabric: Wire Fabric for the silt fence shall have the following properties:

Wire Fabric Designation:	832-12-10-12.5 Class 1
ASTM Designation:	ASTM A116
Width:	32"
Number of Line Wires:	8
Stay Wire Spacing:	12"
Line and Stay Wires:	12.5 Ga.
Top and Bottom Wires:	10 Ga.
Wire Coating:	ASTM Class 1 Zinc Coating

Filter Fabric: Filter Fabric for the silt fence shall have the following minimum properties:

	Value	Test Method
Weight	2.8 oz/yd ²	ASTM D3776
Grab Tensile Strength	110 lbs	ASTM D4632
Grab Elongation	15%	ASTM D4632
Trapezoid Tear Strength	50 lbs	ASTM D4533
Mullen Burst Strength	270 lbs	ASTM D3786
Puncture Strength	60 lbs	ASTM D4833
Retained Strength (500 hrs. accelerated UV exposure)	80%	ASTM D4355
Filtration Efficiency	75%	VTM-51
Flow Rate	0.30 gal/ft ² /min	VTM-51
Height	36 inches	

Filter fabric shall be a woven geotextile made specifically for sediment control. Filter fabric shall not rot when buried and shall resist attack from soil chemicals, alkalis and acids in the PH range from 2 to 13, and shall resist damage due to prolonged ultraviolet exposure. Filter fabric shall be Type FX-11, as manufactured by Carthage Mills, Style GTF-180, as manufactured by LINQ Industrial Fabrics, Amoco 2130 as manufactured by Amoco Fabrics & Fibers, Co., or equal.

After the completion of the project, the Contractor shall remove all silt fence in areas where a good stand of grass has been established and erosion is no longer evident. Removal of the remainder of the silt fence shall occur as other areas are established. Removal of silt fence shall be permitted only with the prior approval of the Engineer.

The Engineer may direct the Contractor to erect and maintain silt fence at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.02 Synthetic Geotextile Filter Fabric (Correlates with TYPE II Geotextile on Drawings)

The filter fabric shall be a woven synthetic cloth such as Mirafi 700X as manufactured by Mirafi, Inc., or equal.

During all periods of shipment and storage, the fabric shall be wrapped in heavy-duty protective covering which will protect the fabric from sunlight, mud, dust, dirt, and debris. The fabric shall not be exposed to temperatures greater than 140°F. After the protective covering has been removed, the fabric shall not be left uncovered under any circumstances for longer than three (3) days.

The filter fabric shall have the following mechanical properties:

Geotextile Construction	Woven
Mass per Unit Area (Unit Weight), ASTM D52611 (oz/yd ²)	5.6
Ultraviolet Resistance, (500 hrs.) ASTM D4355, Average % Strength Retention	90
Grab Tensile Strength (lbs.) ASTM D4632	390 ⁽¹⁾ X250 ⁽²⁾ 370X250
Grab Tensile Elongation(%) ASTM D4632	20 MAX
Wide Width Tensile Strength, (lbs./in.) ASTM D4595	N/A
Burst Strength, ASTM D3786, Diaphragm Method (psi)	480
Apparent Opening Size (AOS), (mm), ASTM D4751	0.21
Permittivity at 50 mm constant head (sec ⁻¹), ASTM D4491	N/A
Puncture Resistance, ASTM D4833 (lb)	135

* **MINIMUM AVERAGE ROLL VALUE (MARV)**

(1) Warp Direction

(2) Fill Direction

Each roll of fabric will be visually inspected by the Engineer or his representative. The Engineer reserves the right to sample and test at any time and reject, if necessary, any material based on visual inspection or verification tests.

Filter fabric shall be installed in such a manner that all splice joints are provided with a minimum overlap of 12-inches. Field splices of filter fabric shall be anchored with anchor pins to insure that required overlap is maintained. At the time of installation, the fabric will be rejected if it has defects, rips, holes, flaws, deteriorations, or damage incurred during manufacture, transportation, or storage.

Backfilling operations shall be done so as to prevent damage to the filter fabric. Damaged sections of filter fabric shall be replaced at no cost to the Owner.

Installation of filter fabric shall be done in a manner so as not to rupture, tear, puncture, cut, or abrade the materials. Where such damage occurs, it shall be required with a patch which extends at least 18-inches beyond the edge of the damaged area. Filter fabric shall be protected by an opaque, waterproof, and oil proof covering during transportation and storage. The fabric shall be protected from exposure to sunlight. The maximum cumulative time of exposure to sunlight during transportation, storage, handling, and installation shall not exceed 3 days.

9.03 Temporary Sediment Basins

Temporary sediment basins shall be constructed as shown on the Drawings and as specified herein. The temporary sediment basins shall be constructed and maintained to the satisfaction of the Engineer until a vegetative ground cover has been established. Proper maintenance will include, but not be limited to, the periodic removal of trapped sediments. The cost of the temporary sediment basins shall include the excavation, grading, diversion ditches, stone for erosion control, washed stone, synthetic geotextile filter fabrics, etc. and all maintenance activities required.

The Engineer may direct the Contractor to erect and maintain temporary sediment basins at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.04 Stone Check Dams

Stone check dams shall be constructed as shown on the Drawings and as specified herein. The stone check dams shall be constructed and maintained to the satisfaction of the Engineer until a vegetative ground cover has been established. Proper maintenance will include, but not be limited to, the periodic removal of trapped sediments. The cost of the stone check dams shall include the excavation, grading, stone for erosion control or rip rap, washed stone, etc., and all maintenance activities required.

The Engineer may direct the Contractor to erect and maintain stone check dams at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.05 Stone Filters

Stone filters shall be constructed as shown on the Drawings and as specified herein. The stone filters shall be constructed and maintained to the satisfaction of the Engineer until a vegetative ground cover has been established. Proper maintenance will include, but not be limited to, the periodic removal of trapped sediments. The cost of the stone filters shall include the excavation, grading, washed stone, mesh hardware cloth, steel post, etc., and all maintenance activities required.

The Engineer may direct the Contractor to erect and maintain stone filters at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.06 Stone Filter Inlet Protection

Stone filter inlet protection shall be constructed as shown on the Drawings and as specified herein. The stone filter inlet protection shall be constructed and maintained to the satisfaction of the Engineer until a vegetative ground cover has been established. Proper maintenance will include, but not be limited to, the periodic removal of trapped sediments. The cost of the stone filter inlet protection shall include the excavation, grading, washed stone, mesh hardware cloth, steel post, etc., and all maintenance activities required.

The Engineer may direct the Contractor to erect and maintain stone filter inlet protection at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.07 Rock Dams

Rock dams shall be constructed as shown on the Drawings and as specified herein. The rock dams shall be constructed and maintained to the satisfaction of the Engineer until a vegetative ground cover has been established. Proper maintenance will include, but not be limited to, the periodic removal of trapped sediments. The cost of the rock dams shall include the excavation, grading, stone for erosion control or rip rap, washed stone, etc., and all maintenance activities required.

The structural stone shall be placed in the stream below the construction site with approximately 2:1 side slopes, and shall be faced on the upstream side with sediment control stone approximately 12 inches thick. The rock dam structure shall have a 1.5 foot minimum height and a 3 foot maximum height and shall not be higher than 1 foot above normal flow of the stream.

The Engineer may direct the Contractor to erect and maintain rock dams at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.08 Rip Rap

The Contractor shall place rip rap as shown on the Drawings. The stone for rip rap shall consist of field stone or rough unhewn quarry stone. The stone shall be sound, tough, dense, and resistant to the action of air and water. The rip rap shall be Class I as specified in the NCDOT Standard Specifications. The stone shall vary in weight from 5 to 200 pounds. At least 30 percent of the total weight of the rip rap shall be in individual pieces weighing a minimum of 60 pounds each. Not more than 10 percent of the total weight of the rip rap shall be in individual pieces weighing less than 15 pounds each.

During placing, the stone shall be graded so that the smaller stones are uniformly distributed throughout the mass. The Contractor may place the stone by mechanical methods, augmented by hand placing where necessary or ordered by the Engineer. The placed rip rap shall form a properly graded, dense, neat layer of stone. The placed rip rap shall have a minimum depth of 18-inches and shall have a layer of synthetic geotextile filter fabric as specified in Section 9.02 placed between the soil and the stone.

The Engineer may direct the Contractor to place rip rap at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.09 Stone for Erosion Control

The Contractor shall place Stone for Erosion Control as shown on the Drawings, as specified herein and as specified in Section 1042 of the NCDOT Standard Specifications. The Stone for Erosion Control shall be Class (A) or Class (B), as shown on the Drawings.

Stone for Erosion Control shall be dumped and placed in such a manner that the larger rock fragments are uniformly distributed throughout the rock mass and the smaller fragments fill the voids between the larger fragments. Rearranging of individual stones by equipment or by hand shall only be required to the extent necessary to secure the results specified above and to protect structures from damage when rock material is placed against the structures. The placed stone shall be the

minimum thickness shown on the Drawings and shall have a layer of synthetic geotextile filter fabric as specified in Section 9.02 placed between the soil and the stone.

The Engineer may direct the Contractor to place Stone for Erosion Control at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.10 Temporary Level Spreader

Temporary level spreaders shall be constructed as shown on the Drawings and as specified herein. The temporary level spreaders shall be constructed and maintained to the satisfaction of the Engineer until a vegetative ground cover has been established. Proper maintenance shall include, but not be limited to, the periodic replacement of the synthetic lining. The cost of the temporary level spreaders shall include the excavation, grading, diversion ditches, synthetic geotextile filter fabric, etc., and all maintenance activities required.

The Engineer may direct the Contractor to furnish and install temporary level spreaders at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.11 Temporary Stream Crossing

Temporary stream crossings shall be constructed as shown on the Drawings and as specified herein. The temporary stream crossings shall be constructed and maintained to the satisfaction of the Engineer until a vegetative ground cover has been established. Proper maintenance shall include, but not be limited to, the periodic replacement of riprap. The cost of the temporary stream crossing shall include the excavation, grading, Class A riprap, synthetic geotextile filter fabric, etc., and all maintenance activities required.

The Engineer may direct the Contractor to furnish and install temporary stream crossings at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.12 Live Stake Plantings

The Contractor shall furnish and install live stakes on exposed stream banks to bankfull elevation of the designed stream. The stakes are to be installed at a density of 2 to 4 live stakes per square yard. The species to be used for live staking are listed below:

Recommended Species

Salix nigra (Black Willow)

Cornus amomum (Silky Dogwood)

Cornus sericia (Red Osier Dogwood)

Populus deltoids (Eastern Cottonwood)

Sambucus canadensis (American Elderberry)

Viburnum dentatum (Arrowwood Viburnum)

The species composition of live-stakes shall include approximately 25-40% each of *Salix nigra* and *Cornus amomum* species (at least 50 % of the total number live stakes is to be comprised of these two species). The remaining species shall include a mixture of the most readily available species listed in the Species List. The Engineer reserves the right to reject any "stakes" that do not meet the above mentioned criteria. The Contractor shall replace rejected work at no additional cost to the Owner.

Live stakes are to be dormant (cut fall or winter), and either gathered locally or purchased from a

commercial supplier.

Collection/Preparation

- Stakes must be freshly cut with side branches removed, but with bark in tact (ensure that the bark is not stripped during the cutting, preparation, or installation of the stake).
- Cuttings are to be collected using a saw (not an ax).
- One end must be cut at an angle for insertion into the soil, and the other must be cut square for tamping.
- Cuttings must be kept fresh and moist prior to installation.
- Cuttings must be prepared from 0.5 to 2-inch diameter stock and approximately 2 to 3 feet in length.

Installation

- Install stakes the same day they are prepared.
- Start the installation nearest to the stream and work up the bank/floodplain.
- Cuttings must be installed right side up with the buds pointing upward.
- Cuttings should be tamped into the ground at right angles to the slope and angled downstream.
- They are to be tamped into the ground for approximately 4/5 of their length.
- Cuttings that split or become “mushroomed” must be replaced.
- Stakes are to be spaced at such that there are 2 to 4 stakes per square yard.
- Stakes should be installed in a random configuration to prevent gullies and promote a more natural effect in the re-vegetated area.

The quantity of Live Staking to be paid will be the actual number of square yards measured along the surface of the ground that has been completed and accepted.

The quantity of Live Stakes, measured and provided above, will be paid for the contract unit price per square yard for “Live Staking”. The price and payment will be considered full compensation for all work covered by this Section, including but not limited to furnishing / harvesting, installing and maintaining.

The Engineer may direct the Contractor to place live stake plantings at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.13 Temporary Construction Entrances

Temporary construction entrances shall be constructed as shown on the Drawings and as specified herein. The temporary construction entrances shall be constructed and maintained to the satisfaction of the Engineer until the project is completed and final clean-up of the project is being finished. Proper maintenance shall include, but not be limited to, the periodic replacement of the #5 washed stone or railroad ballast, and cleaning up of stone scattered away from the temporary construction entrance by the use of the entrance. The cost of the temporary construction entrances shall include the excavation, grading, placement of stone, removal of the stone, and all maintenance activities required.

The Engineer may direct the Contractor to furnish and install temporary construction entrances at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.14 Straw Bale Fence

The Contractor shall place bales of straw in such a pattern to create a straw bale fence, as shown on the Drawings. The straw bales shall consist full bales of straw that are still "twined together".

During placing, the bales of straw shall be placed so that the any soil erosion or running water is collected or passes through the straw bale fence. The placed straw bale fence shall have a sufficient weight or tie-downs to prevent the straw bale fence from being dislodged during heavy rain events.

The Engineer may direct the Contractor to place straw bale fences at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.15 Temporary Ground Cover

Provide temporary or permanent ground cover adequate to restrain erosion on erodible slopes or other areas that will be left unworked for periods exceeding 15 calendar days. No specific payment will be made for temporary ground cover. Cost associated with this provision shall be deemed as included in the Lump Sum payment for Maintenance and Restoration of Unpaved Surface.

9.16 Straw with Net Temporary Ditch Lining (Correlates with TYPE I shown on Drawings)

The Contractor shall place straw with net temporary ditch lining in ditches as shown on the Drawings. The blanket shall consist of clean wheat straw from agricultural crops made into a knitted straw blanket that is machine assembled. The straw shall be evenly distributed throughout the blanket. The blanket shall be covered with a photodegradable synthetic mesh attached to the straw with degradable thread.

The Contractor shall place the straw with net temporary liner immediately after the ditch has been properly graded and prepared, fertilized, and seeded. The netting shall be on top with the straw in contact with the soil. The blanket shall be unrolled in the ditch in the direction of the flow of water. The end of the upstream blanket shall overlap the buried end of the downstream blanket by a minimum of 4 inches. The blanket shall be stapled as per manufacturer's specifications.

Straw with net shall be North American Green S150, Erosion Control Systems High Velocity Straw Mat (net on one side), Contech Ero-Mat, or equal. Straw with net shall be capable of withstanding a channel shear stress of 1.60 psf.

The Contractor shall immediately repair or replace any section of straw with net ditch lining which is not functioning properly or has been damaged in any way until a stable growth of grass has been established.

The Engineer may direct the Contractor to place straw with net ditch liner at other locations not shown on Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.17 Curled Wood Mat Temporary Ditch Lining

The Contractor shall place curled wood mat temporary ditch lining in ditches as shown on the Drawings. The mat shall consist of machine-produced mat of curled wood excelsior or coconut fibers with a majority of the fibers 6 inches or longer with consistent thickness and the fibers evenly distributed over the entire area of the blanket. The top of the mat shall be covered with a biodegradable synthetic mesh. The mesh shall be attached to the curled wood excelsior with photodegradable synthetic yarn.

The Contractor shall place the curled wood mat temporary liner immediately after the ditch has been properly graded and prepared, fertilized, and seeded. The mesh shall be on top with the wood fibers in contact with the soil. The mat shall be unrolled in the ditch in the direction of the flow of water. The end of the upstream blanket shall overlap the buried end of the downstream blanket by a minimum of 4 inches. The mat shall be stapled as per manufacturer's specifications.

Curled wood mat shall be Erosion Control Systems Excelsior High Impact, North American Green C125, Contech Excelsior Blanket, or equal. Curled wood mat shall be capable of withstanding a channel shear stress of 2.0 psf.

The Contractor shall immediately repair or replace any section of mat which is not functioning properly or has been damaged in any way until a stable growth of grass has been established.

The Engineer may direct the Contractor to place curled wood mat ditch liner at other locations not shown on Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.18 Synthetic Mat Permanent Ditch Lining

The Contractor shall place synthetic mat permanent ditch lining in ditches as shown on the Drawings. The mat shall consist of entangled nylon, polypropylene or polyester monofilaments mechanically joined at their intersections forming a three dimensional structure. The mat shall be crush-resistant, pliable, water-permeable, and highly resistant to chemical and environmental degradation.

The Contractor shall place the synthetic mat immediately after the ditch has been properly graded and prepared, fertilized and seeded. The mat shall be unrolled in the direction of the flow of water. The upstream end of each section shall be secured in an anchor trench at least twelve inches deep. The upstream end of mat shall overlap the downstream section by a minimum of three feet, with the upstream length on top. The mat shall be staked as per manufacturer's specifications.

Synthetic mat shall be Enkamat 7020, Synthetic Industries Landlock Erosion Mat TRM 1060, Miramat 1800, or equal. Synthetic mat shall be capable of withstanding a channel shear stress of 5.8 psf.

The Contractor shall immediately repair or replace any section of mat which is not functioning properly or has been damaged in any way until a stable growth of grass has been established.

The Engineer may direct the Contractor to place synthetic mat ditch liner at other locations not shown on Drawings. Payment for this work shall be paid at the Unit Price Bid for this item.

9.19 Curb Inlet Sediment Control Devices

The Contractor shall provide adequate means to prevent any sediment from entering storm drains (curb inlet sediment control) during construction. Excavated materials shall be placed upstream of any trench or other excavation to prevent sedimentation of offsite areas. All streets and driveways shall be scraped and swept as necessary (minimum daily) to prevent the accumulation of dirt and

debris. **[Note: In travel lanes of roadways where traffic may be able to come in contact with the curb inlet sediment control the Contractor shall install curb inlet sediment control utilizing a "traffic safe" method such as Grate-Gator® as manufactured by AFC Environmental, or equal.]**

Curb inlet sediment control devices shall be constructed as shown on the Drawings and as specified herein. The curb inlet sediment control devices shall be constructed and maintained to the satisfaction of the Engineer until all construction activities are completed and there is no potential for sediment entering the curb inlets as a result of the Contractors construction. Proper maintenance shall include, but not be limited to, the periodic replacement of the curb inlet sediment control device. The cost of the curb inlet sediment control devices shall include all sediment removal, cleaning, replacement and maintenance activities required.

The Engineer may direct the Contractor to furnish and install curb inlet sediment control devices at other locations not shown on the Drawings. Payment for this work shall be at the Unit Price Bid for this item.

9.20 Establishment of Erosion Control Devices

Due to the nature of the work required by this Contract, it is anticipated that the location and nature of the erosion control devices will be adjusted on several occasions to reflect the current phase of construction. **Erosion control devices shall be established prior to or concurrent with the clearing operations in a given area.** Where such practice is not feasible, the erosion control device(s) shall be established immediately following completion of the clearing operation.

The construction schedule adopted by the Contractor will impact the placement and need for specific devices required for the control of erosion. The Contractor shall develop and implement such additional techniques as may be required to minimize erosion and off site sedimentation. The location and extent of erosion control devices shall be revised at each phase of construction that results in a change in either the quantity or direction of surface runoff from construction areas. All deviations from the control provisions shown on the Drawings shall have the prior approval of the Engineer.

9.21 Maintenance of Erosion Control Devices

The Contractor shall furnish the labor, materials and equipment required for routine maintenance of all erosion control devices. Maintenance shall be scheduled as required for a particular device to maintain the removal efficiency and intent of the device. Maintenance shall include but not be limited to 1) the removal and satisfactory disposal of trapped sediments from basins or silt barriers and 2) replacement of filter fabrics used for silt fences. Sediments removed from erosion control devices shall be disposed of in locations that will not result in off site sedimentation as approved by the Engineer.

