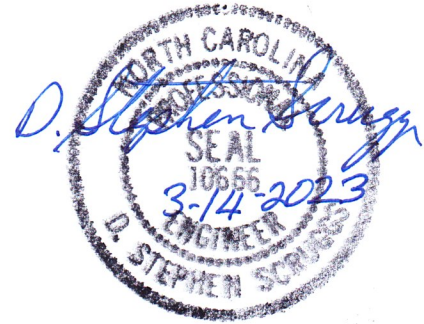


**PROJECT MANUAL**  
**FOR**  
**2017 AERIAL SEWER REPLACEMENT PROJECT**  
**CITY BID NUMBER: WS-2014-42**  
**CITY OF RALEIGH**  
**WAKE COUNTY, NORTH CAROLINA**

**MARCH 2023**



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D. Stephen Scruggs, P.E.



AECOM TECHNICAL SERVICES OF  
NORTH CAROLINA, INC.  
5438 WADE PARK BOULEVARD, SUITE 200  
RALEIGH, NORTH CAROLINA 27607  
AECOM LICENSE No. F-0342  
AECOM PROJECT NO. 60533600



**Raleigh**

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## TABLE OF CONTENTS

<u>Document</u>	<u>Title</u>
00010	Table of Contents
<b>BIDDING REQUIREMENTS</b>	
00100	Advertisement for Bids
00200	Instruction to Bidders
00409	Bidder's Checklist
00410	Bid Form
00430	Bid Bond
00440	Information for Bidders Regarding Compliance with the City of Raleigh's MWBE Program <ul style="list-style-type: none"><li>• Acknowledgment of MWBE Policy</li><li>• Identification of Certified MWBE Participation</li><li>• Affidavit A – Listing of Good Faith Effort</li><li>• Affidavit B - Intent to Perform Contract with Own Workforce</li><li>• Affidavit C – Portion of the Work to be Performed by Certified MWBE Businesses</li><li>• Affidavit D – Good Faith Effort</li><li>• Affidavit E – Certified Subcontractor Payment Form</li><li>• Letter of Intent</li><li>• Contractor Subcontractor Identification Form</li><li>• Request to Change a Certified MWBE Subcontractor</li><li>• Solicitation Form</li></ul>
00441	Contractor's Certificates: Affidavit of Organization and Authority and Sworn Statement
00442	City of Raleigh Contractor's Poor Performance Policy
00443	Non-Collusive Affidavit
00444	Notice to Contractor Regarding Intrusion Beyond Project Limits
<b>CONTRACT REQUIREMENTS</b>	
00510	Notice of Award
00520	Agreement between Owner and Contractor for Construction Contract
00550	Notice to Proceed
00610	Performance Bond
00615	Payment Bond
00616	Certificate of Owner's Attorney & Certificate of Payments
00617	Affidavit
00618	Page for Attaching Certificate of Insurance
00620	Contractor's Application for Payment
00625	Certificate of Substantial Completion
00634	Page for Attaching Power of Attorney
00700	Standard General Conditions of the Construction Contract (EJCDC, 2018)
00800	Supplementary Conditions
00805	Procedures for Reporting NC Sales Tax Expenditures on City of Raleigh Contracts

<b><u>Document</u></b>	<b><u>Title</u></b>
00810	Rules Implementing Mediated Settlement Conferences in NC Public Construction Projects
00940	Work Change Directive(s)
00941	Change Order(s)
00942	Field Order(s)

## **TECHNICAL SPECIFICATIONS**

### **DIVISION 01 – GENERAL REQUIREMENTS**

01 11 00	Summary of Work
01 22 00	Unit Prices
01 31 19	Project Meetings
01 33 00	Submittal Procedures
01 35 13	Specific Project Requirements
01 45 00	Quality Control
01 50 00	Temporary Facilities and Controls
01 51 40	Temporary Bypass Pumping
01 60 00	Product Requirements
01 70 00	Execution Requirements