9.22 Tree Protection Fencing

The Contractor shall furnish and install steel tree protection fencing, posts, etc., where shown on the Drawings and in compliance with these Specifications. Tree protection fencing shall be of the chain link type, 6-foot high fabric. All components are to be hot dipped galvanized, coating to be 1.8 ounces per square foot of surface. Alternate coatings which employ a zinc coating of less than 1.8 ounces per square foot are not acceptable. The fabric shall be 9 gauge aluminum coated wire woven in a 2-inch diamond mesh conforming to ASTM A491. Minimum weight of coating shall be 0.40 ounce per square foot of wire surface. The coated wire shall have a minimum tensile strength of 80,000 lbs. per square inch. Fence shall be stretched tight and securely fastened to posts at points spaced 12-inches apart maximum. Posts shall be galvanized standard weight pipe conforming to the

requirements of ASTM F1083. Line posts shall be Schedule 40, 2³/₈-inch O.D. galvanized pipe with minimum bending strength of 201 pounds under a 6-foot cantilever load. Line posts shall be spaced at a maximum 10-foot O.C. Top and bottom tension wire shall be No. 7 gauge aluminum coated steel wire. Fabric shall be securely tied to tension wire at intervals not to exceed 24-inches. Wire ties shall be preformed 0.148-inch diameter (9 gauge) aluminum. Flat band type ties shall be 1100-H18 or 3003-H14, .064-inch thick by 1/2-inch wide. Hog rings for attaching tension wire to fabric shall be 0.105-inch diameter, Alloy 1100-H14.

All line posts shall be spaced equidistant in the fence line on a maximum of 10-foot centers. Posts shall be set plumb in concrete bases as detailed on Drawings. The top of the posts shall be brought to a smooth grade line. The wire fence shall be set accurately to line and grade and shall be plumb.

Post holes shall be in true alignment and of sufficient size to provide a permanent foundation of concrete. Holes shall be well centered on the posts. A minimum diameter of 12-inches shall be required for all posts. Post foundations shall be carefully rodded or tamped into place. The top of concrete shall extend 2-inches above ground line and shall be neatly troweled and leveled up from edges to the posts so as to have a pitch outward in all directions. No materials shall be installed on the posts, nor shall any load be applied to the posts within 3-days after the individual post foundation is completed. All concrete shall be Class "B" in conformance with Section 6.

9.23 Payment

The quantity of erosion and sedimentation control devices to be included for payment under this Section shall be the total unit quantity of each type erected or placed during the course of construction. All other work required to control erosion and maintain devices shall be considered incidental to the project and no specific payment will be made.

Rip Rap and Stone for Erosion Control not included in other pay items shall be paid for at the unit price listed below when placed at the specific depth.

For completing the work specified under this Section and shown on the Drawings, the Contractor shall be paid the Unit Prices Bid for the respective Pay Items stipulated below:

Pay Item	Description	Unit
9a	Erect and Maintain Silt Fence	LF
9c	Construct and Maintain Stone Check Dam	EA
9d	Construct and Maintain Stone Filters	EA
9e	Construct and Maintain Stone Filter Inlet Protection	EA
9g	Furnish and Place Rip Rap	TON
9i	Furnish and Place Synthetic Geotextile Filter Fabric	SY
9j	Furnish and Place Straw with Net Temporary Ditch Lining	SY
9p	Furnish and Install Temporary Construction Entrances	EA
9q	Furnish and Place Straw Bale Fence	LF
9r	Furnish and Place Curb Inlet Sediment Control	EA
9s	Furnish and Place Tree Protection Fencing	LF

END OF SECTION

SECTION 10 - BORED AND JACKED HIGHWAY, RAILROAD, AND CREEK CROSSINGS

10.00 General

The Contractor shall furnish all labor, equipment and materials and perform all operations in connection with the **GUARANTEED COMPLETE** installation of a bored and jacked casing, as specified herein and as shown on the Drawings. The Contractor shall be responsible for the structural design of the casing pipe and coordinating work in this Section with related work specified elsewhere in this Contract so as to provide all hardware and accessories for a complete installation.

The highway/railroad/creek crossing(s) shall comply with standards set forth in the "Policies and Procedures for Accommodating Utilities on Highway Rights of Way" from the N.C. Department of Transportation, Division of Highways (Latest Revision), "Standard Specifications for Pipelines Conveying Flammable and Non-Flammable Substances" from the American Railway Engineering Association, and the "Standard Specifications for Highway Bridges" from AASHTO (Latest Revision), Form NCR 103 – Specific Requirements of North Carolina Railroad Company For Work On Its Right Of Way, and Form NCR 102 – Specifications for Pipeline Occupancy of North Carolina Railroad Property.

All parts of the materials furnished shall be amply designed, manufactured and constructed for the maximum stresses occurring during fabrication and erection. All materials shall be new and both workmanship and materials shall; be of the very best quality, entirely suitable for the service to which they will be subjected and shall conform to all applicable sections of these Specifications. Manufacturer's designs shall accommodate all the requirements of these Specifications.

The Contractor shall be responsible for the final structural design of the casing pipe. The Contractor shall submit certification that the casing pipe has been designed to resist all loads implied and reasonably anticipated plus other loadings stipulated in the N.C. Building Code in strict conformance with Section 16 of the Standard Specifications for Highway Bridges adopted by AASHTO, latest revision. ***[NOTE: THE CERTIFICATION SHALL ALSO STATE THAT THE DESIGN OF THE CASING PIPE HAS BEEN PERFORMED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. ALL CASINGS WITHIN NCDOT RIGHTS-OF-WAY SHALL REQUIRE DESIGN CERTIFICATIONS TO BE SENT BY THE CONTRACTOR DIRECTLY TO THE NCDOT LOCAL DIVISION OFFICE FOR ALL NCDOT ROADWAY CROSSINGS.]***

10.01 Submittals

The Contractor shall submit Shop Drawings, Material Certification, design certifications and other information as specified for all materials in this Section in accordance with Section 1, GENERAL. Shop Drawings shall also include complete erection, installation, and adjustment instructions and recommendations.

10.02 Manufacturers

The materials covered by these Specifications are intended to be standard materials of proven reliability and as manufactured by reputable manufacturers having experience in the production of such materials. The materials furnished shall be designed, constructed, and installed in accordance with the best practices and methods.

10.03 Casing Pipe

The casing pipe shall be smooth wall or spiral welded steel pipe with a minimum yield strength of 35,000 psi. The minimum pipe size and wall thickness shall be as indicated in the table below. Actual thickness shall be determined and certified after design by the Contractor. All joints shall be butt welded with a full depth, single "V" groove weld. The casing pipe shall conform to ASTM A139, Grade B (without hydro-test) or ASTM A53, Grade B (without hydro-test). The outside of the casing pipe shall be coated with a compatible coal tar epoxy finish coat (12 mils DFT min) Carboline Bitumastic 300M, TNEMEC 46H-143, or equal. The carrier pipe shall be Ductile Iron as specified in Section 4, unless otherwise noted herein.

Carrier Pipe Size (Nom.)	Casing Pipe Size (Min. I.D.)	Wall Thickness (Min.)
16-Inches	30-Inches	0.500-Inches
24-Inches	36-Inches	0.500-Inches
30-Inches	48-Inches	0.750-Inches
36-Inches	48-Inches	0.750-Inches
42-Inches	54-Inches	0.750-Inches
48-Inches	66-Inches	0.750-Inches
54-Inches	72-Inches	0.750-Inches

10.04 Installation - General

The Contractor shall be responsible for the final design, adequacy and methodology of the bored and jacked casing pipe installations. The Contractor shall submit the proposed method of installation, detailed layout information, methods to be implemented if unusual or adverse soil conditions (i.e.: running sand, water, etc.) are encountered during installation, and design certifications, all sealed and signed by a professional engineer registered in the State of North Carolina to the Engineer for submittal to the N.C. Department of Transportation, District Engineer's Office or Utilities Unit; or the North Carolina Railroad Company (NCRR) Operating Railroads; CSX Railroad; or Norfolk-Southern Railroad, and prior to starting work.

The recommended methods and details shown on the Drawings and specified herein are intended to indicate the minimum acceptable standard of quality required for the casing installation. Other methods of installation, based on acceptable industry standards and techniques, may be acceptable for the installation. Alternative methods proposed by the Contractor shall be submitted to the Engineer for review and approval prior to beginning work. Under no conditions shall jetting or wet boring of the casing be allowed.

All excavations and pits shall be well sheeted and braced as necessary for safe and adequate access for workmen, inspections, and materials and shall be of a size suitable to equipment and material handling requirements.

All of the Contractor's plans, specifications and design computations for pit shoring shall be sealed and signed by a Professional Engineer registered in the State of North Carolina.

All pits required for the installation of the casing and located within NCDOT right-of-way shall be completely isolated from the roadway traffic with precast concrete or heavy-duty water filled barriers installed in accordance with the NCDOT Roadway Standard Drawings, Standard No. 1170.

Boring and Jacking

Boring and jacking installations shall be jacked through dry bores slightly larger than the pipe bored progressively ahead of the leading edge of the advancing pipe as spoil is mucked by the auger back through the pipe. As the dry boring operation progresses, each new section of the casing pipe shall be 360° butt-welded, using a full depth, single "V" groove weld, to the next section previously jacked into place. After welding each joint shall be repainted to restore the factory applied coating.

The boring equipment to be used for installing the jacked casing shall be of such size, capacity, and appropriate boring head type to permit the boring operation to proceed in a safe and expeditious manner. The installation of the casing and boring of the hole shall be done as rapidly as possible and shall be done simultaneously to avoid voids, cave-ins or settlement and for safety of traffic above or the intrusion of water as required for the creek crossings.

A special lubricant may be used to facilitate movement or lessen the danger of jacked pipe from freezing.

If voids are encountered or occur outside the casing pipe, grout holes shall be installed in the top section of the casing pipe at 10-foot (maximum) centers and the voids filled with 1:3 Portland Cement to sand grout with sufficient water added to produce a flowable mixture and at sufficient pressure to prevent settlement. **The Contractor shall be prepared to bore through solid rock, weathered or partially weathered rock, or extremely soft materials, if encountered, with a specialized bit or auger.** Costs associated with this provision shall be deemed as included in the Unit Price Bid for each location and no additional payment will be made.

In the event an obstruction is encountered during the boring and jacking operation, and the casing pipe is at least 30-inches in diameter, the auger shall be withdrawn and the obstruction removed. If a bolder is encountered and is removed by blasting or other approved method, the void shall be filled with grout, as previously specified. **No blasting shall be allowed within North Carolina Railroad or CSX rightsof-way.** No blasting shall be permitted within NCDOT right-of-way until a detailed blasting plan is submitted to and approved by the City of Durham, NCDOT, and the Engineer.

The methods and techniques used for blasting shall be as described and in strict accordance with NCDOT "Policies and Procedures for Accommodating Utilities on Highway Rights-of-Way," Subsection on Tunnel Liners.

All shoring materials shall be removed in such a manner so as to avoid collapse and to allow proper backfill. The backfill shall be placed in accordance with Section 4.

Casing Alignment

The Contractor shall check the vertical and horizontal alignment of the casing pipe at no more than 20-foot intervals to verify that the casing pipe is on-line and on-grade with the information indicated on the Drawings. The maximum horizontal alignment differential for waterlines, force mains and pipelines shall not exceed one full diameter of the casing pipe and the maximum vertical alignment differential shall not exceed 1-foot. Under no circumstances shall the casing have an "intermediate high-spot" along its length. Gravity pipe installation alignment differentials shall not exceed the Construction Installation Tolerances indicated in Section 4.14.

Carrier Pipe Installation

For all casing installations the carrier pipe shall be installed with adequately designed and spaced pipe alignment guides "spiders", secured, and bulkheaded as shown on the Drawings. All spiders,

regardless of the manufacturer, shall be manufactured with an ultra-high molecular (high-density) low coefficient of friction runner tip to isolate the spider from the casing pipe and to minimize drag and damage to the casing pipe as the carrier pipe is installed. The proposed procedure to install the carrier pipe is to "bell-up" the pipe outside the casing and push the carrier pipe through the casing. Restrained joint pipe shall be "extended" after installation in the casing pipe.

Concrete brick and mortar bulkheads with air and water vent holes shall be constructed at the terminal ends of the casing. In addition, a Class B concrete cradle shall be provided from the end of the casing bulkhead to the first pipe joint outside the casing.

Surface Settlement Monitoring

Prior to the beginning of any casing excavation, a surface settlement monitoring grid system shall be installed on the roadway. This grid shall consist of PK nails installed along the tunnel centerline at ten foot intervals. Additional lines of PK nails shall be installed 10-feet each side of the centerline. These points shall be initially read and the elevations recorded prior to the start of the casing construction. If no visible settlement is occurring during casing excavations, these points shall be read only at such times as the Contractor's surveyor is present to transfer the line and grade into the casing. These points shall be checked and elevations recorded on a daily basis, until the casing installation is completed.

Dewatering

The Contractor shall do all dewatering as required for the completion of the work. Procedures for dewatering proposed by the Contractor shall be submitted to the Engineer for review prior to any earthwork operations. All water removed by dewatering operations shall be disposed of in accordance with the North Carolina Sedimentation Pollution Control Act.

The dewatering system shall be of sufficient size and capacity as required to control groundwater or seepage to permit proper excavation and boring operations. The system shall include a sump system or other equipment, appurtenances and other related earthwork necessary for the required control of water. The Contractor shall drawdown groundwater to at least the bottom of excavations at all times in order to maintain a dry and undisturbed condition.

The Contractor shall control, by acceptable means, all water regardless of source. Water shall be controlled and its disposal provided for. The entire periphery of the excavation areas shall be ditched and diked to prevent water from entering the excavation where applicable. The Contractor shall be fully responsible for disposal of the water and shall provide all necessary means at no additional expense to the Owner. The Contractor shall be solely responsible for proper design, installation, proper operation, maintenance, and any failure of any component of the system.

The Contractor shall be responsible for and shall repair without cost to the Owner, any damage to work in place and the excavation, including damage to the bottom due to heave and including removal of material and pumping out of the excavated area. The Contractor shall be responsible for damages to any other area or structure caused by his failure to maintain and operate the dewatering system proposed and installed by the Contractor.

The Contractor shall take all the steps that he considers necessary to familiarize himself with the surface and subsurface site conditions, and shall obtain the data that is required to analyze the water and soil environment at the site and to assure that the materials used for the dewatering systems will not erode, deteriorate, or clog to the extent that the dewatering systems will not perform properly during the period of dewatering. Copies of logs of borings and laboratory test results are available to the Contractor. This data is furnished for information only, and it is expressly understood that the

Owner and Engineer will not be held responsible for any interpretations or conclusions drawn there from by the Contractor.

Prior to the execution of the work, the Contractor, Owner and Engineer shall jointly survey the condition of adjoining structures. Photographs and records shall be made of any prior settlement or cracking of structures, pavements, and the like, that may become the subject of possible damage claims.

10.05 Special Construction Requirements for NCDOT

The entire operation shall be subject to inspection by the Division of Highways' Resident Engineer or Inspector on the project, and shall have full authority to stop work if, in his opinion, it shall cause any damage to the roadway section or endanger traffic.

All material shall be subject to inspection by the NCDOT - Division of Highways.

The method of shoring the pits for tunneling operations shall be approved by the State Design Services Engineer of the Division of Highways prior to any work beginning at the site.

The Owner, upon completion of the casing/tunnel liner installation, shall notify the Division Engineer in writing by letter with a copy to the attention of the State Design Services Engineer, North Carolina Department of Transportation, Division of Highways, Raleigh, North Carolina 27611, the Owner should require in his Contract the same of the Contractor.

The Owner shall reimburse the Division of Highways for repair costs, should any settlement or damage result to the roadway within a period of one (1) year after completion of the casing/tunneling operations, the Owner should require in his contract the same of the Contractor.

The Contractor and any of his subcontractors performing work on the State rights-of-way in connection with tunneling operations shall furnish to the Department of Transportation to the attention of the District Engineer's Office, for approval, a certificate of insurance, in an original and one copy, in the minimum amounts of \$500,000 Bodily Injury and \$250,000/\$500,000 Property Damage as evidence of proper coverage before beginning any work at the site. The Certificate is to show that explosion, collapse and underground insurance coverage is provided and is to make reference to the project, county and the District Engineer's Office or Utilities Unit file number. The Certificate is also to be countersigned by an authorized North Carolina Resident Agent with the name and address of the agent denoted thereon.

It will be the responsibility of the Contractor and/or his subcontractor to furnish and keep in force the insurance requirements for a period of one (1) year after completion and acceptance of the work by the Owner and the Department of Transportation.

10.06 Special Construction Requirements for the Railroads

The Contractor and any of its subcontractors performing work in connection with casing installations shall furnish to each railroad company the following:

NORTH CAROLINA RAILROAD COMPANY (NCRR)

1. Public Liability Insurance - not less than \$5,000,000 per occurrence.

2. Railroad Protective Liability Insurance - not less than \$2,000,000 per occurrence and \$6,000,000 aggregate.
3. Automobile Public Liability Insurance and Property Damage Liability - \$5,000,000 per occurrence.
4. Employers' Liability and Occupational Disease Insurance - \$1,000,000 each accident, \$1,000,000 policy limit, and \$1,000,000 each employee.
5. Property and Public Affairs Manager
North Carolina Railroad Company
2809 Highwoods Blvd., Suite 100
Raleigh, NC 27604

All work shall be in accordance with Form NCR 103 – Specific Requirements of North Carolina Railroad Company For Work On Its Right Of Way and Form 102 – Specifications for Pipeline Occupancy of North Carolina Railroad Property.

A flagman will be required by the railroad company for this project. The Contractor shall pay the costs for each flagman required for the duration of the work within the railroad Rights-of-Way. The flagman cannot be provided by any other personnel other than an authorized employee of the railroad. The daily cost for the flagman shall be estimated as follows:

1. Norfolk Southern Corporation: \$500 per day based on an 8 hour day. Contact Glenn Mauer (919) 596-1240.
2. CSX Transportation: \$700 per day based on an 8 hour day plus \$1000 per day if a signal locate is needed. Contact H. A. Barrow (803) 664-8289.

It will be the responsibility of the Contractor and/or its subcontractor to furnish and keep in force the insurance requirements for a period of one (1) year after completion and acceptance of the work by the Owner and each railroad company.

10.07 Payment

Quantities included for payment under this Section shall be the total amount of work and materials required for each bored and jacked roadway crossing installed at the locations shown on the Drawings. The Lump Sum cost at each location shall include the carrier pipe, casing pipe, pipe alignment guides, vent pipe (if required), all excavations, dewatering, jacking, boring, brick bulkhead, concrete cradle (as specified above) and sheeting as required for a complete installation.

All other work required to complete the bored and jacked crossing shall be considered as incidental to the project and no specific payment will be made.

For completing the work specified under this Section, and as shown on the Drawings, the Contractor shall be paid the Unit Price Bid for the Pay Item(s) stipulated below:

Pay Item	Description	Unit
10a	Furnish and Install Bored and Jacked Railroad Crossing, W/L Sta. Sta. 96+66.58 to W/L Sta. 99+16.58	LS
10b	Furnish and Install Bored and Jacked Utility Crossing, W/L Sta. 110+60.22 to W/L Sta. 111+20.22	LS
10c	Furnish and Install Bored and Jacked Stream Crossing, W/L Sta. 119+09.93 to W/L Sta. 120+08.93	LS
10d	Furnish and Install Bored and Jacked Stream Crossing, W/L Sta. 143+14.13 to W/L Sta. 143+94.13	LS
10e	Furnish and Install Bored and Jacked Roadway Crossing, W/L Sta. 156+34.88 to W/L Sta. 158+14.88	LS

END OF SECTION

SECTION 11 - PRECAST CONCRETE MANHOLES

11.00 General

The Contractor shall furnish all labor and materials required for the complete construction of the manholes as detailed on the Drawings and as specified herein. The manholes shall be located as shown on the Drawings or as directed by the Engineer.

The Contractor shall submit Shop Drawings to the Engineer for the manholes, frames, covers and steps to be furnished. The Engineer shall review the submittal and approve its conformance with the Specifications before the materials are ordered. Shop Drawings shall be in accordance with Section 1.

All materials specified shall be produced in a plant of recognized reputation and regularly engaged in the production of materials conforming to the specified standards. All materials shall be new and both workmanship and materials shall be of the very best quality, entirely suitable for the service to which the units are to be subjected. All material of the same kind supplied or the work shall be produced by the same manufacturer.

11.01 Precast Concrete Manholes

Precast manhole base, riser sections, cone sections and flat top slab shall be as specified herein, and as shown on the Drawings and shall conform to ASTM C478. Manholes shall have a minimum wall thickness of 5-inches for 4-foot and 5-foot diameter manholes, 6-inches for 6-foot diameter manholes, 7-inches for 7-foot diameter manholes, 8-inches for 8-foot diameter manholes and 10-inches for 10-foot diameter manholes. Manholes shall be as manufactured by N.C. Products, Tindall Products, or equal.

The precast sections shall be joined together with a preformed flexible joint sealant compound meeting or exceeding all requirements of Federal Specifications SS-S-OO210 (GSA-FSS), "Sealing Compound, Preformed Plastic for Pipe Joints", Type I, Rope Form.

The Contractor shall coordinate size and location of all manhole penetrations with the manufacturer. Additional reinforcing steel shall be provided around each opening to provide structural integrity equivalent to that of a standard section without openings. If the manhole supplier can manufacture the manhole to withstand all of the possible loads without the required additional reinforcing steel required around the openings, the supplier shall submit design calculations sealed by a Professional Engineer registered in the State of North Carolina specifically indicating that the additional rebar is not necessary. Reinforcing steel in the base shall conform to ASTM A615, Grade 60 and wall steel shall conform to ASTM A185. Shop Drawings shall indicate all openings and additional reinforcement. All structures located within the NCDOT Right-of-way shall be of a NCDOT approved design for HS-20 loading rated for continuous traffic. If any proposed structure is not of a design approved by NCDOT, the contractor shall submit details and design calculations signed and sealed by a Professional Engineer for approval prior to construction.

Manhole openings shall have a flexible rubber sleeve of either the cast-in-place type or the spring set type and shall be large enough to accept the respective pipe as shown by the Drawings. The spring set type shall be the PSX assembly as manufactured by Press Seal Gasket Corporation or the Kor-N-Seal assembly as manufactured by Kor-N-Seal. The interior power sleeve or expander shall be stainless steel. The flexible rubber sleeve shall conform to the requirements of ASTM C923 and include stainless steel take-up clamps. The sleeve shall be the correct size for the pipe to be joined and shall be installed properly to provide a watertight joint. The interior of the sleeve shall be filled with Class B concrete.

Openings in sanitary sewer manholes too large for the flexible rubber sleeve shall utilize an inflatable, heavy duty ($\frac{3}{8}$ " wall thickness, min.) rubber bladder type seal, suitable for pressure testing at 10 psi (min.). The rubber bladder shall conform to the requirements of ASTM C923. The bladder shall be expanded with water, which is injected using a pressure pump. The bladder shall contain an environmentally safe, anti-bacterial compound which turns into a high viscosity gel when in contact with the pressurized water. The rubber bladder shall be the NPC Contour Seal as manufactured by Kor-N-Seal, or equal.

All manhole base sections shall have a floor slab that extends a minimum of 6-inches beyond the outside edge of the manhole wall all around the periphery of the manhole. All extended base slabs shall be a minimum of 9-inches thick, unless otherwise shown on the Drawings and shall be monolithically cast with the reinforcing steel extending into the extension.

The manhole base shall be placed on compacted stone bedding material, as shown on the Drawings. If, in the opinion of the Engineer, additional undercutting is required, the unstable material shall be removed as Additional Excavation and refilled with Additional Crushed Stone Bedding as specified in Section 8. All manhole wall and base penetrations and joints, inside and out, shall be filled with non-shrink grout.

11.02 Manhole Frames, Covers, and Steps

Manhole frames and covers shall be cast iron. Cast iron shall be tough, closed-grained gray iron, free from blow holes, shrinkage cracks, or other defects. The cast iron shall conform at ASTM A48 Class 30B. Standard manhole frames and covers shall be Model 669 by U. S Foundry, or equal. Covers shall be complete with gaskets and corrosion resistant bolts. Standard cast-in-place manhole frames and covers shall be Model R-1668 by Neenah, or equal. Watertight cast-in-place manhole frames and covers shall be Model R-1915, Type P or L by Neenah, or equal. Frames and covers shall be identical throughout the Contract for the intended service. Watertight frames and covers shall be suitable for 20 psi internal pressure.

Manhole frames and covers shall be located in such a manner that there is ready access to the manhole steps, if permitted. The word "**WATER**", "**SEWER**" or "**REUSE**" shall be cast into the center area of the cover and **CONFINED SPACE LETTERING SHALL BE PLACED IN THE PERIMETER FACE OF THE MANHOLE COVER AS FOLLOWS: -DANGER PERMIT REQUIRED – CONFINED SPACE DO NOT ENTER-**.

The minimum clear opening shall be 22 $\frac{1}{4}$ - inches. The minimum average frame weight shall be 190 pounds. All covers shall be perforated, unless otherwise specified. Manhole frames and covers shall be located in such a manner that there is ready access to the manhole steps, if permitted. Frames shall be well bedded in mortar or cast directly into the pre-cast concrete top as shown on the Drawings. The exterior of all cast iron manhole frames and covers shall be given one shop coat of asphaltic or coal tar varnish. The interior of all cast iron manhole frames and covers shall be given two (2) coats, 24 mils DFT each of hi-build coal tar epoxy, unless otherwise specified.

Manhole frames and covers shall be located as indicated on the Drawings. Standard frames shall be well bedded in mortar and bolted down with at least four (4) $\frac{1}{2}$ "-dia. (minimum) 304L stainless steel anchor bolts. The interior of all cast iron manhole frames and covers shall be coated with the same interior lining material as specified in Subsection 11.11 – Surface Preparation, Interior Lining and Exterior Painting.

Manhole steps, if required, shall be constructed of Grade 60 steel reinforcing rod (minimum $\frac{1}{2}$ -inch). Steps shall be completely encapsulated with a wear resistant and chemical resistant

rubber. Each step shall have a minimum vertical load resistance of 800 pounds and shall have a minimum pull-out resistance of 400 pounds. The steps shall have 11-inches minimum tread width and shall be placed at 16-inches on center, or as shown on the Drawings.

11.03 Adjusting Collars and Final Adjustments

Adjusting collars shall be as shown on the Drawings. Final adjustments shall be made so that the manhole frame and cover will be smooth and flush with the finished grade of the adjacent surface, or as otherwise indicated on the Drawings for manholes shown above grade. **Adjusting collars shall not be used on watertight manholes.**

11.04 Excavation, Backfill and Work Under Other Sections

Excavation and backfill shall conform to applicable portions of Section 4. Additional excavation, and additional stone bedding shall conform to and be paid for under Section 8.

11.05 Removal and Disposal of Water; Sheeting and Bracing

The provision of these clauses under Section 4 shall apply to this item. No additional payment will be made.

11.06 Channel Inverts (For Sanitary Sewers)

Inverts shall be placed using Class B concrete with forms sufficient to provide a smooth half-round shape as shown on the Drawings. Manhole bases employing **full depth** precast inverts are acceptable.

Where the slope of the line does not change through a manhole, a constant slope shall be maintained in the invert. Where slope changes occur within a given manhole, the transition shall be smooth and shall occur at the approximate center of the manhole.

11.07 Concrete Ballast for Manholes

Concrete ballast shall be provided for all of the manholes indicated on the Drawings to receive ballast. Class B concrete as specified in Section 6 shall be used for concrete ballast. Ballast shall be placed against the outer wall of the manhole around the entire periphery for the full height of the ballast. Ballast shall bear directly on the extended manhole base and shall extend no more than 24-inches beyond the edge of the manhole wall. Ballast shall be placed in such a manner that a monolithic ring (collar) is formed around the manhole. Minimum volumes of concrete ballast required for each manhole shall be as shown on the manhole schedule shown on the Drawings.

Additional ballast concrete over that indicated may be required according to the final grade and depth of manholes. Additional ballast concrete shall be provided as directed by the Engineer.

11.08 Connections to Existing Pipe

The Contractor shall verify the diameter and elevation of all existing pipe to be connected to prior to starting work. Existing pipelines connecting to new structures shall be neatly built into the structure to provide a leak-tight connection. Before depositing concrete against existing pipes, the pipe surfaces shall be thoroughly cleaned of all foreign matter and shall be coated with an epoxy adhesive in accordance with the manufacturer's instructions. The Contractor shall cut-off and remove completely a sufficient amount of the existing pipe, required to make the connection. The Contractor shall provide adequate protection to prevent any damage to the existing pipe.

11.09 – Testing

The Contractor shall vacuum test each assembled manhole after completing pipe connections and sealing, but before backfilling or placing the frame and cover as follows:

- A. Plug pipes with suitably sized and rated pneumatic or mechanical pipeline plugs. Place plugs a minimum of 6” beyond the manhole wall and brace to prevent displacement of the plugs or pipes during testing.
- B. Position the vacuum tester head assembly to seal against the interior surface of the top of the cone section and inflate according to the manufacturer’s recommendations.
- C. Draw a vacuum of 10” of mercury, close the valve on the vacuum line and shut off the vacuum pumps.
- D. Measure the time for the vacuum to drop to 9” of mercury. The manhole shall pass when the time to drop to 9” of mercury meets or exceeds the following:

Manhole I.D. (inches)	48	60	72	84	96	120
Seconds	60	75	90	105	120	150

- E. If the manhole fails the test, remove the head assembly, coat the manhole interior with a soap and water solution, and repeat the vacuum test for approximately 30 seconds. Leaking areas will have soapy bubbles. Make the necessary repairs and repeat the test until the manhole passes.

11.10 - Field Changes

The Engineer may elect to increase the size or relocate the manholes to meet actual field conditions, and under such circumstances the quantities of work shall be adjusted to reflect actual work performed by the Contractor. Under such circumstances the Contractor shall have no claim for delays or other damage due to such eventualities.

11.11 - Surface Preparation, Interior Lining and Exterior Painting

Surface Preparation -The concrete surface shall be clean, dry, free of oil, grease, or other contaminants as required by the manufacturer of the lining and coating. Any air pockets over ¼-inch in diameter and ⅛-inch deep appearing on the concrete surface after cleaning shall be filled with an epoxy sand patching material. The epoxy sand patch shall be troweled and dry prior to the application of the lining. Any steel surfaces to be painted shall be solvent cleaned, or wire brushed prior to painting. Application of the lining and coating shall be by brush, roller, or spray system using equipment recommended by the manufacturer. The temperature during application and curing of lining and coating shall be as recommended by the manufacturer. Time between coats (if applicable) shall be as recommended by the manufacturer.

If the inside joint recess will be mortared and painted with a lining in the field by the Contractor, the manhole supplier shall not paint the inside vertical surfaces at the ends of the manhole. When the inside joints will not be mortared in the field, the manhole supplier shall paint the inside vertical concrete surfaces at each end of the manhole section. The paint shall be extended continuously over the front lip of the spigot and onto the sealing surface of the bell so that all interior joint surfaces which can be exposed to the fluid inside the manhole are coated.

Interior Lining - The entire interior surface of all concrete structures shall be cleaned and coated with one coat of 20% solids, deeply penetrating, dual-component polyurea primer (0.5 – 1.0 mils DFT, 150 ft²/gal), one intermediate coat of a dual component polyurea (50-100 mils DFT, 50 ft²/gal) and one top coat of a 65% solids, two-part polyurea (7.5 – 10 mils DFT, 125 ft²/gal). All coats can be applied by brush, spray, or roller. Polyurea coatings shall be Duramer 1030 as manufactured by SewerKote, or equal.

11.12 - Payment

All manholes not included for payment in other pay items shall be paid for at the unit price listed below.

For completing the work specified under this Section and shown on the Drawings, the Contractor shall be paid the unit prices bid for the respective Pay Items stipulated below:

Pay Item	Description	Unit
11	Furnish and Install 4-Foot Diameter Standard Precast Concrete Manholes	Vertical Foot

END OF SECTION

SECTION 12 - TRAFFIC CONTROL

12.00 General

The Contractor shall follow the construction procedure and maintenance of traffic as shown on the Drawings, unless a more workable plan is agreed to by the Engineer and the City's Transportation Department, prior to or during the prosecution of the work.

12.01 Street Signs and Markers and Route Markers

The Contractor shall move any existing street signs and markers and route markers out of the construction limits of the project and install the street signs and markers and route markers so that they will be visible to the traveling public if there is sufficient right of way for these signs and markers outside of the construction limits.

Near the completion of the project and when so directed by the Engineer, the Contractor shall move the signs and markers and install them in their proper location in regard to the finished pavement of the project.

Any signs or markers which cannot be relocated due to lack of right-of-way, or any signs and markers which will no longer be applicable after the construction of the project, shall be stockpiled at locations directed by the Engineer for removal by others.

The Contractor shall be responsible for any damage to any street signs and markers or route markers during the above described operations.

No direct payment will be made for relocating, reinstalling, and/or stockpiling the street signs and markers and route markers as such work will be considered incidental.

12.02 Construction Traffic Control Devices

Description - The work covered by this Section consists of furnishing, erecting, maintaining, relocating, and removing traffic control devices in accordance with the Drawings, Specifications, MUTCD, NCDOT, or as directed by the Engineer. The MUTCD referred to in this provision shall be the current edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, as prepared by the National Advisory Committee on Uniform Traffic Control Devices, including all standard documents referred to in the second paragraph of Section 1A-7 of the MUTCD. The current edition shall be the edition current on the date of advertisement for the Project. All traffic control devices furnished by the Contractor shall remain the property of the Contractor, unless otherwise required by the Contract. Traffic control devices shall include, but not be limited to signs, nonmetallic drums, barricades, cones, delineators, temporary guardrail, temporary pavement marking, raised reflective pavement markers, flaggers and pilot vehicles, as required.

Materials - General - Unless otherwise required, materials used in the fabrication and installation of construction traffic control devices shall be in accordance with the applicable provision of the MUTCD. When traffic control devices are no longer required for traffic handling in the initial phase of construction requiring their use, they may be reused at various locations throughout the project provided the device is not defaced, is structurally sound, clean, and otherwise conforms to the above requirements.

Traffic control devices which do not meet the requirements of this Section shall not be used; and, when during the life of a project, a device ceases to meet the requirements of this Section it shall be

promptly removed and replaced with a conforming device at no additional compensation. The Engineer shall have the authority to determine the acceptability of the traffic control devices.

Construction Methods - General - Traffic control devices shall be installed at the inception of construction operations, and shall be properly maintained, relocated as necessary, cleaned, and operated during the time they are in use. They shall remain in place only as long as they are needed and shall be immediately removed thereafter. Where operations are performed in stages, only those devices that apply to the conditions present shall be left in place.

The location, legends, sheeting, dimensions, number of supports, and horizontal and vertical placement of warning signs, barricades, and other traffic control devices shall be as required by the Drawings, the MUTCD, NCDOT, or as directed by the Engineer. The Contractor may submit for the Engineer's consideration a method for handling traffic other than as shown on the Drawings. The alternate traffic handling plans shall not be used until they are approved by the Engineer in writing. During periods when not warranted, warning signs and other devices shall be removed from the work area, covered with specified material, or otherwise positioned so they do not convey their message to the traveling public. If covered, the covering material shall be exterior plywood and shall cover the entire face of the sign panel. The covering material shall be installed in such a manner that the sign panel will not be defaced. Covering material shall be maintained in a neat and workmanlike manner during its use.

Weeds, brush, trees, construction materials, equipment, etc., shall not be allowed to obscure any traffic control device in use.

If cones are used for delineation at night, each cone shall have any appropriate white reflectorized cone collar as detailed on the Drawings, or as directed by the Engineer.

Competent and properly trained flaggers, properly attired and equipped, shall be provided as shown on the Drawings, when directed by the Engineer, or when the Contractor deems it necessary to safely handle traffic through the construction area.

The Contractor shall assume full responsibility for the continuous and expeditious maintenance of all construction warning signs, barricades, and other traffic control devices. Maintenance shall include repair and replacement of traffic control devices which, in the opinion of the Engineer, are damaged by traffic or other means, or deteriorated beyond effectiveness. Conditions covered under maintenance shall include but not be limited to replacement due to loss of reflectivity; replacement of broken supports; plumbing of leaning signs; cleaning of dirty signs, barricades, and other devices; repair of defaced sheeting and legend; and replacement of stolen or vandalized items. All items used for traffic control shall be maintained in a satisfactory condition. Failure to maintain all traffic control devices in a satisfactory condition may be cause for suspension of construction operations until proper traffic control is re-established.

The Contractor shall continuously review and maintain all traffic handling measures to assure that adequate provisions have been made for the safety of the public and workers.

12.03 Stationary Construction Signs

Description - The work covered by this Section consists of furnishing, erecting, relocating, maintaining, and removing stationary signs necessary for controlling traffic.

Materials - Reflective sheeting shall be used on all sign facing and shall meet the requirements of AASHTO M268. The reflective sheeting shall be enclosed lens (Engineers grade) sheeting and shall have a smooth, sealed outer surface which will display the same color both day and night. The reflective sheeting on each sign shall have a smooth appearance. The reflective sheeting shall be applied in a workmanlike manner so that there are no bubbles or wrinkles in the material.

The Contractor shall furnish a material certification in accordance with Article 106-3 of the NCDOT Standard Specifications for all new and used reflective sheeting as required by the Engineer.

Construction Methods - All work shall be in accordance with requirements of Section 12.02.

12.04 Type III Barricades

Description - The work covered by this Section consists of furnishing, erecting, maintaining, and removing Type III Barricades.

Construction Methods - All work shall be in accordance with requirements of Section 12.02.

12.05 Portable Temporary Traffic Control Devices

Description - The work covered by this Section consists of furnishing erecting, relocating, maintaining, and removing portable temporary traffic control devices necessary for controlling traffic. Portable temporary traffic control devices shall include but not be limited to portable signs, non-metallic drums, barricades, cones, delineators, flaggers, pilot vehicles, and any other traffic control device not covered by any other Sections included in this Contract.

Materials

Portable Signs - Reflective sheeting shall be used on all sign facing and shall meet the requirement of AASHTO M268. The reflective sheeting shall be enclosed lens (Engineers grade) sheeting and shall have a smooth, sealed outer surface which will display the same color both day and night. The reflective sheeting on each sign shall have a smooth appearance. The reflective sheeting shall be applied in a workmanlike manner so that there are no bubbles or wrinkles in the material.

The Contractor shall furnish a material certification in accordance with Article 106-3 of the NCDOT Standard Specifications for all new and used reflective sheeting as required by the Engineer.

Non-Metallic Drums - The drums shall be made of plastic impact resistant material. The drums shall have a two-piece, breakaway design that will maintain its integrity upon impact throughout a temperature range of -20°F to 125°F. Upon impact the upper portion of the drum shall deform and breakaway from the base, minimizing damage to drums or vehicles. The base and ballast shall remain in position and vehicle shall easily pass over it.

The drums shall be designed to have two TYPE "A" or "IC" light wells located on the top surface of the drums. The drums shall be designed with a top to completely seal the drums to prevent water from accumulating and freezing in the bottom of the drums. The base shall be designed to accommodate a sandbag of 40 lbs. to 60 lbs. A sandbag with 50 lbs. of sand shall be supplied with each drum.

The drums shall have an assembled minimum height of 36", a minimum outside base diameter of 21", and a combined minimum weight of 12 lbs.

The Contractor shall be required to furnish the Engineer a sample drum and its specifications for approval prior to the delivery of drums of the project.

The markings on drums shall be horizontal, circumferential, orange and white stripes six to eight inches wide, covering entire outside. The entire area of orange and white shall be reflectorized with the enclosed lens (Engineers grade) sheeting, except for the corrugation area where a 2" non-reflectorized band will be allowed. There shall be at least two orange and two white stripes on each drum. Reflectorized material shall have a smooth, sealed outer surface which will display the same approximate color day and night. The reflective sheeting shall meet the requirement of AASHTO M268.

Construction Methods - All work shall be in accordance with the requirements of Section 12.02.

12.06 Flashing Arrow Panels

Description - The work covered by this Section consists of furnishing, maintaining, moving, and relocating flashing arrow panels mounted on a trailer, truck, or other mobile unit, as shown on the Drawings.

Materials - The flashing arrow panels shall meet the requirements of the MUTCD (Section 6E) for a Type A panel.