### **DIVISION 02 – EXISTING CONDITIONS**

02 83 13	Lead in Construction
----------	----------------------

### **DIVISION 03 - CONCRETE**

03 30 00	Cast-in-place Concrete
----------	------------------------

### **DIVISION 09 - FINISHES**

09 91 00	Painting
----------	----------

### **DIVISION 31 - EARTHWORK**

31 05 00	Earthwork
31 11 00	Clearing and Grubbing
31 23 33	Trenching for Utilities
31 25 00	Erosion Control
31 62 16	Steel Piles

### **DIVISION 32 – EXTERIOR IMPROVEMENTS**

32 10 00	Pavement and Appurtenances
32 92 00	Lawns and Grasses

### **DIVISION 33 – UTILITIES**

33 01 30.11	Sewer Line Cleaning and TV Inspection
33 01 30.81	Manhole Rehabilitation
33 31 11	Sanitary Sewer System

## **APPENDICES**

### Owner Obtained Permits/Entitlements:

- NC DEQ, Division of Land Resources; Erosion and Sediment Control Plan
- NC DEQ; Individual 401 Water Quality Certification
- U.S. Army Corps of Engineers; General Permit Section 404
- NC DEQ, Division of Water Resources; Neuse River Basin Riparian Buffer Impacts with Additional Conditions
- City of Raleigh Flood Study
- City of Raleigh Sewer Permit

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**ADVERTISEMENT FOR BIDS**  
POSTED: MARCH 20, 2023  
CITY BID NUMBER: WS-2014-42

Project: 2017 Aerial Sewer Replacement Project

Owner: City of Raleigh, North Carolina, Public Utilities Department,  
One Exchange Plaza, Suite 620, Raleigh, NC 27601.  
Contact: Dennis Lassiter, 919-996-3474, [dennis.lassiter@raleighnc.gov](mailto:dennis.lassiter@raleighnc.gov) .

Engineer: AECOM Technical Services of North Carolina, Inc.  
5438 Wade Park Boulevard, Suite 200, Raleigh, NC 27607  
Chris Parker, 318-355-5016, [christopher.parker@aecom.com](mailto:christopher.parker@aecom.com)

Sealed Bids will be received until **2:00 PM on Tuesday, April 25, 2023**, at One Exchange Plaza, 6th floor conference room 1, Raleigh, NC 27602, at which time and place bids will be publicly opened and read aloud for the construction of the 2017 Aerial Sewer Replacement Project.

After Bids are opened, the Owner shall evaluate them in accordance with the methods and criteria set forth in the Instructions to Bidders. The Owner/City Council reserves the right to waive any informality or to reject any or all Bids. Unless all Bids are rejected, Award will be made to the lowest responsible and responsive Bidder, taking into consideration quality, performance and the time specified in the Bid Form for the performance of the Contract.

A **Mandatory** Pre-Bid Meeting will be held at **10:00 AM on Wednesday, April 5, 2023**, in the parking lot of St. Michael's Episcopal Church, 1520 Canterbury Road, Raleigh, NC 27608.

The Project consists generally of the following major items: Replacement of approximately 550 feet of 12-inch aerial sewer mains and steel support piers, replacement of approximately 800 feet of 12-inch aerial sewer mains on existing support piers, manhole rehabilitation, installation of three steel access platforms around existing elevated manholes, all in the State Street Area; removal of approximately 500 feet of 6-inch sewer mains and manholes, and installation of approximately 565 feet of 8-inch replacement sewer mains and manholes in the Banbury Road Area; and removal of approximately 150 feet of 6-inch sewer mains including aerial and supports, and installation of approximately 150 feet of 6-inch replacement sewer mains including aerial and supports in the Woodrow Drive Area. The foregoing description shall not be construed as a complete description of all work required.

Bidding Documents may be examined at Engineer's office and at: Construct Connect, online; McGraw Hill Dodge Company, online; Construction Journal, online; and NC Institute of Minority Economic Development (a.k.a. The Institute), online.