Construction Methods - All work shall be in accordance with the requirements of Section 12.02.

During periods of times that traffic is shifted from its normal pattern, a mobile flashing arrow panel shall be used at locations shown on the plans or at locations directed by the Engineer.

12.07 Changeable Message Signs

Description - The work covered by this Section consists of furnishing, installing, maintaining, moving, relocating and removing changeable message signs, as shown on the Drawings.

Materials - Use Changeable Message Signs that have been evaluated by NTPEP. Use Changeable Message Signs that are on the NCDOT's Approved Products List and are traffic-qualified by the Work Zone Traffic Control Unit.

Construction Methods - Mount all changeable message signs on a trailer, or truck, as specified on the Drawings, designed to adequately support the message board in a level position. Align and sight the changeable message sign to provide optimal driver visibility. The Contractor's sign operator shall adjust flash rate so that a minimum of two complete sign panels can be displayed and legible to a driver while approaching the sign at the posted speed.

Relocate the units for the various stages of construction as shown in the Drawings, or as needed to adequately inform the motorists.

Provide an experienced operator for the changeable message sign during periods of operation to ensure that the messages displayed on the sign panel are in accordance with the Drawings and in accordance with message content guidelines. Ensure that the message sign is illuminated properly to meet the existing light conditions, and that all adjustments for operation of the sign are made as needed to properly guide motorists.

Expedite repairs due to failure, malfunction, or damage to a changeable message sign. Furnish another changeable message sign (approved by the Engineer and at no additional cost) during the repair time. Repair and/or replace changeable message sign immediately; otherwise, suspend all construction activities requiring the use of the sign until the sign is restored to operation.

Maintenance - Perform all maintenance operations recommended by the manufacturer of the sign. Include the periodic cleaning of the sign face and associated solar panels in maintenance operations.

12.08 Payment

For completing the Work specified under this Section, and as shown on the Drawings, the Contractor shall be paid the unit price for the Pay Item stipulated below:

Pay Item	Description	Unit
12a	Furnish and Install Traffic Control Devices	LS
12b	Furnish and Install Additional Changeable Message Signs	Per Unit/ Daily

***END OF SECTION

SECTION 13 – DEMOLITION AND REMOVAL OF EXISTING INTERCEPTORS AND MANHOLES

13.01 Title to Materials

This Section covers the demolition, removal, and disposal of existing interceptor pipe and manholes, and any other extraneous piping not required for the operation of the sewer replacement as indicated on the Drawings and as specified hereinafter. The Contractor shall furnish all labor, materials and equipment to demolish and remove manholes and piping and accessories as designated on the Drawings.

13.02 Condition of Structures and Equipment

The Owner does not assume responsibility for the actual condition of manholes and piping to be demolished and removed. The information regarding the existing manholes and piping shown on the Drawings is based on visual inspection and a walk-through survey only. Neither the Engineer nor the Owner will be responsible for interpretations or conclusions drawn therefrom by the Contractor.

13.03 Demolition and Removals

The removal of all materials from the demolition of manholes and piping, when released by the Owner and Engineer, shall be done by the Contractor and shall become the Contractor's property, unless otherwise noted, for disposition in any manner not contrary to the Contract requirements and shall be removed from the site to the Contractor's own place of disposal. All disposal fees including sanitary landfill "tipping fees", if applicable, shall be borne by the Contractor.

The Contractor shall proceed with the removal of the manholes and piping and associated appurtenances in a sequence designed to maintain the current wastewater flow in continuous operation, and shall proceed only after approval of the Engineer.

Any manholes, piping and appurtenances removed without proper authorization, which are necessary for the operation of the existing wastewater collection facilities shall be replaced to the satisfaction of the Engineer at no cost to the Owner.

All excavation caused by demolitions shall be backfilled in accordance with Section 4.

13.04 Protection

Demolition and removal work shall be performed by competent experienced workmen for the various type of demolition and removal work and shall be carried out through to completion with due regard to the safety of the general public, Owner employees, and the workmen on-site. The work shall be performed with as little nuisance as possible.

The work shall comply with the applicable provisions and recommendation of ANSI A10.2, Safety Code for Building Construction, all governing codes, and as hereinafter specified.

The Contractor shall make such investigations, explorations and probes as are necessary to ascertain any required protective measures before proceeding with demolition and removal. The Contractor shall give particular attention to shoring and bracing requirements so as to prevent any damage to new or existing construction.

The Contractor shall provide, erect, and maintain, lights, barriers, weather protection, warning signs and other items as required for proper protection of the public, workmen engaged in demolition operations, and adjacent construction.

The Contractor shall provide and maintain temporary protection of the existing structures designated to remain where demolition, removal and new work is being done, connections made, materials handled or equipment moved.

The Contractor shall not close or obstruct walkways or driveways and shall not store or place materials in walkways or driveways or other means of egress. The Contractor shall conduct operations with minimum traffic interference.

The Contractor shall be responsible for any damage to the existing structure or contents by reason of the insufficiency of protection provided.

13.05 Workmanship

The demolition and removal work shall be performed as described in the Contract Documents. The work required shall be done with care, and shall include all required shoring, bracing, etc. The Contractor shall be responsible for any damage, which may be caused by demolition and removal work to any part or parts of existing structures or items designated for reuse or to remain. The Contractor shall perform patching, restoration and new work in accordance with applicable Technical Sections of the Specifications and in accordance with the details shown on the Drawings. Prior to starting of work, the Contractor shall provide a detailed description of methods and equipment to be used for each operation and the sequence thereof for review by the Engineer.

Wherever piping is to be removed for disposition, the piping shall be drained and the contents properly disposed of by the Contractor and adjacent pipe that are to remain in service shall be removed, blanked off or plugged and then filled with non-grout or concrete as indicated on the Drawings.

Materials or items demolished and not designated to become the property of the Owner or to be reinstalled shall become the property of the Contractor and shall be removed from the property and legally disposed of.

The Contractor shall execute the work in a careful and orderly manner, with the least possible disturbance to the public and to the existing interceptor system.

In general, manholes and piping shall be demolished in small sections, and where necessary to prevent collapse of any construction, the Contractor shall install temporary shores, struts, and bracing.

Where alterations occur, or new and old work join, the Contractor shall cut, remove, plug, repair or remove the adjacent materials to the extent required by the construction conditions, so as to leave the altered work in as good a condition as practical.

The Contractor shall confine cutting of existing pipe areas designated to remain to the limits required for the proper installation of the new work as shown on the Drawings.

The Contractor shall remove temporary work, such as enclosures, signs, guards, and the like when such temporary work is no longer required or when directed at the completion of the work.

13.06 Remove and Dispose of Existing Interceptor

The Contractor shall locate, excavate, plug the existing interceptor and remove the length of the existing interceptor as indicated on the Drawings.

13.07 Plug Existing Interceptor

The Contractor shall locate, excavate, plug the existing interceptor and remove the length of the existing interceptor as indicated on the Drawings.

13.08 Remove and Dispose of Existing Manholes

The Contractor shall locate, excavate, and remove the existing manhole in it's entirety as indicated on the Drawings.

13.09 Breakdown and Fill Existing Manholes

The Contractor shall locate, excavate, and "knock down" the existing manhole at the locations indicated on the Drawings.

13.10 Fill Existing Interceptors with Pumpable Flowable Fill

The Contractor shall locate, excavate, plug the existing interceptors and remove the length of the existing interceptor as indicated on the Drawings.

13.11 Payment

The quantity to be paid for under this Section shall be the actual number, length or volume of items removed or placed in accordance with the Engineer's directions and the Drawings, as measured in place by the Engineer. No payment will be made for excavation or backfill required to perform this work, as shown on the Drawings. **ALL EXCAVATION IS UNCLASSIFIED.** Any excavation not authorized by the Engineer will be at the Contractor's expense. Backfill material shall be as specified in Section 4.

For completing the work specified under this Section, the Contractor shall be paid unit prices bid for the respective Pay Items stipulated below:

<u>Pay Item</u>	<u>Description</u>	<u>Unit</u>
13a	Remove and Dispose of Existing Manholes	EA

END OF SECTION

SECTION 18 – PETROLEUM IMPACTED GROUNDWATER AND SOIL

18.00 General

This Section covers the observation or detection of any petroleum products or odors in the trench or immediate vicinity of the proposed Work area and the associated removal and disposal, if required. The Contractor shall be prepared to, immediately upon notification, furnish all labor, materials and equipment to address the removal, containment, handling, transportation, treatment and/or disposal of any petroleum products encountered.

SPECIAL NOTE: If free-phase (pure product) petroleum product is discovered in the groundwater or soil during construction, the Contractor shall cease all operations and immediately contact the City of Durham Fire Department and the Engineer.

The Contractor shall have no claim for monetary compensation from the City of Durham for the Contractor's inability to proceed with construction due to the encountering of petroleum impacted groundwater or soil. Compensation to the Contractor is limited to an extension of time to the Contract only.

18.01 Training and Certification for Petroleum Impacted Groundwater or Soil

All heavy equipment operators who are excavating petroleum impacted groundwater or soil shall be qualified for OSHA 1910.120. The personnel shall have completed, at a minimum, the 24-hour Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) and be current with all refresher course training. Copies of HAZWOPER certifications for all equipment operators shall be submitted to the Engineer within 15 calendar days after the Notice of Award to the apparent low Bidder.

The Contractor is to provide equipment, materials, and properly trained environmental professional personnel to perform environmental tasks, as needed.

The Contractor shall provide at least the minimum number of training hours specified. On a hazardous waste site that has many site specific peculiarities the Contractor may need to train employees beyond the 40 hour and/or 24 hour minimum set by the standard. The Contractor shall provide training to its employees that prepares them for their job functions and responsibilities, as stated in the general requirements in 29 CFR 1910.120(e).

While "onsite", soil/groundwater disposal truck drivers shall not leave the truck cab unless they have the minimum HAZWOPER training certification.

18.02 Petroleum Impacted Groundwater

Upon observation or detection of any petroleum products or odors in the trench, this work shall consist of dewatering trenches via vacuum pumping, manifesting, transportation and proper disposal of petroleum impacted groundwater at an approved facility and/or the pre-treatment of groundwater for the utility installation. If onsite pre-treatment is required, then treated groundwater shall be discharge into the City's

sanitary sewer system with the pre-approval from the City of Durham's Department of Water Management.

As established by the North Carolina Department of Environment and Natural Resources (NCDENR), if petroleum odors (e.g. Volatile Organic Compound (VOC) concentrations), or visible petroleum sheens or petroleum products are observed within the excavation trench, then dewatering of the trench will immediately cease and groundwater pre-treatment activities shall commence.

Petroleum impacted groundwater activities are regulated by State of North Carolina Department of Environment and Natural Resources (NCDENR), Guidelines for Assessment and Corrective Action, Division of Water Quality, April 2001.

18.03 Groundwater Procedures

If petroleum odors are detected in the trench, then dewatering and/or well pointing activities shall cease until appropriate remedial responses by the Contractor are onsite and have been activated.

If petroleum sheens or free phase product are observed in the trench, then dewatering and/or well pointing activities shall cease until appropriate remedial responses by the Contractor are onsite and have been activated.

Under no circumstances shall petroleum impacted groundwater be knowingly discharged into gutters, open ditches, low lying areas, drop-inlets, storm water grates, surface water bodies, tributaries, creeks or rivers.

If petroleum odors are detected in the trench or petroleum sheens or free phase product are observed in the trench, an OSHA 1910.120 certified technician who has completed the 24-hour HAZWOPER training shall be onsite at all times. The certificate of training and/or certificate of the annual refresher class shall be kept onsite at all times.

An OSHA 1910.120 certified technician who has completed the 40-hour HAZWOPER training shall be onsite when petroleum impacted dewatering or groundwater pre-treatment is occurring. The certificate of training and/or certificate of the annual refresher class shall be kept onsite at all times.

Upon visual observations of oily sheens in the trench or olfactory detection of petroleum impacted vapors, the Contractor shall immediately contact the Engineer to report the suspected presence of any petroleum impacted groundwater. The Engineer will endeavor to arrive onsite within four (4) working hours of the notification from the Contractor (depending on time of day of said notification) to observe site conditions and to field screen the area for the presence or absence of VOC concentrations using a pre-calibrated Photoionization Detector (PID).

When well-pointing and dewatering, the Contractor shall be responsible for the onsite presence and utilization of: a generator, a baffled drop-out tank and or settling basin or fractionation tank(s); oil/water separator; transfer pumps; hoses; and water meter(s). The Contractor shall be responsible for observing, monitoring and recording water quality within the oil/water separator basin when well pointing and dewatering is occurring in an impacted area or zone. When dewatering, the Contractor shall record

water quality conditions every 4 hours and submit **Table 1** (attached herein) to the Engineer on a daily basis.

18.04 Groundwater Pre-Treatment System

The Contractor shall be prepared to immediately provide the services of certified environmental subcontractors should petroleum impacted groundwater be encountered.

The environmental subcontractor shall have an appropriate, operational, pre-approved (by City of Durham Department of Water Management's Pre-Treatment Coordinator, Tyrone Battle) pre-treatment system online within 8 hours, starting from the time the Engineer has responded and provided approval of the appropriate remedial method(s).

Mobile pre-treatment system(s) for groundwater may include: a baffled drop-out tank or settling basin or fractionation tank(s), oil/water separator, filtration bags, diffuser, high or low pressure Granulated Activated Carbon (GAC) unit(s), transfer pumps, hose lengths, water meter and generator(s).

If liquid phase hydrocarbons or petroleum based fuels are observed on the water table, then the free phase petroleum product(s) shall be extracted using a vacuum pump system and/or Aggressive Fluid Vapor Recovery (AFVR). Upon approval from the Engineer, the Contractor shall be responsible for contacting the appropriate AFVR or mobile pre-treatment sub-contractor. The Contractor shall sign all transport and disposal manifests. The Contractor shall ensure the groundwater/product mixture is properly manifested and transported to a State of North Carolina approved and licensed disposal/recycling facility.

After pre-treatment or disposal, the Contractor shall provide the Engineer with copies of transportation manifest records, and/or a Certificate(s) of Remediation and Recycling or other written documentation indicating that the impacted groundwater has been adequately treated or disposed. All manifests are required to be submitted to the Engineer on a weekly basis.

The Engineer will be responsible for collecting the appropriate number and types of samples, sample analyses, and reporting to all pertinent regulatory agencies and the Engineer. The Engineer will be responsible for securing discharge permits, where necessary.

18.05 Petroleum Impacted Soil

Upon observation or detection of any petroleum products or odors in the trench, this work shall consist of the excavation, transportation and disposal of petroleum impacted soils excavated for the utility installation.

As established by the North Carolina Department of Environment and Natural Resources (NCDENR), the action level for petroleum constituents is ten (10) parts per million (ppm) for undisturbed soils. However, once soil is disturbed, then any detectable levels of Volatile Organic Compound (VOC) concentrations will have to be properly manifested and transported to a state approved and licensed disposal/ recycling facility.

18.06 Soil Procedures

Petroleum impacted soil excavation activities are regulated by the Guidelines for Ex Situ Petroleum Contaminated Soil Remediation, State of North Carolina Department of Environment and Natural Resources (NCDENR), Division of Waste Management, Underground Storage Tank Section, September 1, 2003.

An OSHA 1910.120 certified technician who has completed the 24-hour HAZWOPER training shall be onsite at all times when petroleum impacted soil excavation or trenching activity is occurring.

Upon visual or olfactory detection of petroleum impacted soil, the Contractor shall immediately contact the Engineer to report the suspected presence of any petroleum impacted soils. The Engineer will endeavor to arrive onsite within four (4) working hours of the notification from the Contractor (depending on time of day of said notification) to observe site conditions and to field screen the area for the presence or absence of VOC concentrations using a pre-calibrated Photoionization Detector (PID).

During excavation, the Contractor shall make every effort to separate potentially petroleum impacted soil from clean soil. Only the minimum volume of soil necessary to perform the installation is to be excavated. The Engineer will assist the Contractor to determine the limit of impacted soil to be segregated.

All potentially petroleum impacted soil excavated can be temporarily staged next to the trench of origin, placed upon polyethylene sheeting of at least 10-mil thickness and covered with polyethylene sheeting of at least 10-mil thickness to prevent direct precipitation onto the stockpile, or the petroleum impacted soil may be directly loaded into roll-off containers or dump trucks for manifesting and offsite transport.

If the impacted soil is staged for a period greater than 24 hours, a berm shall be placed around the perimeter of the stockpile. The cover sheeting shall continue over a berm designed to prevent direct precipitation onto the stockpile to inhibit the migration of petroleum impacted soils and runoff. The sheeting shall extend outside the berm and be installed and secured in a manner to prevent the damage from wind or accumulation of precipitation. **Figure 1** attached herein is a diagram for the temporary containment and treatment of petroleum contaminated soil.

The Contractor shall ensure the soil is properly stockpiled and properly covered at all times, especially when inclement weather is forecast or occurs.

The Engineer will field screen temporarily stored soil using a PID to determine if the disturbed soil qualifies as "clean fill". Impacted soil with any detectable field screening readings of VOCs shall be disposed of at an off-site facility in accordance with NCDENR regulations. If the source of the impacted soil is unknown, soil sampling and analytical analysis will be performed by the Engineer for off-site soil disposal purposes. The excess petroleum impacted soils shall be treated or disposed of as soon as possible; however, in the event petroleum-impacted soil cannot be transported immediately to an off-site treatment or disposal facility, the soil may be stockpiled on site until such time as this is practicable. After treatment or disposal, the Contractor shall provide the Engineer with copies of transportation manifest records, and/or a Certificate of Remediation and Recycling or other written documentation indicating that the soil has been adequately

treated or disposed. All manifests are required to be submitted to the Engineer on a weekly basis.

18.07 Contacts

KHA:	Kevin Carter Jeremy Rivenbark	919-678-4078, 919-971-0635 (cell) 919-678-4133
City of Durham:	Jim Azurello Tyrone Battle	919-560-7946 (Stormwater Service) 919-560-4386 (Pre-Treatment Coordinator)
NCDENR:	John Malloy Mark Powers Matthew Fleeman	919-791-4200 UST Division 919-791-4228 UST Division Head
Haz Waste	John Powers Vance Jackson	919-508-8400, 0 same as above
NCDOT	Mike Goodwin	919-220-4750 (Asst. District Engineer)

18.08 Petroleum-Impacted Groundwater Contractors

Garco Inc.:	Al King	336-683-0911 (soil & liquids)
Product Recovery Management (PRM):	Dana Browne	866-776-6995 (liquids)
Carbonair:	Tom Fitzgerald	800-526-4999 (liquids)

The Contractor may elect to use all, some or none of the above referenced environmental sub-contractors for this Project.

18.09 Petroleum-Impacted Soil Contractors

Earthtech	Scott Keller	919-774-4517 919-770-4258	
T&D Hauler Contractor	Garco Inc.:	Al King	336-683-0911 (soil & liquids)

The Contractor may elect to use all, some or none of the above referenced environmental sub-contractors for this Project.

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18.10 Payment

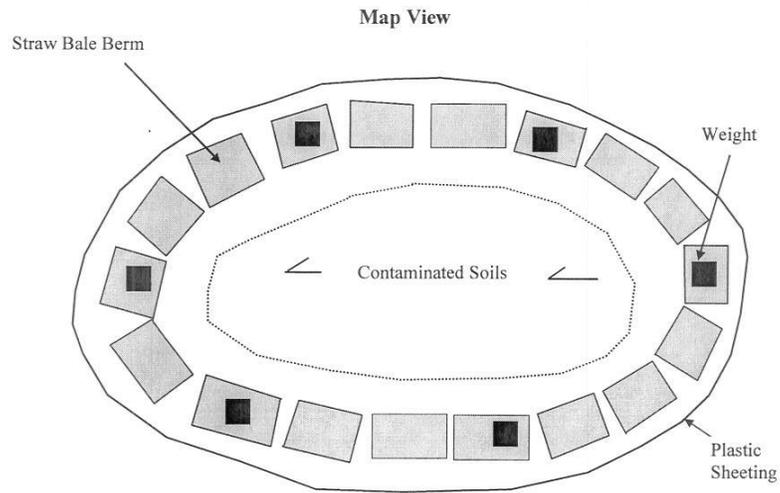
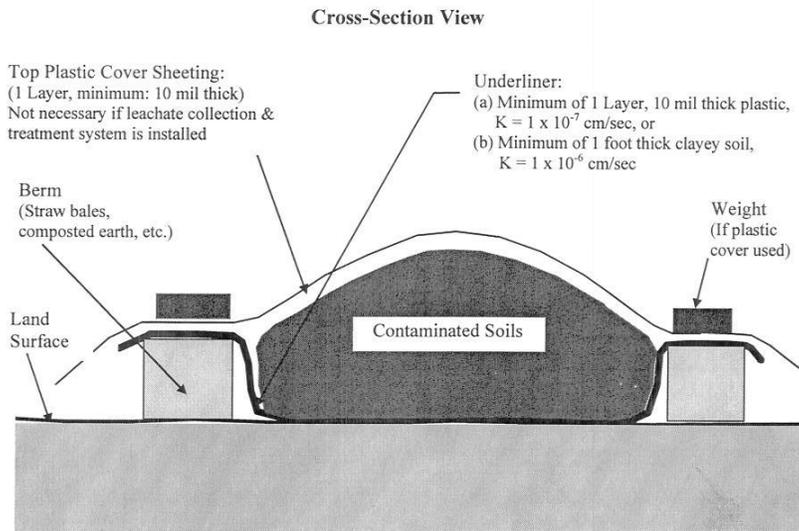
Payment shall be made under this Section only for the removal and disposal of petroleum impacted groundwater and soil. No payment will be made for the excavation and disposal of soil not authorized by the Engineer.

For completing the Work specified under this Section, the Contractor shall be paid the Unit Prices Bid for the respective Pay Items stipulated below:

Pay Item	Description	Unit
18a	Removal, Storage, Transportation, Treatment and/or Disposal of Petroleum Impacted Groundwater	GAL
18b	Mobile Pre-Treatment Remediation System	MONTHLY
18c	Filter Bags	EA
18d	Granular Activated Carbon (GAC)	TON
18e	Excavation, Transportation and "Temporary Stockpiling" of Petroleum Impacted Soil	CY
18f	Excavation, Storage, Transportation, Treatment and Disposal of Petroleum Impacted Soil	TON
18g	Temporary Containment and Treatment of Petroleum Contaminated Soil as illustrated in Figure 1	EA
18h	Furnish and Install "Replacement" Backfill and Select Backfill for Petroleum Impacted Soil Removed	CY

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Figure 1
Diagram for Temporary Containment and Treatment of
Petroleum-Contaminated Soil



APPENDICES

APPENDIX A

DURHAM



1869
CITY OF MEDICINE

SMALL DISADVANTAGED BUSINESS ENTERPRISE (SDBE) REQUIREMENTS AND CONSTRUCTION FORMS

CONTRACT: [SRM-IIB]

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CITY OF DURHAM SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

CONSTRUCTION FORMS

Revised 6/08



Mailing Address:

101 City Hall Plaza
Durham, North Carolina 27701
Phone: 919-560-4180
Facsimile: 919-560-4513

Street Address:

302 East Pettigrew Street, C-180
Durham, North Carolina 27701

The Department of Equal Opportunity/Equity Assurance
Good Things Are Happening In Durham

INSTRUCTIONS ON SDBE REQUIREMENTS

FOR USE IN BIDDING ON CONSTRUCTION PROJECTS WITH THE CITY OF DURHAM

These instructions summarize the provisions of the City of Durham's Equal Business Opportunity Ordinance as it applies to the bid process. Of course, as with any summary, it cannot reflect all of the ordinance.

QUESTIONS AND ANSWERS ON SDBE REQUIREMENTS

1. What is the purpose of the City's Equal Business Opportunity (EBO) program? The Director of the City's EO/EA Department has set SDBE goals for this contract. There will be a goal for SDBEs owned by Blacks and a goal for SDBEs owned by women. For the bid to be fully considered by the City, the bid needs to meet those goals or the bidder needs to have made good-faith efforts to subcontract with SDBEs in order to meet the goals. In order to be given credit for making those good-faith efforts, however, the bidder must provide written documentation of those good-faith efforts. That written documentation must be submitted to the City within 2 days after the bid opening unless a different time is stated by the City. See the instructions below regarding Form E-107.

2. What is an "SDBE"? It means a Small Disadvantaged Business Enterprise. An SDBE is a business, certified by the City of Durham as an SDBE, whose management, policies, major decisions, and daily business operations are independently managed and controlled by one or more socially and economically disadvantaged individuals. Among those considered to be "socially and economically disadvantaged" are individuals found by the City on a case-by-case basis to have been subjected to racial or ethnic prejudice or cultural bias within American society because of his or her identity as a member of a group. The business must not exceed size and gross revenue limits, and it must be majority-owned by one or more socially and economically disadvantaged individuals.

The firm needs to have its certification from the City before the bid opening if it is to count toward meeting the goals. See the next answer on how certification is needed in the good-faith efforts context. Many other units of government, such as counties, departments of transportation, and states, also certify firms and maintain lists of certified firms, but for purposes of complying with the City of Durham's SDBE requirements, the SDBE must be certified by the City of Durham. Certification does not mean that the City has found the firm to be competent.

3. Can other women or minority owned firms that have been certified by other entities be qualified as an SDBE pursuant to City's EBO Program? In accordance with Section 26-6(h) of the Ordinance to Promote Equal Opportunities in City Contracting, the City of Durham may consider a formal certification of another entity to determine whether an applicant meets requirements of the Equal Business Opportunity Program, provided that the City Manager or designee determines that the certification standards of such entity are comparable to those of the City. The City of Durham has determined that the following certifications are comparable to its own and may be used by bidders/proposers: North Carolina Department of Transportation (N.C. DOT), United States Small Business Administration (U.S. SBA) and Raleigh-Durham Airport Authority (RDU).

In lieu of SDBE's listed in its SDBE System, the City of Durham will accept women and minority firms certified by N.C. DOT (www.ncdot.org), U.S. SBA and RDU as meeting its SDBE goal requirements provided the bidder/proposer submits evidence that the firm is currently certified by one of the stated entities

at the time of bid/proposal. Failure to provide evidence of certification may disqualify the firm's participation for the purpose of meeting SDBE goals.

Any firm submitted in this manner will be contacted and urged to complete an abbreviated certification process with the City of Durham. For purposes of this document and associated forms, any reference to a "City Certified SDBE," an "SDBE certified by the City" or similar reference shall include reference to a qualified women or minority owned firm certified and approved in accordance with the above paragraphs, even where specific reference is made to the City SDBE database.

4. What SDBE forms must a bidder or contractor turn in to the City, and when?

<i>Name or description of form</i>	<i>Necessary to submit this form?</i>	<i>When to submit it?</i>
E-101 (SDBE PARTICIPATION ON BASE BID)	Always	With the bid
E-102 (SDBE PARTICIPATION ON BID ALTERNATE)	Yes, if there are alternates. Use a separate form for each alternate.	With the bid
E-103 reserved for future use)	n/a	n/a
E-104 (EMPLOYEE BREAKDOWN)	Has the bidder prequalified? Has the bidder met the SDBE goals? If the answer to either of these questions is "yes," then the form is not required. If the answer to both of those questions is "no," then the bidder must submit this form as part of its documentation of good-faith efforts.	Within 2 days after bid opening unless a different time is stated by the City
E-105 (STATEMENT OF INTENT TO PERFORM AS SUBCONTRACTOR)	Yes, if the bidder proposes to count any subcontracts with SDBEs towards the SDBE goals	Within 5 days after bid opening unless a different time is stated by the City
E-106 (REQUEST TO CHANGE SDBE PARTICIPATION AFTER BID OPENING)	Yes, if the bidder or contractor proposes certain changes in its subcontracting	Not with the bid. Once the bidder is identified as the apparent lowest responsible bidder, this form is due before the bidder/contractor can make the proposed change.
E-107 (QUESTIONNAIRE ON BIDDER'S GOOD-FAITH EFFORTS)	No, but it may help the bidder's case if the bidder failed to meet the SDBE goals. Do not turn in if the bidder met the goals.	Within 2 days after bid opening unless a different time is stated by the City
Good-faith documentation	Yes, if the bidder failed to meet the SDBE goals.	Within 2 days after bid opening unless a different time is stated by the City
Equal employment opportunity statement	Always, unless the bidder has prequalified	Within 2 days after bid opening unless a different time is stated by the City

5. If a bidder fails to meet the SDBE goals, can it still be awarded the contract? Bidders that do not meet the goals but demonstrate good-faith efforts are treated equally to those that meet the goals. Awarding a contract is ultimately the decision of the City Council, which considers compliance with the EBO ordinance along with other matters.

6. In making good-faith efforts, what SDBEs should a potential bidder contact? The City provides a list of SDBEs that have been certified by the City of Durham for particular trades, services, goods, etc. Potential bidders should contact SDBEs listed for the work that can be subcontracted.

7. Our firm already has employees who can do the work and does not want to subcontract that work. How does this fit in? The purpose of the EBO ordinance is to change business practices that would otherwise occur, by giving opportunities to under-used segments of the economy. If the bidder does not meet the goals, its good-faith efforts will be examined as with any other bidder that did not meet the goals.

8. If the bidder contacts a small socially and economically disadvantaged firm that could become a certified SDBE, will that count toward good-faith efforts? This contact will not count unless the firm that you contact is able to get its certification from the City of Durham before the bids are opened. In making good-faith efforts, let us suppose that a potential bidder contacts firms that could qualify to be SDBEs. If those firms have their certification from the City at the time of the bid opening, those contacts will count towards good-faith efforts. But there is a risk, because getting certification takes time, and the firm has to provide various documents to the City in order to merit certification.

9. Do all subcontracts with SDBEs count? The City will count as SDBE participation only expenditures to an SDBE that performs a commercially-useful function in the relevant work. An SDBE performs such a function when the socially and economically disadvantaged owners themselves are actually involved in performing, managing, and supervising a distinct element of the work. To determine whether those requirements are met, the City takes into account the amount of work subcontracted, industry practices, the adequacy of the resources of the SDBE for the work, the qualifications, such as possession of licenses, permits, and professional designations of the socially and economically disadvantaged owners, and other relevant factors. For example, if an SDBE lacks substantially all of the resources equipment and personnel to do the work it shall be presumed not to perform a commercially-useful function. The EBO ordinance includes more points to consider on this issue.

10. May an SDBE enter into subcontracts? This question arises in two situations: (1) the bidder is an SDBE and (2) the bidder is subcontracting with an SDBE. Consistent with normal industry practices, an SDBE may enter into subcontracts. If an SDBE subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of normal industry practices, the SDBE shall be presumed not to be performing a commercially-useful function. The SDBE may present evidence to rebut this presumption to the City.

11. What does it mean to say that information must be submitted “with the bid”? Unless bidders are given other written instructions from the City, it means that the information must be in a sealed envelope, delivered to the same place where a bid can be delivered, and before the time set for the bid opening. Unless bidders are given other written instructions from the City, the information can be either in the same envelope as the bid or in a separate envelope. If it is a separate envelope, the outside of the envelope must state the same information that is required on the bid envelope, and that it contains SDBE forms.

12. When the chart in question 3 says that a form can be submitted 2 days or 5 days after the bid opening, exactly when is it due? Where is it to be submitted?

The form must be submitted to the City's EOE Department, located at 302 East Pettigrew Street, C-180 or faxed to (919) 560-4513, so that it is received within 2 days or 5 days (whichever applies according to the chart) after the bid opening. If the form is faxed, it must be received before midnight on that 2nd or 5th day. If it is delivered by any other means, it must be received before 5:00 PM. In counting these 2 days or 5 days, exclude the following: the day of the bid opening, Saturday, Sunday, and holidays observed by city government of the City of Durham. For instance, for a form due in 2 days, if the bid opening is on a Thursday, the due date for the form would be on the following Monday (midnight if faxed, otherwise 5:00 PM). If the day after the bid opening or that Monday is a City holiday, the form would be due on Tuesday. For a form due in 5 days, if the bid opening were on Tuesday, the due date for the form would be on the following Tuesday (midnight if faxed, otherwise 5:00 PM). If any weekday between those Tuesdays is a City holiday or if the Tuesday on which the form would be due is a City holiday, the form would be due on Wednesday. It is best to place the documents inside an envelope, and to write on the outside of the envelope the same information that is required on the bid envelope, and that it contains SDBE forms. Holidays observed by city government are New Years' Day, Dr. Martin Luther King, Jr., Day; Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the day after Thanksgiving Day, Christmas Day; two days (varying from year to year) during the week of Christmas Day; and other times as may be authorized by City Council.

13. When there are bid alternates how is SDBE participation counted? The total amount of the award actually made by the City is the key. For instance, assume the following made-up example:

- ◆ Base bid is \$200,000
- ◆ Alternate A bid is \$50,000
- ◆ Alternate B bid is \$20,000
- ◆ Black-owned SDBE goal is 10%.
- ◆ The bidder proposes Black-owned SDBE participation as follows: \$20,000 on the base bid, \$4,000 on Alternate A, and \$10,000 on Alternate B.

In this fictional example, the bidder may or may not meet the goal, depending on the actual award by Council. This chart illustrates:

AWARD BY CITY COUNCIL

	Only the base bid	Base bid + Alternate A	Base bid + Alternate B	Base bid + Alternates A & B
Bid total	\$200,000	\$250,000 (200,000 + 50,000)	\$220,000 (200,000 + 20,000)	\$270,000 (200,000 + 70,000)
Total SDBE participation	\$20,000	\$24,000 (20,000 + 4,000)	\$30,000 (20,000 + 10,000)	\$34,000 (20,000 + 14,000)
Black-owned SDBE percentage	10%	9.6%	13.6%	12.6%
Meet 10% Black-owned SDBE goal?	Yes	No	Yes	Yes

14. How does the City count participation by an SDBE that is not owned by Blacks or women? An SDBE not owned by Blacks or women may be counted by the bidder towards either goal. The bidder should specify how to count such SDBEs on form E-101.

15. How is the lease of equipment by an SDBE counted? If the SDBE leases equipment for the work of the contract, the value of the lease payments is included as part of the SDBE's participation. However, it is not proper to include such lease payments if they are to be made to the prime contractor or the prime contractor's "Affiliate." To understand what an "Affiliate" is, see section 26-3 of the EBO ordinance.

16. How is the purchase of goods from an SDBE counted? If the bidder is buying goods from an SDBE, the cost of the goods can be considered SDBE participation only if (a) the SDBE operates or maintains a factory that produces the goods, or (b) the SDBE has an establishment where the goods of the general character described by the specifications or required under the Contract are regularly sold or leased to the public in the usual course of business. If (b) applies, the SDBE's *principal* business must be selling or leasing those goods and the SDBE must operate under its own name.

INSTRUCTIONS FOR INDIVIDUAL SDBE BID FORMS FOR CONSTRUCTION

Form E-101 (SDBE PARTICIPATION) On this form, "participation" is the dollar amount of subcontracts for significant goods and services to be used to perform the contract. For instance, if the bidder would enter into subcontract with SDBEs for a total of \$30,000, that would be the SDBE participation amount. The sum of SDBE participation and non-SDBE participation should equal the amount of the bid. Form E-101 is required for the base bid

Form E-102 (SDBE PARTICIPATION ON BID ALTERNATE) This form is essentially the same as Form E-101, except that it is used for the alternate bids instead of the base bid. Use a separate Form E-102 for each alternate bid.

Form E-103 reserved for future use

Form E-104 (EMPLOYEE BREAKDOWN) Complete Part A for the primary location where the goods and services that are the subject of the bid are to be made or provided. If the parent company or other locations of the bidder are providing any substantial portion of the goods or services, then the bidder must also complete Part B, for the consolidated company. If the bidder has an EEO-1 Report that provides the

same information as required on the Form E-104, the EEO-1 Report may be used instead. On whether to submit Form E-104, see question 3 above. If you need to submit it, see questions 3 and 11 above on when and where to turn in this form.

Form E-105 (STATEMENT OF INTENT TO PERFORM AS SUBCONTRACTOR) The bidder must provide a Form E-105 (Statement of Intent) for each SDBE firm that the bidder would subcontract with if the City awards the contract to the bidder. See questions 3 and 11 above on when and where to turn in this form.

On Form E-105, what happens if column 2 (dollar amount) disagrees with column 3 (percentage)?

If there is a conflict between the dollar amount in Column 2 and the percentage of base bid in Column 3, the percentage stated in Column 3 will control. For instance, if Column 2 is \$10,000, Column 3 is 10%, and the base bid is \$200,000, there is an error, because ten percent of \$200,000 is \$20,000, not \$10,000. In that example, the form will be read as a commitment for \$20,000. If the SDBE both (i) is doubtful of its arithmetic *and* (ii) wants Column 2 to control in case of disagreement, it may say that Column 2 will control over Column 3, but to do so, it must write that on Form E-105.

E-106 (REQUEST TO CHANGE SDBE PARTICIPATION AFTER BID OPENING) When is this form used? Beginning with the time that the City Manager identifies a bidder as the apparent lowest responsible bidder and continuing as that bidder is awarded the contract and continuing until that bidder/contractor reaches the point of final completion of the work, Form E-106 is to be used when the following occurs: If the bidder/contractor proposes to do any of the following –

- to replace a subcontractor,
- to perform subcontracted work with the bidder/contractor's own forces,
- to increase the quantity of subcontracted work,
- to decrease the quantity of subcontracted work, or
- to change the allocation of work among subcontractors,

then the bidder/contractor must make good-faith efforts to attain the goals that it has shown on the E-101 and applicable E-102 forms, and the bidder/contractor must fill out Form E-106. Substitutions of subcontractors in these circumstances, both before and after the awarding of a contract, are subject to City approval. Consult the City's EO/EA Department on the procedures to follow in order to comply with City Code 26-10(c).

E-107 (QUESTIONNAIRE ON BIDDER'S GOOD-FAITH EFFORTS) Bidders that do not attain the SDBE goals have the responsibility to make good-faith efforts and to demonstrate to the City that they have made such efforts. In determining a bidder's good-faith efforts to engage SDBEs, the City Manager shall consider the information supplied by the bidder to answer the questions in Form E-107, , along with other criteria that the City Manager deems proper. Form E-107 is an optional tool that bidders may use to show that they have made good-faith efforts. See questions 3 and 11 above on when and where to turn in this form. Even when this form may be submitted after the bid opening, it cannot include information on efforts made after the bid opening. Even if a bidder does not use Form E-107, the City will nevertheless attempt to answer the questions on the E-107 using good-faith documentation supplied by the bidder. Bidders who do not turn in Form E-107 will still find it helpful to know how the City will determine whether good-faith efforts have been made.

For Section 2 of Form E-107 -- To make the best good-faith efforts as described under Section 2 on E-107, your firm should have sent a written letter or fax to all SDBEs on the City’s list that perform the kind of work to be subcontracted. Your firm needs to keep a record of all of these attempts to reach SDBEs. That letter would say, in effect, as follows: (Of course, your firm would need to write appropriate words where *italicized instructions* are used below.)

Our firm is interested in bidding on a contract with the City of Durham for [*describe the project*]. We are interested in subcontracting, to your firm, the following work [*describe specific work, for example, painting of interiors of 5 rooms, including prep work; or supplying 20 circuit breakers of type XJE-R or equivalent*]. You may inspect the applicable plans and specifications and descriptions of items to be purchased at our office located at the address shown above, or at the City of Durham’s EO/EA Department, 302 East Pettigrew Street, C-108 , Durham, N.C., 27701 , 919-560-4180[*, or at the AGC plan room in (specify the locations)*]. You may obtain a copy [*explain how and from whom (the City, architect, engineer, etc.) the potential subs can obtain a copy*].

If applicable, tell the SDBEs at which offices of the AGC the plans and specifications may be seen, possibly from the following AGC list.