Complete Bidding Documents may be obtained by registering at the office of the Engineer. Electronic documents will be provided at no cost or for \$50 fee for the electronic documents on a compact disk (CD). If desired, hard copies may be obtained upon providing a \$200 non-refundable fee for each set of documents, which includes all contracts. Plans and digital files must be purchased through the Engineer's Office to be on the bidders list. Bids will only be accepted from companies listed on the bidders list. To remain up to date on any Addenda, changes, or information notices please send an email to Chris Parker at [christopher.parker@aecom.com](mailto:christopher.parker@aecom.com) indicating your intention to prepare a Bid for the Project. Failure to complete this step may render your Bid non-responsive

With each request for Bidding Documents supply the following information: Company name, contact person, street address, phone number, and email address for Bidding point of contact; N. C. contractor's license with limitation and classification; indicate if the firm will be a Prime bidder, Supplier or Sub-Contractor.

Bidders will be required to show evidence that they are licensed to perform the work in the Bidding Documents as required by North Carolina General Statute, Chapter 87 and the Instruction to Bidders.

Bid Security in the amount of five percent (5%) of the Bid must accompany each Bid and shall be subject to the conditions provided in the Instruction to Bidders.

Pursuant to General Statutes of North Carolina Sections 143-128.2 and 143-131, and in accordance with City policy, the City of Raleigh encourages and provides equal opportunity for certified Minority and Woman-Owned Business Enterprise (MWBE) businesses to participate in all aspects of the City's contracting and procurement programs to include Professional Services; Goods and Other Services; and Construction. The prime contractor will be required to identify participation of MWBE businesses in their Bid, and how that participation will be achieved.

Furthermore, the City's goal is to contract or sub-contract fifteen percent (15%) of the contract amount to certified MWBEs on construction projects over \$300,000, or with contracts that include \$100,000 or more in state funding.

City of Raleigh

Mary-Ann Baldwin, Mayor

END OF DOCUMENT



**INSTRUCTIONS TO BIDDERS**  
**TABLE OF ARTICLES**

	<b>Page</b>
Article 1 – Defined Terms.....	1
Article 2 – Copies of Bidding Documents .....	2
Article 3 – Qualifications of Bidders .....	2
Article 4 – Examination of Bidding Documents, Other Related Data, and Site.....	4
Article 5 – Pre-Bid Conference.....	5
Article 6 – Site and Other Areas.....	5
Article 7 – Interpretations and Addenda.....	5
Article 8 – Bid Security .....	6
Article 9 – Contract Times .....	7
Article 10 – Liquidated Damages .....	7
Article 11 – “Or-Equal” Items.....	7
Article 12 – Subcontractors, Suppliers and Others.....	7
Article 13 – Preparation of Bid .....	8
Article 14 – Basis of Bid; Comparison of Bids .....	9
Article 15 – Submittal of Bid .....	9
Article 16 – Modification and Withdrawal of Bid.....	10
Article 17 – Opening of Bids.....	10
Article 18 – Bids to Remain Subject to Acceptance .....	10
Article 19 – Evaluation of Bids and Award of Contract .....	10
Article 20 – Contract Security and Insurance .....	11
Article 21 – Signing of Agreement.....	11
Article 22 – Sales and Use Tax.....	12

**ARTICLE 1 – DEFINED TERMS**

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office* – The office from which the Bidding Documents are to be issued and which registers plan holders.

## **ARTICLE 2 – COPIES OF BIDDING DOCUMENTS**

- 2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement For Bids may be obtained by registering with the Issuing Office as identified in the advertisement.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.
- 2.04 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents, or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as plan holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms, or for a Bidder's failure to obtain Addenda from a plan room.
- 2.05 *Electronic Documents*
- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.
1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.
- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.05.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

## **ARTICLE 3 – QUALIFICATIONS OF BIDDERS**

- 3.01 Bidders are notified that relevant Articles of Chapter 87 of the General Statutes of North Carolina, will be observed in receiving and awarding contracts. Bidders for this Project must be properly licensed for the Work.