1100 Euclid Avenue Charlotte, NC 28203-1868 Phone: (704)372-1450	Caswell Bldg., Glenwood Place 3700 National Drive, Ste. 201 Raleigh, NC 27612 Phone: (919)781-3270
4000 Piedmont Parkway, Ste. 400 High Point, NC 27265-0941 Phone: (336)812-3127	2527 S. 17th St. Wilmington, NC 28401 (McGee CADD Reprographics Bldg.) Phone: (910)791-5533
2713 Breezewood Avenue Fayetteville, NC 28303 Phone: (910)484-0184	801 Dickenson Blvd. Greenville, NC 27834 (McGee CADD Reprographics Bldg.) Phone: (252)752-4400
404 Executive Park, Bldg. 3 Asheville, NC 28801-2426 Phone: (828)254-6499	Other AGC locations if they have the plans and specifications

GOOD-FAITH DOCUMENTATION. This is not a City form but is documentation to be supplied by the bidder. See the instructions on Form E-107 above. Unless the bidder meets the SDBE goals, the bidder must demonstrate that it made good-faith efforts. To do so, it can use a combination of providing answers to Form E-107 and documentation, such as copies of the notices to SDBEs that are described in question 1(c) on Form E-107. See questions 3 and 11 above on when and where to turn in this form. Even when this documentation may be submitted after the bid opening, it cannot include information on efforts made after the bid opening.

EQUAL EMPLOYMENT OPPORTUNITY (EEO) STATEMENT. This is not a City form but is a statement to be supplied by the bidder. The bidder shall state its nondiscrimination employment policy and business practices as of the time of bid opening. Write “EEO” at the top of the first page of your statement. This is different from the EEO-1, which is referred to in the instructions for Form E-104. See questions 3 and 11 above on when and where to turn in this form.

Form E-101 SDBE PARTICIPATION ON BASE BID

Name of Bidder: Sullivan Eastern, INC

Prequalification number: 1257 Prequalification expiration date: 11-8-13

Total dollar amount of SDBE participation in base bid work: 90,000.00

For each row, check one column: E, F, or G.

Column A	Column B	Column C	Column D	Column E	Column F	Column G
Name of proposed subcontractor for base bid work	Goods and services to be provided for base bid work	Subcontract amount, in dollars, for base bid work	Percentage of total base bid (Column C divided by total base bid)	Black-owned SDBE	Women-owned SDBE	Non-SDBE
Stay Alert Safety Service	Traffic Control	\$ 5,000.00	0.2 %		✓	
Calamar Inc	Materials	\$ 25,000.00	0.9 %		✓	
Bailey Contracting	Materials	\$ 60,000.00	2.2 %	✓		
		\$	%			

Attach extra sheets as needed. See question 14 under **QUESTIONS AND ANSWERS ON SDBE REQUIREMENTS**, which states that the bidder may check column E or column F for an SDBE that is neither Black-owned nor women-owned.

Do the above participation amounts meet the goals on this contract, assuming only the base bid is counted?

Yes No. If the answer is No: (1) the bidder must have made good-faith efforts; (2) the bidder must provide, within 2 business days after bid opening, documentation of good-faith efforts; and (3) the bidder must sign below.

As an authorized representative of the Bidder, I swear or affirm under penalty of fraud that the good-faith efforts documentation submitted with this bid, pertaining to the base bid and all alternates, if any, is correct and not intended to defraud or mislead. After the contract between the City and the Bidder is signed, except to the extent that the City gives prior written approval for changes, the Contractor agrees that it shall engage the subcontractors listed on this E-101 and on all applicable E-102 forms, to perform the work for the dollar amounts or percentages described on this E-101 and applicable E-102s.

Thomas M. Sullivan
Signature of individual authorized to sign for Bidder

Form E-102 SDBE PARTICIPATION ON BID ALTERNATE

This form pertains to the following bid alternate: _____

(Specify the alternate, in the way that it is designated in the bid documents)

Name of Bidder: _____

Total dollar amount of SDBE participation in work on this alternate: _____

For each row, check one column: E, F, or G.

Column A	Column B	Column C	Column D	Column E	Column F	Column G
Name of proposed subcontractor for this alternate	Goods and services to be provided for this alternate	Subcontract amount, in dollars, for this alternate	Percentage of total bid for this alternate (Column C divided by total bid for this alternate)	Black-owned SDBE	Women-owned SDBE	Non-SDBE
		\$	%			
		\$	%			
		\$	%			
		\$	%			

Attach extra sheets as needed. . See question 14 under QUESTIONS AND ANSWERS ON SDBE REQUIREMENTS, which states that the bidder may check column E or column F for an SDBE that is neither Black-owned nor women-owned.

Do the above participation amounts meet the goals, if you consider only this alternate and not the base bid work? **Yes** **No**. If the answer is No: (1) the bidder must have made good-faith efforts; (2) the bidder must provide, together with this bid, documentation of good-faith efforts; and (3) the bidder must sign Form E-101 (SDBE PARTICIPATION ON BASE BID).

E-104 EMPLOYEE BREAKDOWN

Part A – Employee statistics for the primary location.

				M—a—l—e—s					F—e—m—a—l—e—s				
Employment category	Total employees	Total males	Total females	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project manager													
Professional													
Technical													
Clerical													
Labor													
Totals													

Part B – Employee statistics for the consolidated company. *(See instructions for this form on whether this part is required.)*

				M—a—l—e—s					F—e—m—a—l—e—s				
Employment category	Total employees	Total males	Total females	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project manager													
Professional													
Technical													
Clerical													
Labor													
Totals													

Form E-105 STATEMENT OF INTENT TO PERFORM AS SUBCONTRACTOR

Name of **Bidder**: _____

Name of **Project**: _____

The undersigned firm is certified by the City of Durham as an SDBE.

The undersigned SDBE represents that it will enter into a formal contract with the Bidder to perform the following work in connection with the Project, in the dollar amount or percentage listed below, if the Bidder signs a contract with the City of Durham for the Project.

Describe the work in sufficient detail so that it can be determined whether the SDBE's work is a substantial and necessary part of the Project.

Column 1 - description of work to be done by undersigned SDBE	Column 2 -dollar amount of the proposed subcontract between the bidder and the undersigned SDBE	Column 3 - percentage of Bidder's base bid represented by the proposed subcontract between the Bidder and the undersigned SDBE

The undersigned SDBE will be ready to begin work on the subcontract on the following date:

Name of SDBE: _____ Telephone No. _____

Address, including Zip Code, of SDBE: _____ Fax No. _____

Signature of authorized representative of SDBE

Title of the person who signed above: _____

What person with the SDBE should the City contact with questions about this form or the proposed subcontract? _____

Name of individual: _____ Telephone No. _____

Title of individual: _____

Email address: _____

By submitting this form to the City of Durham, the Bidder represents that if the Bidder signs the contract with the City of Durham for the Project, the Bidder will enter into the subcontract described above with this SDBE.

E-106 REQUEST TO CHANGE SDBE PARTICIPATION AFTER BID OPENING

Project: _____

Name of bidder or contractor: _____

Name and title of representative of bidder or contractor: _____

Address (including Zip Code): _____

Telephone number: _____ Fax number: _____

Email address: _____

Total amount of original contract, before any change orders or amendments: _____

Total amount of the contract, **including** all approved change orders and amendments to date, but **not counting** the changes proposed in this form: _____

Dollar amount of changes proposed in this form: _____

The proposed change (*check one*) **increases** **decreases** the dollar amount of the bidder's/contractor's contract with the City.

Does the proposed change decrease the SDBE participation? (*check one*) **yes** **no**

If the answer is **yes**, complete the following:

BOX A. For the subcontract proposed to be changed (increased, reduced, or eliminated):

Name of subcontractor: _____

Goods and services to be provided before this proposed change: _____

Is it proposed to eliminate this subcontract? **yes** **no**

If the subcontract is to be increased or reduced, describe the nature of the change (*such as adding \$5,000 in concrete work and deleting \$7,000 in grading*): _____

Dollar amount of this subcontract before this proposed change: _____

Dollar amount of this subcontract after this proposed change: _____

This subcontractor is (*check one*):

- 1. City-certified Black-owned SDBE
- 2. City-certified women-owned SDBE
- 3. City-certified SDBE that is neither Black-owned nor women owned, but to be credited as
 - 3(a) Black-owned SDBE 3(b) women-owned SDBE
- 4. not a City-certified SDBE

BOX B. Proposed subcontracts other than the subcontract described in Box A above

Name of subcontractor for the new work: _____

Goods and services to be provided by this proposed subcontract: _____

Dollar amount proposed of this proposed subcontract: _____

This subcontractor is (*check one*):

- 1. City-certified Black-owned SDBE
- 2. City-certified women-owned SDBE
- 3. City-certified SDBE that is neither Black-owned nor women owned, but to be credited as
 - 3(a) Black-owned SDBE 3(b) women-owned SDBE
- 4. not a City-certified SDBE

Add additional sheets as necessary.

This form is used only if the conditions described in the instructions are present.

E-107 QUESTIONNAIRE ON BIDDER'S GOOD-FAITH EFFORTS

Name of Bidder:

If you find it helpful, feel free to attach pages to explain your answers. **How many pages is your firm attaching to this questionnaire?** _____ (Don't count the 2 pages of this questionnaire.)

If a yes or no answer is not appropriate, please explain the facts. All of the answers to these questions relate only to the time before your firm submitted its bid or proposal to the City. In other words, actions that your firm took after it submitted the bid or proposal to the City cannot be mentioned or used in any answers.

1. SOLICITING SDBEs.

(a) Did your firm solicit, through all reasonable and available means, the interest of all SDBEs certified (that is, in the City's database) in the scopes of work of the contract? **yes** **no**

(b) In such soliciting, did your firm advertise? **yes** **no** Are you attaching copies to this questionnaire, indicating the dates and names of newspaper or other publication for each ad if that information is not already on the ads? **yes** **no**

(c) In such soliciting, did your firm send written (including electronic) notices or letters? Are you attaching one or more sample notices or letters? **yes** **no**

(d) Did your firm attend the pre-bid conference? **yes** **no**

(e) Did your firm provide interested SDBEs with timely, adequate information about the plans, specifications, and requirements of the contract? **yes** **no**

(f) Did your firm follow up with SDBEs that showed interest? **yes** **no**

(g) With reference to the SDBEs that your firm notified of the type of work to be subcontracted -- Did your firm tell them?

(i) the specific work your firm was considering for subcontracting? **yes** **no**

(ii) that their interest in the contract is being solicited? **yes** **no**

(iii) how to obtain and inspect the applicable plans and specifications and descriptions of items to be purchased? **yes** **no**

2. BREAKING DOWN THE WORK.

(a) Did your firm select portions of the work to be performed by SDBEs in order to increase the likelihood that the goals would be reached? **yes** **no**

(b) If **yes**, please describe the portions selected. **ANSWER:**

3. NEGOTIATION. In your answers to 3, you may omit information regarding SDBEs for which you are providing Form E-105.

(a) What are the names, addresses, and telephone numbers of SDBEs that you contacted? **ANSWER:**

See next page for remaining questions.

(b) Describe the information that you provided to the SDBEs regarding the plans and specifications for the work selected for potential subcontracting. **ANSWER:**

(c) Why could your firm not reach agreements with the SDBEs that your firm made contact with? Be specific. **ANSWER:**

4. ASSISTANCE TO SDBEs ON BONDING, CREDIT, AND INSURANCE.

(a) Did your firm or the City require any subcontractors to have bonds, lines of credit, or insurance?
 yes **no** (Note: In most projects, the City has no such requirement for *subcontractors*.)

(b) If the answer to (a) is **yes**, did your firm make efforts to assist SDBEs to obtain bonds, lines of credit, or insurance? **yes** **no** If **yes**, describe your firm's efforts. **ANSWER:**

(c) Did your firm provide alternatives to bonding or insurance for potential subcontractors? **yes** **no**
If **yes**, describe. **ANSWER:**

5. GOODS AND SERVICES. What efforts did your firm make to help interested SDBEs to obtain goods or services relevant to the proposed subcontracting work? **ANSWER:**

6. USING OTHER SERVICES.

(a) Did your firm use the services of the City to help solicit SDBEs for the work? **yes** **no** Please explain. **ANSWER:**

(b) Did your firm use the services of available minority/women community organizations, minority and women contractors' groups, government-sponsored minority/women business assistance agencies, and other appropriate organizations to help solicit SDBEs for the work? **yes** **no** Please explain. **ANSWER:**

APPENDIX B



CERTIFIED SMALL DISADVANTAGED BUSINESS ENTERPRISE (SDBE) LISTING

CONTRACT: [SRM-IIB]

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City of Durham SDBE Listing for Southern Reinforcing Main Phase IIB

Name	Mailing Address	City	State	Zipcode	Gender/ Race ID	Contact	Phone	Fax	Cell/Phone	Email	Services	Licenses
41 Construction Company, Inc.	333 North Main Street	Dyer	TN	38330	M	Lafayette Johnson	731-692-2526	731-426-2750	731-692-2528	4jnc@bellsouth.net	concrete-placing and finishing, slab, tying steel, sidewalks, foundations, curbs, gutters and mass pour concrete projects	
ABTAK of Durham, Inc.	11 Loggin Trail	Durham	NC	27707	M	Eli Brown	919-259-0091	866-577-5286	919-259-0091	abtak3@msn.com	general contractor: cement, landscaping, grading, utilities, carpentry	NC General Contractors License#71930 Limited Building
Andre Laws Grading & Backhoe Service, Inc.	1306 Broad Street	Durham	NC	27705	M	Andre Laws	919-641-5641	919-416-1131	919-427-2583	alawsjr1@aol.com	Grading, Clearing and Excavation	City of Durham Business License
Atlantic Contracting Co., Inc.	116 Stage Coach Trail	Greensboro	NC	27419	W	Niveen Kattan	336-931-3109	336-601-3108	336-601-1669	info@atlanticcontractinginc.com	Concrete Masonry	NC General Contractors License
Autry Construction Company	6993 Driver Road	Zebulon	NC	27597	M	Waymond Autry	919-369-1355	252-235-0210	919-369-1355	autry.construction@yahoo.com	Public Utilities - Water, Sewer, Storm Drainage	
B & B Triangle Lawncare	PO Box 25006		NC	27702	M	Andre Bond	919-384-9300	919-384-9300	919-423-1417	abond@bandbtrianglelawncare.com	landscaping, lawn maintenance, cleaning, construction cleanup, snow removal	City of Durham Privilege License
Becton Industries	2007 Ford Gates Drive	Garner	NC	27529	M	Arthur Becton	919-772-9596	919-773-1146	919-271-2796	abecton@mindspring.com	Distributor/Supplier of Utilities, Plumbing and Construction Supplies	Garner Privilege License
Buffalo Creek Grading & Transport, Inc.	PO Box 685	Wendell	NC	27591	W	Melissa Morgan	919-266-7473	919-365-3655	919-266-7473	wrenronnie@yahoo.com	hauling, grading, landscaping, construction, excavation: dozer work	
Busy Black Trucking, LLC	1111 Snow Hill Road	Durham	NC	27712	M	Anthony Black	919-442-7079	919-471-6232	919-442-7079	busyblacktrucking@nc.rr.com	hauling services-all aggregate materials, rock, sand, dirt, concrete debris, demolition	City of Durham Privilege
Calamar, Inc.	P.O. Box 52058	Durham	NC	27717	W	Pam Lane	919-969-1574	919-969-1563	919-491-9216	Planep1@aol.com	construction of water utilities and sewer utilities; storm drainage; general construction; supply materials for storm drainage/water and sewer	City of Durham Privilege
Callis Contractors, Inc.	1306 Broad Street	Durham	NC	27705	M	Jessie Callis	919-416-6191	919-416-1131	919-416-1131	projmang@calliscontractorsinc.com	general contractor (Highway and Public Utilities); Demolition	GC License #59167 Unlimited Building
Carolina Environmental Contracting, Inc.	PO Box 1905	Mount Airy	NC	27030	W	Joanne Cheatham	336-320-3849	336-320-3854	919-422-3854	joanne@carolinaenvironmentalcontracting.com	Erosion Control; Silt Fencing; Tree Protection; Fencing; Revegetation (seeding)	City of Mt. Airy Business License
Carolina Transport Services, LLC	566 Neodak Road	Apex	NC	27523	H	Brenda Fisher, Elda Greene	919-596-5905	919-362-8199	919-596-8199	Brenda@carolinatransportservice.com	hauling dirt, stone, gravel, asphalt, etc. Hauling heavy equipment	City of Durham Privilege
Carrothers Enterprise	40626 B W Road	New London	NC	28127	M	Christopher Carrothers	(704)422-6407	(704)422-6407	(704)422-0145	ccarrothers@windstream.net	Framing, drywall, general trades, demolition, drywall, concrete and masonry.	
Certified Concrete Construction, Inc.	PO Box 91298	Raleigh	NC	27617	W	Joel Sousa	919-781-5575	919-481-9058	919-442-8358	joel@certifiedconcreteconstruction.com	concrete flat work: curb & gutter; sidewalk; concrete paving; dumpster pads; wheelchairs ramps; driveways	City of Durham Privilege License
Complete Lawn Care	5853 Sandstone Drive	Durham	NC	27713	M	Robert Grimsley	919-544-7603	919-544-9131	919-201-9646	completelawnrenc@gmail.com	Landscaping; lawn care; hauling topsoil, gravel and sand	City of Durham Business License
Coral Home Solutions dba Coral Construction and Design	P.O. Box 628	Carrboro	NC	27510	M	Tiffany Elder	919-627-7843	866-854-4717	919-260-2507	info@coralbuilt.com	general contracting; construction; plumbing; electrical; HVAC; roofing; masonry; drywall; painting; flooring; demolition; concrete	NC General Contractor's License#58672 Limited Building
Core Master, LLC	PO Box 8946	Rocky Mount	NC	27804	M	Lisa Gonzalez	252-451-5661	252-451-5662	252-205-3386	info@coremasterusa.com	concrete core drilling; concrete cutting/floor/wall/hand sawing; controlled demolition	
Cruz Brothers Concrete, Inc.	1572 Payne Road, #75	Graham	NC	27253	H	Maria L. Cruz	336-376-0787	336-376-1115	336-516-5764	mes@cruzbro.com	Concrete curb & gutter, sidewalks, slabs, driveways	
D. Washington Group LLC	411 E. Chapel Hill Street, Suite 906	Durham	NC	27587	M	Dewayne Washington	919-794-5948	919-794-5721	919-8167356	dewayne@dwashingtongroup.com	General Contractor; concrete; masonry; demolition; carpentry; gypsum board systems	General Contractor's License#69829
David Hinton Construction Co., Inc.	P.O. Box 471	Middlesex	NC	27557	M	David Hinton	919-868-5874	919-868-5874	919-868-5874	dhconst@nc.rr.com	curb & gutter; sidewalks; slab work; concrete	
Davidson Construction, LLC	208 Gibson Lane	Clayton	NC	27520	M	Tony Small	919-550-3485	919-550-3485	919-868-7771	davidsonbidg@aol.com	concrete; demolition; sheetrock; metal studs; construction	NC General Contracting#63308 Limited Building