- 3.02 To demonstrate Bidder's qualifications to perform the Work prior to award, within 5 days of Owner's request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.
- A. Evidence of Bidder's authority to do business in the state where the Project is located.
  - B. Bidder's state contractor license number.
  - C. Official name of Bidder and length of time the organization has been in business under present name.
  - D. Address, phone and fax numbers of main place of business. Address and phone numbers of company office that will manage the Project if different than above.
  - E. Officers of the company. Name and resume of designated project manager and field superintendent. Number of regular employees of the organization.
  - F. Latest financial statement showing assets and liabilities of the company.
  - G. Name and home office address of the Surety proposed and the name and address of the responsible local claim agent.
  - H. Listing of completed projects of similar size and type in the last 5 years. Provide name and phone number of project owner representative.
  - I. Existing work commitments.
  - J. List of work to be subcontracted. Name and addresses of subcontractors.
  - K. Names and addresses of major material Suppliers.
  - L. Statement that bidder is capable of completing the project within the stated time.
  - M. Safety record of company for the last 5 years showing any violations, etc.
  - N. List of all claims/resolutions/final judgements for the last 10 years.
  - O. Failure or refusal to furnish information requested shall constitute a basis for disqualification of Bidder and the withholding of the Bid Bond.
- 3.03 The apparent Low Bidder shall submit within 72 hours of the Bid Date the following Affidavits:
- A. Affidavit C, Portion of the Work to be Performed by Certified MWBE Businesses.
  - B. Affidavit D, Good Faith Efforts.
  - C. Failure or refusal to furnish information requested shall constitute a basis for disqualification of Bidder and the withholding of the Bid Bond.

- 3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

#### **ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE**

4.01 *Subsurface and Physical Conditions*

- A. No subsurface or geotechnical investigations of the project sites have been performed.

4.02 *Underground Facilities*

- A. 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 Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

- 4.03 On request, Owner 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.

- 4.04 Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

- 4.05 Paragraph 7.13.G of the General Conditions indicates that if an Owner safety program exists, it will be noted in the Supplementary Conditions.

- 4.06 It is the responsibility of each Bidder before submitting a Bid to:

- A. Examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents, including any Addenda;
- B. 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;
- C. Become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. Consider the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific sequences of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;
- E. 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 required, and in accordance with the other terms and conditions of the Bidding Documents;

- F. Become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- G. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
- H. 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 Banbury and Woodrow sites shall be inspected only at the pre-bid meeting in the company of an authorized representative of the Owner. The State Street Site can be visited at any time without the company of an authorized representative of the Owner.

4.07 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific sequences 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 performing and furnishing the Work.

#### **ARTICLE 5 – PRE-BID CONFERENCE**

5.01 A mandatory Pre-Bid Conference will be held at 10:00 AM on Wednesday, April 5, 2023 in the parking lot of St. Michael's Episcopal Church, 1520 Canterbury Road, Raleigh, NC 27608. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are required to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

#### **ARTICLE 6 – SITE AND OTHER AREAS**

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. The Owner has obtained the temporary easements shown for construction and limited staging and laydown area as indicated on the Drawings; however, 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 Contractor with agreements being in writing and a copy of the agreement provided to the City. All permits, regulatory approvals and fees associated with obtaining the additional area shall be the full responsibility of the Contractor.

#### **ARTICLE 7 – INTERPRETATIONS AND ADDENDA**

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing only. Interpretations or clarifications considered necessary by Engineer, in response to such questions, will be issued by Addenda to all plan holders registered with the Issuing Office. Questions received less than 7 working days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. Engineer's email address is [steve.scruggs@aecom.com](mailto:steve.scruggs@aecom.com).
- 7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.
- 7.03 Submittal with questions shall include the project name, City Bid Number, the person's name submitting the question, firm, telephone number, and email address.
- 7.04 Addenda, when issued, will be on file at the offices of the Owner and Engineer and the NC Interactive Purchasing System (IPS) at least 24 hours before Bids are opened. It shall be the Bidder's responsibility to make inquiry as to the Addenda issued. All such Addenda shall become part of the Contract Documents and all Bidders shall be bound by such Addenda, whether or not received by the Bidders.