City of Durham SDBE Listing for Southern Reinforcing Main Phase IIB

Name	Mailing Address	City	State	Zipcode	Gender/ Race ID	Contact	Phone	Fax	CellPhone	Email	Services	Licenses
Done Right the First Time Contractors	5021 Robinwood Road	Durham	NC	27713	M	Troy White	919-544-7963	919-572-6351	919-824-3325	driftcontractors@gmail.com	construction services:concrete; painting; drywall; plumbing; electrical; framing; finishing	NC General Contractor's License#69797
Double P Concrete Finishing Services, LLC	6917 Windover Drive PO Box 663	Durham	NC	27712	M	Randy Williams	919-477-3009	919-477-3009	919-624-3009	btear4@aol.com	grading; hauling; concrete placement; grading,forming, pouring and finishing	City of Durham Privilege
Dwehll Professional Services, LLC	PO Box 663	Durham	NC	27704	M	Rhonda Dandridge	(919)672-3088			dwehllconstruction@gmail.com	Concrete, landscaping and janitorial	None
Erosion Supply Company	PO Box 91208	Raleigh	NC	27675	W	Vicki Phillips	919-787-0334	919-787-0335	919-414-7465	vphillis@erosionsupply.com	provide site preparation & paving materials which include erosion control, seeding and geotextiles	
ETC Concrete Construction Corporation	3829 Opportunity Lane	Raleigh	NC	27603	H	Liz Esteves	919-772-4114	919-772-4114	919-291-5719	liz@etcconcrete.com	concrete-sidewalks;paving;footings	
FRL Cleaning	611 Morrene Avenue	Durham	NC	27705	W	Vilma Forrester	919-383-9482	919-383-9482	919-724-7118	albornozvilma@hotmail.com	commercial and residential cleaning; mowing and landscaping	City of Durham Privilege
H. Richardson & Company, Inc.	5104 Sky Lane Drive	Durham	NC	27704	M	Henry Richardson	919-530-1770	919-530-1770		jrichardson84@nc.rr.com	General Contracting (Highway); Construction Administration; Inspection; Technical Assistance Provided to Engineers such as: Field Testing, Data Collection; Traffic control; Erosion Control; Asphalt or Pavement Repair	General Contracting License #49668; Highway
HD3 Enterprises	9001 Willington Place	Wake Forest	NC	27587	M	Harry Daniels	919-741-5155	919-741-5155	919-741-5155	hdaniels@HD3Enterprises.com	Project Management; pavement markings; fence installation; waste dispos; landscaping	
Hine Stetwork, Inc.	PO Box 1275	Goldsboro, NC	NC	27533	W	Ann Hine	919-736-8990	919-736-8886	919-738-2972	am@hinesetwork.com	demolition; grading; paving; concrete; erosion control;clearing&grubbing; water & sewer curb&gutter;storm drainage	NC General Contracting#52225 Unlimited:Highway, PU (Water & Sewer)
Hughes Masonry	2524 Hwy 55	Durham	NC	27713	M	Billy Hughes	919-201-2498	919-201-2498	919-201-9138	bhughes.masonry@yahoo.com	masonry; brick; stone work; pressure washing;concrete	City of Durham Privilege License
Hunter and Hunter General Services, LLC	324 W. Glendale Avenue	Charlotte	NC	28120	M	Carlos Hunter	866-935-9499		980-989-8193	hunter_hunterllc@yahoo.com	General Commercial Construction Services; Paint maintenance and repair;commercial and residential building upfits; commercial and residential landscaping; carpentry; drywall and finishing; metal framing	City of Charlotte: City of Mount Holly
ICORE Service Company, LLC	4216-A Queen Beth Drive	Greensboro	NC	27405	M	Cornelius Lamberth	336-274-2394	336-617-8253	336-362-1646	rlhamb@hotmail.com	Framing, Ceilings, Concrete (Flat), Doors and Hardware	NC General Contractor's License - Building, Limited
IO Contracting, LLC	PO Box 6069	Raleigh	NC	27608	H	Robert A. Nunez	919-832-5111	919-832-4111	919-616-2618	rnunez@iocontracting.net	Concrete Construction and Concrete Repair	City of Raleigh Privilege License
J.A. Farrington Janitorial Services, Inc.	2403 Fayetteville St.	Durham	NC	27707	M	James Farrington	919-808-2120	919-806-8064	919-308-7988	kemeluniversal@hotmail.com	Janitorial Services and cleaning; landscaping & ground maintenance; irrigation; snow removal	Durham Privilege License
JEM Business Development Svs. LLC dba The Ameri-Thal Group	401 Sherrill Street	Greensboro	NC	27403	AS	Jay Miller	336-772-2542	336-772-2542		Je.Miller@TheAmeriThalgroup.com	General construction; painting;drywall; landscaping; construction cleaning; small business consulting services	
Kearneco Grading	1512 US Hwy 401 S.	Warrenton	NC	27589	M	Paul Kearney	252-257-4106	252-257-9411	252-213-1932	pkearney@ncol.net	grading;excavation;demolition	
Kinston Contracting, Inc.	113 East Gordon Street	Kinston	NC	28501	M	Linda J. Lanier	252-268-7768			dirplay2@yahoo.com	general construction;grading; clearing;concrete;landscaping	
Lanier Construction Company, Inc.	1505 Browntown Road	Snow Hill	NC	28580	M	Sherba Lanier	252-747-8124	252-747-4337	252-286-6736	sherba@dlrcway.com	Curb & Gutter, Concrete, Grading and Excavation, Road Construction,clearing and grubbing; General construction; Manhole and Valve box,Bridge and Box culverts	NC General Contractor's License Unlimited Classification: Building: Highway, PU (Water Line & Sewer)

City of Durham SDBE Listing for Southern Reinforcing Main Phase IIB

Name	Mailing Address	City	State	Zipcode	Gender/ Race ID	Contact	Phone	Fax	Cell/Phone	Email	Services	Licenses
Martinez Company, Inc.	342 Fleming Drive	Durham	NC	27712	H	Keith Brown	919-255-8817	919-367-0637	919-724-2611	luis342@bellsouth.net	demolition; concrete cutting/repair/placement/slabs/sidewalks;waterproofing; caulking; sealers; sandblasting; pressure washing; erection of p/strut; natural stone	
Mason Builders, LLC	P O Box 1068	Gaston	NC	27832	M	Bernard Mason	919-237-2377	252-535-2275	252-578-2329	Bernard@masonbuilders.org	building construction; electrical contractor; HVAC construction; masonry; tiling; framing; painting/drywall; flooring; concrete; design/build construction; architectural	NC General Contractor's License# 39316 Unlimited Building; VA Class A Contractor's License#2705
Mayo's Masonry, Inc.	4917 Howe Street	Durham	NC	27704	M	Phillip Mayo	919-730-5063	919-237-3105	919-730-5053	mayo_masonryinc@yahoo.com	Concrete/Masonry/Framing/Hauling	
McClure and Associates Construction, Inc.	6201 Remington Lake Drive	Raleigh	NC	27616	W	Leslie McClure	919-878-8006	919-878-7992	919-868-3649	Leslie@mcclurebuilders.com	new commercial and residential construction; commercial and residential renovation/rehab; painting; grading; demolition; drywall; concrete; framing; roofing; metal roofing;	NC General Contractors License#42632 Unlimited Building
McFarland Corbitt Construction, LLC	11421 Cane Crossing Road #1111	Charlotte	NC	28277	M	Tutino McFarland	704-249-6513	704-900-6812		tmcfarland@mcfarlandcorbitt.com	General Contracting/Building & public utilities; Construction Management	
New Beginning Landscape, LLC	11438 Larix Drive	Charlotte	NC	28273	M	George Daniels	704-400-4930	704-504-3115	704-508-4930	nbocdc@centurylink.net	Landscaping	
Norlina Grading & Excavating, LLC	P.O. Box 1092	Norlina	NC	27563	W	Wilma Snyder	252-456-2933	252-456-2002	252-432-2112	wilma_snyder@yahoo.com	public utilities-water, sewer, drain, grading; excavating & land clearing	
Pro-Site Services, LLC	P O Box 1491	Durham	NC	27702	M	Ronald Williams	919-730-8110		919-730-8110	ron@prositeservices.net	Concrete, Grading	City of Durham Business License
RDU Paving, Inc.	5415 Fayetteville Road	Raleigh	NC	27603	W	Jeanette Lundholm	919-329-7300	919-329-7301	919-625-2832	sales@rdupaving.com	asphalt paving; new pavement construction/repair;seal coating; striping; small concrete repair	City of Raleigh, NC General Contractors License - Highway Limited: #62537
Reddick Masonry	701 Felicia Street	Durham	NC	27704	M	Rueben Reddick	919-477-8297	919-620-0721	919-730-0983	reddickmasonry@aol.com	hardscape brick paving; concrete; curbs; gutters; masonry; walk ways	City of Durham Privilege
RTP Grading & Sitework, LLC	PO Box 12557	Durham	NC	27709	M	Blair Peil	919-361-5400	919-361-5432	919-427-1215	rtgrading@netzero.com	demolition, clearing, erosion control, concrete, grading, asphalt, water&sewer,curb&gutter, sidewalks, retentionponds/walls,stormdrain	City of Durham; Town of Chapel Hill
RTP Grading & Sitework, LLC	PO Box 12557	Durham	NC	27709	M	Blair Peil	919-361-5400	919-361-5432	919-427-1215	rtgrading@netzero.com	demolition, clearing, erosion control, concrete, grading, asphalt, water&sewer,curb&gutter, sidewalks, retentionponds/walls,stormdrain	City of Durham; Town of Chapel Hill
Sanchez Trucking	922 Riverbark Lane	Durham	NC	2703	H	Marcial Sanchez	919-697-9004	919-596-5402		truckling_sanchez@yahoo.com	hauling/concrete removal; sidewalks; driveways	City of Durham Privilege
Seal Brothers Contracting, LLC	3618 W. Pine Street	Mt. Airy	NC	27030	W	Mari Seal	336-786-2263	336-789-7325		mari@sealbrothers.com	erosion control	
Skyrock Construction, LLC	1000-A Old Milburnie Road	Raleigh	NC	27604	M	Nana Manso	919-266-2446	919-266-9096	919-745-7941	nmanso@skyrockconstructionllc.com	concrete; retaining walls; all flat works; concrete construction	NC General Contractor's License#68111
Smith Supply, LLC	3650 Rogers Road, Suite 320	Wake Forest	NC	27587	M	Tynish Smith Hollins	919-761-3937	919-463-0850	919-605-4688	thollins@nc.rr.com;	small pipe;small pipe fittings; silt fence; filter fabric; valves-DIP	Raleigh Privilege
Southern Garden, Inc.	P O Box 808	Apex	NC	27502	W	Todd Laakso	919-362-1050	919-363-9222	919-669-0110	info@southerngardeninc.com	Landscaping; Landscape Installation/ Maintenance; irrigation, seed & mulch, NC Pest Control Applicator; brick & unit pavers, light masonry; water features; playground equipment; parks; site furnishings & amenities; retaining walls; wetland plantings.	City of Durham Privilege License, NC Landscape Contractor #1049; NC Ground Pesticide Application

City of Durham SDBE Listing for Southern Reinforcing Main Phase IIB

<u>Name</u>	<u>Mailing Address</u>	<u>City</u>	<u>State</u>	<u>Zipcode</u>	<u>Gender/ Race ID</u>	<u>Contact</u>	<u>Phone</u>	<u>Fax</u>	<u>CellPhone</u>	<u>Email</u>	<u>Services</u>	<u>Licenses</u>
Stay Alert Safety Services, Inc.	PO Box 467	Kernersville	NC	27284	W	Melissa Babcock	336-993-2828- TollFree-866-897-2828	336-993-9029		mababcock@stayalert.com	Traffic control safety products(sales & rental), sign installation, traffic control plans	
Stokes Landscaping	7826 Fawnbrook Drive	Hillsborough	NC	27278	M	Maurice Stokes	919-477-9591	919-321-6191	919-624-3939	srmosto@aol.com	Landscaping; Drainage Work; Grounds Maintenance; Grading	City of Durham Business License Town of Garner
Triangle Landscape Supplies of J.C. LLC	6300 Cornwalls Road	Garner	NC	27529	W	Stacey Mangum	919-553-1118	919-553-7161	919-274-2661	smangum@nc.rr.com	Supplier of Landscaping Supplies	
W. E. Garrison Company, Inc.	5820 Fayetteville Rd.	Raleigh	NC	27603	W	Colleen B. Garrison	919-772-4144	919-772-4860	919-306-6158	colleeng@wegarrison.com	Hauling; Clearing; Grading; Concrete Curb & Gutter & Flatwork; Field Engineering; Demolition; Grubbing; Storm Drainage	NC Professional Engineering License #3503
Wilson Lawn Service of Durham, Inc.	4608-O Industry Lane	Durham	NC	27713	M	Ernest Wilson	(919)572-9155	(919) 572-9153	(919) 730-6343	wilsonlawnofdurham@verizon.net	landscaping; lawn maintenance; mowing; clean-ups	City of Durham Privilege License

APPENDIX C



SMALL DISADVANTAGED BUSINESS ENTERPRISE (SDBE) REPORTING FORMS

CONTRACT: [SRM-IIB]

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Reimbursable Sales and Use Tax Statement, Continuation page

1. Type of property purchased *	2. Date property purchased	3. Name of vendor	4. Invoice number	5. Date of invoice	6. N. C. county in which purchased.**	7. Amount of State sales and use taxes paid	8. Amount of local sales and use taxes paid	9. Total of columns 7 & 8

Enter totals of columns 7, 8, and 9, added to totals from all pages, into page 1. This page is used whether page 1 is signed by the Contractor or the Subcontractor.
022304RW

APPENDIX D



SMALL DISADVANTAGED BUSINESS ENTERPRISE (SDBE) CONTRACTOR PREQUALIFICATION FORMS

CONTRACT: [SRM-IIB]

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CITY OF DURHAM SMALL DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

PREQUALIFICATION FORM

Revised 6/08



Mailing Address:

101 City Hall Plaza
Durham, North Carolina 27701
Phone: 919-560-4180
Facsimile: 919-560-4513

Street Address:

302 East Pettigrew Street, C-180
Durham, North Carolina 27701

The Department of Equal Opportunity/Equity Assurance
Good Things Are Happening In Durham

APPLICATION FOR PREQUALIFICATION

The answers to the following questions shall be used to determine the qualifications of my organization to bid upon construction projects undertaken by the City. You may submit an AIA Contractor's Qualification Statement in lieu of questions 1-23. Questions 24-30 must be submitted with the Statement.

1. Name of Firm: _____

2. Business Address: _____

City: _____ State: _____ Zip: _____ County: _____

3. Telephone Number: () _____ Fax Number: () _____

Email Address: _____

4. Contact Person : _____ Title: _____

5. The organization is requesting prequalification as:

Corporation Limited Partnership General Partnership

Sole-Proprietorship Limited Liability Company Other

6. If a corporation, Limited Liability Co., or Limited Partnership, indicate the following:

Date of Incorporation or other official commencement of status _____

State of Incorporation or other official commencement of status _____

7. Internal Revenue Service ID No: _____

(Employer ID/SSN): _____

8. Year business established by current owner: _____

9. Are you authorized to do business in North Carolina as well as locally, including all business licenses?

Yes No (Attach copies)

10. List North Carolina Contractor's License Number, classification and Limitation:

License Type	License No.	Classification	Limitation

11. Indicate the type(s) of work for which the business would like to qualify to perform:

12. How many years has your organization been in business as a contractor under your present name?

13. Has your organization been in business under another business name? Yes No

(If so, please list any former names and addresses. _____)

14. List the construction experience of the management personnel including superintendents of your organization.

Name	Present Position	Years of Construction Experience	Type of Work	In What Capacity

15. Has your organization failed to complete any work awarded to you? Yes No

(If so, please explain. Attach additional sheets if necessary.)

16. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction project? Yes No (If so, please explain)

17. Has your organization ever been denied prequalification in this state or any other state under this name or any other name?

Yes No (If so, name the state(s), and explain reasons for denial)

18. Has your organization ever been disqualified or removed from a bidding list in this state or any other state?
 Yes No (If so, indicate state(s) and explain reason for disqualification)

19. List major projects which show the various types of work completed by your organization in the past five (5) years and/or presently under construction. (Attach separate sheet if necessary)

Name and Address of Owner	Name and Location of Project	Contract Amount	Was contract completed on time?	Were there any penalties imposed?	Were there any liens, claims or stop notices filed against the job?

20. List major Equipment owned. (Attach separate sheet if necessary)

QUANTITY	ITEM	SIZE OR CAPACITY	CONDITION	YEARS OF SERVICE

21. Name of Bonding Company: _____

22. Maximum Current Bonding Level: _____

23. Attach a current financial statement including a balance sheet showing the following items:

- a) Current assets
- b) Net fixed assets
- c) Other assets
- d) Current liabilities
- e) Other liabilities

24. Does your organization utilize minority, women or SDBE subcontractors on contracts that are not let by the City of Durham?

Yes No (If yes, list three contracts and the minority, women or SDBE firms used by your organization on these contracts)

Name and Location of Project	SDBE Firm Utilized	Dollar Amount of Participation	Contact Person and Telephone No.

25. For the contracts referenced above, did your organization make good faith efforts to assist interested minority, women and SDBEs in obtaining bonding, lines of credit, or insurance if such assistance was necessary?

Yes No

26. Does your organization make voluntary efforts to increase the number of minority, female and socially and economically disadvantaged individuals at higher skill and responsibility levels within your own organization? Yes No

27. Does your organization effectively use the services of available minority, women and socially and economically disadvantaged community organizations; contractor groups; local, state, and Federal minority/women or small disadvantaged business assistance offices; and other organizations which provide assistance in recruitment and placement of SDBEs? Yes No

28. Does your organization participate in minority/women apprenticeship or on-the-job training programs?

Yes No (If yes, attach a copy of your company's program)

29. Attach a written narrative of any voluntary good faith efforts your organization proposes to undertake during the upcoming year to provide equitable participation of minority and women employees and subcontract.

30. The following documents must be submitted with your application: (Forms Enclosed)

(You may submit your organization's EEO Policy in lieu of this statement)

- a) Employee Breakdown
- b) Equal Employment Opportunity Statement

EMPLOYEE BREAKDOWN

Part A – Employee Statistics for the Primary Location

M-----a-----l-----e-----s F-----m-----a-----l-----e-----s

Employment Category	Total Employees	Total Males	Total Females	White	Black	Hispanic	Asian or Alaskan Islander	Indian or Alaskan Native	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project Manger													
Professional													
Labor													
Clerical													
Totals													

Part B – Employee Statistics for the Consolidated Company (See instructions for this form on whether this part is required.)

M-----a-----l-----e-----s F-----m-----a-----l-----e-----s

Employment Category	Total Employees	Total Males	Total Females	White	Black	Hispanic	Asian or Alaskan Islander	Indian or Alaskan Native	White	Black	Hispanic	Asian or Pacific Islander	Indian or Alaskan Native
Project Manger													
Professional													
Labor													
Clerical													
Totals													

EEO-1 Report may be submitted in lieu of this form

Equal Employment Opportunity Statement

AFFIDAVIT

(signature)

(date)

(printed name)

State of _____ County of _____

I, a notary public in and for the aforesaid county and state, certify that _____

_____ personally appeared before me this day and, after having been

duly sworn, stated that he or she is _____

(title)

in _____ ; that he or she was

(name of Applicant)

authorized to sign the foregoing application on behalf of said Applicant, and that the statements contained in the foregoing Application for Prequalification are true to the best of his or her knowledge and belief. This the _____ day of _____, 20_____.

My commission expires:

Notary Public

APPENDIX E



NON-COLLUSION AFFIDAVIT FORMS FOR BIDDER AND SUBCONTRACTOR

CONTRACT: [SRM-IIB]

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NON-COLLUSION AFFIDAVIT OF BIDDER

State of North Carolina County of Durham

Thomas M. Sullivan, PRESIDENT, being first duly sworn, deposes and says that:

1. He is President of Sullivan Eastern, Inc. the Bidder that has submitted the attached Bid;
2. He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;
3. Such Bid is genuine and is not a collusive or sham Bid;
4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from Bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy connivance or unlawful agreement any advantage against the _____ (Local Public Agency) or any person interested in the proposed Contract; and
5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed)

Thomas M Sullivan

President

Title

Subscribed and sworn to before me this

15th day of JAN, 2013

Wanda L. Goad

Title



My Commission Expires 12/5/14

NON-COLLUSION AFFIDAVIT OF SUBCONTRACTOR(S)

State of _____ County of _____
_____, being first duly sworn, deposes and says that:

1. He is _____ of _____, hereinafter referred to as the "Subcontractor";
2. He is fully informed respecting the preparation and contents of the Subcontractor's Proposal submitted by the Subcontractor to _____, the Contractor for certain work in connection with the _____ Contract pertaining to the Project in _____ (City or County and State);
3. Such Subcontractor's Proposal is genuine and is not a collusive or sham proposal;
4. Neither the Subcontractor nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Proposal in connection with such Contract or to refrain from submitting a Proposal in connection with such Contract, or has in any manner, directly or indirectly, sought by unlawful agreement or connivance with any other Bidder, firm or person to fix the price or prices in said Contractor's Proposal, or to fix any overhead, profit or cost element of the price or prices in said Contractor's Proposal, or to secure through collusion, conspiracy connivance or unlawful agreement any advantage against the _____ (Local Public Agency) or any person interested in the proposed Contract; and
5. The price or prices quoted in the Subcontractor's Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) _____

Title

Subscribed and sworn to before me this
_____ day of _____, _____

Title

My Commission Expires _____

APPENDIX F

DURHAM



1869
CITY OF MEDICINE

BID BOND FORMS

CONTRACT: [SRM-IIB]

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BID BOND
(for the City of Durham)

Contract name and number or other description of the Contract:

SRM-IIB "Southern Reinforcing Main - Phase IIB Construction"

Name of Bidder: Sullivan Eastern, Inc.
3874 S. Alston Ave., Suite 103, Durham, NC 27713

Name, address, and telephone number of Surety's N. C. Resident Agent: Debra S. Ritter

Telephone number of Surety's home office: 800-421-3880

Surety is a corporation organized and existing pursuant to the laws of the State of: Connecticut

Amount of this bond: check one

(write or type the amount in words and figures) All numbers in this section are in U. S. dollars.