#### **ARTICLE 8 – BID SECURITY**

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternatives) and in the form of a certified check, bank money order, or a Bid Bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 6.01 of the General Conditions.
- 8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of 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 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Agreement or the end of the Bid holding period, whereupon Bid security furnished by such Bidders will be returned.
- 8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within 7 days after the Bid opening.

## **ARTICLE 9 – CONTRACT TIMES**

9.01 The number of days within which, or the dates by which, the Work is to be substantially completed, ready for final payment, and Milestones (if any) are set forth in Section 00520, Agreement.

## **ARTICLE 10 – LIQUIDATED DAMAGES**

10.01 Provisions for liquidated damages, if any, are set forth in Section 00520, Agreement.

## **ARTICLE 11 – “OR-EQUAL” ITEMS**

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or those “or-equal” materials and equipment approved by Engineer and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed “or-equal” item. No item of material or equipment will be considered by Engineer as an “or-equal” unless written request for approval has been submitted by Bidder and has been received by Engineer within 10 days of the issuance of the Advertisement for Bids or invitation to Bidders. Each such request shall conform to the requirements of Paragraph 7.05 and 7.06 of the General Conditions and related Supplementary Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer’s decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

Applications for review of “or-equals” materials or equipment shall be by Bidders only.

11.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” requests are made at Bidder’s sole risk.

## **ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS**

12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner 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 days after Bid opening submit to Owner 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 Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, without an increase in the Bid.

12.02 If apparent Successful Bidder declines to make any such substitution, Owner may declare the Bid as non-responsive and 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 for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner

and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 7.07 of the General Conditions.

- 12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.
- 12.04 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in Supplementary Conditions 7.07.

### **ARTICLE 13 – PREPARATION OF BID**

- 13.01 The Bid Form is included with the Bidding Documents. Additional copies may be obtained from the Issuing Office. To bid the project the Bidder should be registered with the Issuing Office.
- 13.02 All blanks on the Bid Form shall be completed in ink and the Bid Form 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 item listed therein. In the case of optional alternatives the words “No Bid,” “No Change,” or “Not Applicable” may be entered. Bid forms shall not be conditional, limited, or restricted in any way.
- 13.03 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. The corporate address and state of incorporation shall be shown.
- 13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.
- 13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member 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.
- 13.06 A Bid by an individual shall show the Bidder’s name and official address.
- 13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.08 All names shall be printed in ink below the signatures.
- 13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.11 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.



## **ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS**

### **14.01 *Unit Price***

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.
- B. 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 13.03 of the General Conditions.
- C. 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.
- D. When the Bid Form includes Alternate(s), Bidder shall submit a Bid on a unit price basis for the base Bid and include a separate price for each alternate described in the Bidding Documents as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate.
- E. In the comparison of Bids, alternatives will be applied in the same order of priority as listed in the Bid Form to the extent that project funds are available.

### **14.02 *Allowances***

- A. When the Bid Form includes cash allowances, the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

## **ARTICLE 15 – SUBMITTAL OF BID**

- 15.01 The Owner, at the location and time indicated in the Advertisement for Bids, will receive sealed Bids. Bids received after the indicated time and date shall not be considered.
- 15.02 With each copy of the Bidding Documents, a Bidder may be furnished one separate unbound copy of the Bid Form and the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and all attachments as outlined in Article 8 of the Bid Form. The complete list of required bid documents can also be found in the attached Bidder's Checklist. The completed checklist shall be the first page of all bids submitted.
- 15.03 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement For Bids and shall be enclosed in a plainly marked package with the Project title, City Bid Number, and project name as applicable, the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed Dennis Lassiter, Construction Projects Administrator, City of Raleigh, Public Utilities Department, One Exchange Plaza, Suite 620, Raleigh, NC 27601.
- 15.04 The Bidder shall be fully responsible for timely delivery at the location designated for receipt of the Bids.