(\$ _____)

five percent of the amount of the proposal

Date of execution of this bond: January 15, 2013

Obligee: CITY OF DURHAM, a North Carolina municipal corporation.

KNOW ALL PERSONS BY THESE PRESENTS, that the Surety executing this bond, which Surety is duly licensed to act as surety in North Carolina, is held and firmly bound unto the City of Durham, Obligee, in the penal sum of the amount stated above, for the payment of which sum, well and truly to be made, the Surety binds itself and its successors and assigns, jointly and severally, by these presents. Whereas the Bidder is herewith submitting a proposal for the Contract referred to above, and the Bidder desires to file this Bid Bond in lieu of making the cash deposit pursuant to G.S. 143-129; NOW THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the Bidder shall be awarded the contract for which the bond is submitted, and shall, within ten days after the award is made, execute and deliver to the Obligee the contract and give satisfactory surety as required by G.S. 143-129, then this obligation shall be null and void, otherwise to remain in full force and virtue; and if the Bidder fails or refuses to so execute and deliver said contract or give said satisfactory surety, the Surety shall upon demand forthwith pay to the Obligee the full penal sum of this bond. The Surety waives all extensions of time, and notice of extensions of time, for the opening of proposals and for the modification, award, execution, and delivery of the contract. IN WITNESS WHEREOF, the Surety has executed this instrument under its seal as of the date of execution indicated above, pursuant to authority of its governing body.

Travelers Casualty and Surety Company of America

(name of Surety)

Debra S. Ritter

(signature of Surety's attorney in fact) Debra S. Ritter

(Affix Surety's corporate seal.)

(Instructions to Surety: If you use a raised corporate seal, press hard enough to make it legible)

Bid Bond Page 1 RNW:071301



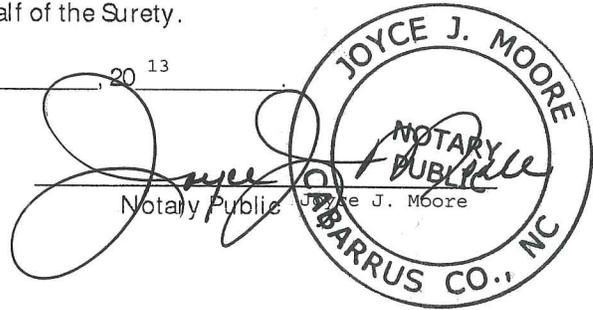
ACKNOWLEDGMENT OF SURETY'S EXECUTION OF BID BOND

State of North Carolina County of Cabarrus

I, Joyce J. Moore, a notary public in and for said county and state, certify that Debra S. Ritter personally appeared before me this day and acknowledged that he or she is Attorney in Fact for Travelers Casualty and Surety Company of America, the Surety named in the foregoing Bid Bond, in which bond the Obligee is the City of Durham, and that he or she executed said bond, under the seal of the Surety, on behalf of the Surety.

This the 15th day of January, 2013

My commission expires:
9-23-2013



Bid Bond Page 2 RNW:071301



POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 223393

Certificate No. 005225876

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Raymond J. Garruto, Debra S. Ritter, Ramona Fewell, Brad W. Gibson, Martin D. Pallazza, Angela M. Yount, Ann Carter, Cindy B. Graham, Jennifer Agee, and Murray Williams

of the City of Charlotte, State of North Carolina, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 10th day of October, 2012.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: [Signature]
Robert L. Raney, Senior Vice President

On this the 10th day of October, 2012, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2016.



[Signature]
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 15th day of January, 2013.


Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.

City of Durham Privilege License 2013

Ordinance
54

Description
GENERAL CONTRACTORS

Units
1

Business Sullivan Eastern Inc
Address: 3874 S Alston Ave Ste 103

Sullivan Eastern Inc
3874 S Alston Ave Ste 103,
Durham, NC 27713

*Licenses must comply with all local ordinances or the license may be forfeited.
This receipt is for payment of the privilege license tax under Article V of Chapter
30 of the Durham City Code. This license must be posted conspicuously where
business is conducted.*

Issued By: City Collector of Revenue

page 1 of 1

Account No
20530

Date Issued
06/07/2012

Tax Year Beginning
07-01-2012

Tax Year Ending
06-30-2013

Receipt No
122211

APPENDIX G



PERFORMANCE BOND AND PAYMENT BOND FORMS

CONTRACT: [SRM-IIB]

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PERFORMANCE BOND AND PAYMENT BOND

Date of Contract: _____

Contract Name and Number: “Southern Reinforcing Main - Phase IIB Construction” [SRM-IIB]

Name of Principal (Name of Contractor): _____

Name of Surety: _____

Name and Address of Surety's NC Resident Agent: _____

Contracting Body: CITY OF DURHAM, a North Carolina municipal corporation

Amount of Performance Bond (in words and numerals): _____
_____ Dollars (\$ _____
)

Amount of Payment Bond: same dollar amount as the dollar amount of Performance Bond.

Date of Execution of these Bonds: _____

* * * * *

KNOW ALL PERSONS BY THESE PRESENTS, that we, the PRINCIPAL AND SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, administrators, and successors, jointly and severally, by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain Contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term

of said Contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue. As used hereinabove, "modifications" shall include, without limitation, changes (including, without limitation, changes granting extensions of time) and additions to with respect to the Work, scope of work, and specifications.

* * * * *

KNOW ALL PERSONS BY THESE PRESENTS, that we, the PRINCIPAL AND SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain Contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the Work provided for in said Contract, and any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue. As used hereinabove, "modifications" shall include, without limitation, changes (including, without limitation, changes granting extensions of time) and additions to or with respect to the Work, scope of work, and specifications.

* * * * *

The Performance Bond and the Payment Bond are being combined here only for purposes of convenience in signing and acknowledging and the obligations of the Principal and of the Surety are the same as if the bonds were on separate documents. Each bond is in the dollar amount stated above, and the amounts of these bonds are not combined. The Surety agrees that both of these bonds are fully binding on it whether or not the Principal executes these bonds. These bonds are given pursuant to Article 3 of Chapter 44A of the NC General Statutes.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument (for both the Performance Bond and the Payment Bond) under their several seals on the date of execution indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

(Name of Principal)

ATTEST:

Secretary

By: _____

President

(Affix corporate seal)

(Name of Surety)

(Name of attorney in fact)

(Affix corporate seal)

(Note: If you use a raised corporate seal, press hard enough to make it legible.)

ACKNOWLEDGEMENT OF CONTRACTOR'S EXECUTION OF CONTRACT,
PERFORMANCE BOND AND PAYMENT BOND

State of _____ County of _____

I, _____, a notary public for the aforesaid county and state, certify that _____ personally appeared before me this day, and acknowledged that he or she is _____ Secretary of _____, a corporation, and that by authority duly given and as the act of the corporation, the foregoing (1) Contract with the City of Durham and (2) Performance Bond and Payment Bond with respect to the Contract, were signed in its name by its _____ President, whose name is _____, sealed with its corporate seal, and attested by him/herself as its said Secretary or Assistant Secretary.

This the ____ day of _____, _____.

NOTARY PUBLIC

My commission expires: _____

ACKNOWLEDGEMENT OF SURETY'S EXECUTION OF
PERFORMANCE BOND, AND PAYMENT BOND

State of _____ County of _____

I, _____, a Notary Public for said county and state, certify that _____, personally appeared before me this day and acknowledged that he or she is Attorney in Fact for _____, the Surety named in the foregoing Performance Bond and Payment Bond, in both of which bonds the contracting body is the City of Durham, and that he or she executed said bonds, under the seal of said Surety, on behalf of said Surety.

This the ____ day of _____, _____.

NOTARY PUBLIC

My commission expires: _____

APPENDIX H



REIMBURSABLE SALES AND USE TAX STATEMENT FORMS

CONTRACT: [SRM-IIB]

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Reimbursable Sales and Use Tax Statement by Subcontractor

This line is to be completed by the Contractor: Payment Application No. _____ Estimate No. _____

Name of Contractor: _____ **Name of Subcontractor:** _____
Project: "Southern Reinforcing Main – Phase IIB Construction" [SRM-IIB]

1. Type of property purchased *	2. Date property purchased	3. Name of vendor	4. Invoice number	5. Date of invoice	6. N. C. county in which purchased. **	7. Amount of State sales and use taxes paid	8. Amount of local sales and use taxes paid	9. Total of columns 7 & 8

Grand totals of columns 7, 8, & 9 for all pages of this pay application/estimate. |||||

Notes: * If the invoice clearly specifies the property for which tax reimbursement is being requested, you need not list the property on this form.
 ** In column 6, if not purchased in N. C., write *Not in N. C.*

Add extra pages as needed. Total number of pages, including this page, in this request: _____. **Do not include invoices in that page count. In addition to the pages referred to above, invoices that substantiate this statement are attached.**
CERTIFICATION: The undersigned individual certifies (1) he or she is an employee or principal of the Subcontractor that is submitting this form with the Contractor so that the Contractor may request reimbursement for N. C. State and local sales and use taxes that the Subcontractor has paid, (2) all of the properties listed above, and on all pages, if any, added to this page, and designated on the attached invoices, are building materials, supplies, fixtures, and equipment that have become or will become a part of or annexed to a building or structure that is owned or leased by the City of Durham and is being erected, altered, or repaired for use by the City of Durham in the project named above, (3) no tax on scaffolding, tools, equipment repair parts, equipment rentals, forms for concrete, or fuel to operate machinery or equipment is included, and (4) all of the information on this form, and on all pages, if any, added to this page, is true.

signature of individual _____ typed or printed name of individual _____
 Sworn to and subscribed before me, this _____ day of _____, 20_____.

022304RW Notary Public My commission expires: _____

APPENDIX I



SUBMITTAL TRANSMITTAL FORM AND SUBMITTAL REGISTER FORM

CONTRACT: [SRM-IIB]

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CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: December 3, 2012

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

SUBMITTAL TRANSMITTAL FORM

Attention: Jeremy A. Rivenbark, P.E.
Kimley-Horn and Associates, Inc.
3001 Weston Parkway
Cary, North Carolina 27513
(919) 678-4133

CONTRACTOR SHALL COMPLETE THIS SECTION

Transmittal No.: _____

Subcontractor: _____

Date of Submittal: _____

Supplier: _____

Re-Submittal: _____ Yes _____ No

Contractor's Certification:

Description: _____

The review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

Drawing No.: _____

(Contractor Submittal Manager Signature)

Specification Section: _____

Submittal Classification: _____

(Seal)

Submittal Code: _____

ENGINEER SHALL COMPLETE THIS SECTION

Date of Receipt: _____

Date of Review/Approval: _____

Approved by Engineer (AE)
No exceptions noted.

Comments: _____

Approved by Engineer (AEC)
With corrections as noted on the
submittal data or attachments,
re-submittal not required.

(Engineer Signature)

Disapproved by Engineer (DE)
Re-submittal required.

(Seal)

**PLACE CONTRACTOR SUBMITTAL REVIEW STAMP AND ENGINEER SUBMITTAL
REVIEW STAMP ON NEXT PAGE**

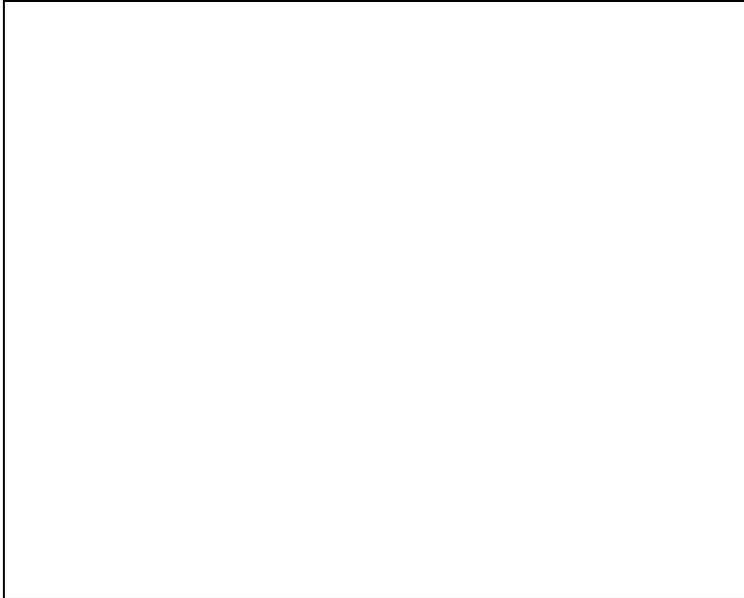
CONTRACT: SRM-IIB
PROJECT: SOUTHERN REINFORCING
MAIN – PHASE IIB
DATE: December 3, 2012

DEPARTMENT OF WATER MANAGEMENT
CITY OF DURHAM, NORTH CAROLINA

PLACE CONTRACTOR SUBMITTAL REVIEW STAMP BELOW

A large, empty rectangular box with a thin black border, intended for a contractor submittal review stamp.

PLACE ENGINEER SUBMITTAL REVIEW STAMP BELOW

A large, empty rectangular box with a thin black border, intended for an engineer submittal review stamp.

APPENDIX K

DURHAM



1869
CITY OF MEDICINE

FALCON ENGINEERING GEOTECHNICAL INVESTIGATION REPORT

CONTRACT: [SRM-IIB]

The Bidder is further advised that the Owner has made subsurface investigations and a report has been prepared, in connection with this project for the Engineer, a copy of this report is posted on a project ftp site at:

ftp://SRMII_FALCON:SRMII_BORINGS@ftp.kimley-horn.com/_secure/SRMII_GEOTECHNICAL

Note that the correct letter case (upper or lower) is required for the FTP site address, username, and password. Should your browser require you to enter a username and password, please use the following username and password:

Username: SRMII_FALCON

Password: SRMII_BORINGS

APPENDIX M



CITY STANDARD CONSTRUCTION FORMS

(As-Built Checklist)

(Sewer System Survey Manhole Data Sheet)

(Sewer Air Test Table)

(Sewer Air Test Form)

CONTRACT: [SRM-IIB]

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AS-BUILT CHECK LIST
CITY OF DURHAM

PROJECT NAME: _____ DATE: _____
REVIEWED BY: _____ PROJECT NUMBER: _____

WATER SEWER

1. Name of City project, project number, date, north arrow, scale.
2. All inverts into and out of manholes shall be field verified to 1/100 ft.
3. Professional Engineer's seal and Professional Land Surveyor's seal as applicable or required.
4. Plans shall show stubs for individual services. Cleanouts (C.O.'s) shall be located by measuring from each manhole along the sewer main up stream to a point which lies on a line that is perpendicular to the sewer main and connects said point and C.O. – zero point shall be the immediate downstream manhole, i.e., 127/14R. No stations shall be used.
5. Drawings shall indicate water/sewer phases.
6. Show approximate vertical and horizontal separations of sewer mains to proposed or existing utilities and structures.
7. For each sewer reach, show pipe diameter, length, type, slope, existing surface elevations and proposed finish grades. Show station or distance to beginning and end of change in pipe material.
8. Show all water supply wells within 50' and community wells within 100' of sewer main.
9. Show manhole top elevation & flood elevation or surface water flow levels @ each MH.
10. Elevations shall be tied to mean sea level. Indicate any benchmarks within project area.
11. As-built plans shall be mylar sheets (standard 24"X36"). A CD disk (Auto Cad 2004 equivalent) must be provided to the City. All lettering shall be at least 0.10 inches in height. All drawings shall become the property of the City of Durham.
12. Show location of air release valves, gate valves and fittings along water mains and sanitary sewer force mains.
13. Show stations and material types for force mains.
14. Lot numbers, lot lines and street names.
15. Sheet numbers and number of total sheets.
16. Indicate size of services greater than 4".
17. Indicate manhole service taps, service casing and/or material transition.
18. Accurate location map and index planning map at a scale of 1 inch = 200 feet.
19. Clearly indexed cover sheet with location of plan - profile sheets on cover sheet, by sheet number.
20. Reference ties to existing sewer systems by title and page of as-built drawing for existing system. City will assist with obtaining this information. Show information on plan-profile sheet and cover sheet.
22. City note on all plan & profile sheets.
23. C/O shown open circle, water meters open box.
24. Provide CAD disk
25. Total linear feet on cover sheet: Water lines _____, Gravity sewer _____, Force main _____
26. Water and sewer layers to be bolder line type than drainage, streets, etc.
27. Make contour lines very light.

Date Final Inspection Completed: _____ Inspector's Initials: _____

CITY OF DURHAM, NORTH CAROLINA
101 CITY HALL PLAZA
Durham, North Carolina 27701
Phone: (919) 560-4381 Fax: (919) 560-4316

SEWER SYSTEM SURVEY
MANHOLE DATA SHEET

Date: _____

Drainage Basin: _____
Manhole Number: _____

N.C. Grid Coordinates:
NAD 27 _____ (check one)
NAD 83 _____

From: _____ To: _____

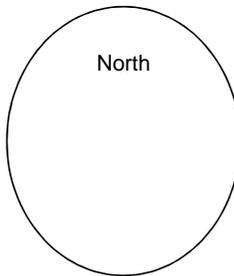
N= _____
E= _____

Bearing: _____
Distance: _____

MSL ELEVATION	PIPE SIZE	PIPE MATERIAL
Rim _____	_____	_____
Invert In _____	_____	_____
Invert In _____	_____	_____
Invert In _____	_____	_____
Invert In _____	_____	_____
Invert Out _____	_____	_____

Manhole Construction _____

Manhole Diameter _____



Sketch Orientation

Notes:

- 1) Type of surface around manhole (asp, concrete, grass) and other topo items, nearby (15') (CB's, curbs, hydrants, other MH's, large trees, etc)
- 2) Number of holes in the lid (0,4,16, other)
- 3) Does the MH insert have a vent?
- 4) Note any drop-type connection, with both upper and lower inverts.

CITY OF DURHAM DEPARTMENT OF WATER MANAGEMENT
AIR TEST TABLE

	Time (Hour :Minute :Second)										
	Pipe Diameter (in)										
	8	10	12	15	18	21	24				
Length (ft)											
25	00:00:18	00:00:22	00:00:27	00:00:31	00:00:36	00:00:45	00:00:53				
50	00:00:36	00:00:45	00:00:53	00:01:03	00:01:12	00:01:29	00:01:47				
75	00:00:53	00:01:07	00:01:20	00:01:34	00:01:48	00:02:14	00:02:40				
100	00:01:11	00:01:29	00:01:47	00:02:05	00:02:24	00:02:58	00:03:34				
125	00:01:29	00:01:51	00:02:14	00:02:37	00:03:00	00:03:43	00:04:27				
150	00:01:47	00:02:14	00:02:40	00:03:08	00:03:36	00:04:28	00:05:21				
175	00:02:05	00:02:36	00:03:07	00:03:39	00:04:12	00:05:12	00:06:14				
200	00:02:22	00:02:58	00:03:34	00:04:10	00:04:48	00:05:57	00:07:07				
225	00:02:40	00:03:20	00:04:00	00:04:42	00:05:25	00:06:42	00:08:01				
250	00:02:58	00:03:43	00:04:27	00:05:13	00:06:01	00:07:26	00:08:54				
275	00:03:16	00:04:05	00:04:54	00:05:44	00:06:37	00:08:11	00:09:48				
300	00:03:34	00:04:27	00:05:21	00:06:16	00:07:13	00:08:55	00:10:41				
350	00:04:09	00:05:12	00:06:14	00:07:18	00:08:25	00:10:25	00:12:28				
400	00:04:45	00:05:56	00:07:07	00:08:21	00:09:37	00:11:54	00:14:15				
450	00:05:21	00:06:41	00:08:01	00:09:23	00:10:49	00:13:23	00:16:02				
500	00:05:56	00:07:25	00:08:54	00:10:26	00:12:01	00:14:52	00:17:48				
Q(cu ft/min)	2	2.5	3	4	5	5.5	6				