## **ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID**

- 16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Modifications shall indicate only the amount to be added to or deducted from the Bidder's Bid amount as submitted on the Bid Form.
- 16.02 No bid may be withdrawn after the Bid opening for a period of time as indicated in the Bid Form except in accordance with the provisions of N.C. General Statutes 143-129.1.

## **ARTICLE 17 – OPENING OF BIDS**

- 17.01 Bids will be opened at the time and place indicated in the Advertisement For Bids and, unless obviously non-responsive, 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.

## **ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

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

## **ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT**

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder when the lowest responsible Bid is in excess of the funds available.
- 19.02 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 that 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.
- 19.03 In evaluating Bids, Owner 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.
- 19.04 In evaluating Bidders, Owner 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, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Project.

- 19.07 In determining the lowest responsible Bidder, Owner may take into consideration the past performance of Bidder on construction contracts with particular concern given to completion times, quality of work, safety record, cooperation with other contractors, and cooperation with owner.
- 19.08 In determining the responsive Bidder, Owner shall take into consideration bidder's compliance with the requirements of G.S. 143-128.2(c). Failure of the low bidder to furnish affidavit(s) and documentation as required by the Bid Form for compliance with G.S. 143-128.2(c) may constitute a basis for disqualification of the Bid.
- 19.09 Owner reserves the right to reject Bid as non-responsible if the evidence submitted by, or investigation of, such Bidder fails to satisfy Owner that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the Work described therein.
- 19.10 Should the Owner adjudge that the apparent low Bidder is not the lowest responsible Bidder by virtue of the above information, said apparent low Bidder will be so notified and his Bid security shall be returned.
- 19.11 If the Contract is to be awarded, the Owner reserves the right to award contracts to the lowest responsive, responsible bidder in the manner described above.

#### **ARTICLE 20 – CONTRACT SECURITY AND INSURANCE**

- 20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

#### **ARTICLE 21 – SIGNING OF AGREEMENT**

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 consecutive calendar days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within 10 consecutive calendar days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

- 21.02 In case of failure of Owner to execute the Agreement in the appropriate time, Bidder shall have the right to withdraw bid.
- 21.03 In case of failure of Bidder to execute the Agreement, Owner may at his option consider the Bidder in default, in which case Bid security accompanying Bid shall be retained by the Owner.
- 21.04 Applicable laws, ordinances, and the rules and regulations of authorities having jurisdiction over construction of the Project shall apply to the contract throughout.

**ARTICLE 22 – SALES AND USE TAX**

- 22.01 The Owner is exempt from sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Bid. Refer to Paragraph 7.10 of the Supplementary Conditions for additional information.

END OF DOCUMENT

## BIDDER'S CHECKLIST

**This checklist shall be included as the first page of the submitted bidding documents. As outlined in Article 7 of the Bid Form section, the following items shall be included with the fully executed Section 00410 Bid Form:**

	A.	Required Bid security in the form of a Bid Bond (EJCDC No. C-430) or Certified Check (circle type of security provided); Bid Bond shall include an executed Power of Attorney.
	B.1.	Nondiscrimination Agreement
	B.2.	Communication of City of Raleigh Policy toward use of Minority and Women-Owned Business Enterprise Program/Contractors
	B.3.	Identification of Certified MWBE Participation
	B.4.	Affidavit A, Listing of Good Faith Effort; or Affidavit B, Intent to Perform Contract with Own Workforce
	C.	Contractor's Certificates, Affidavit of Organization and Authority of Sworn Statement
	D.	City of Raleigh – Contractor's Poor Performance Policy
	E.	Non-Collusive Affidavit
	F.	Notice to Contractor Regarding Intrusions Beyond Project Limits
	G.	Evidence of authority to do business in the state of the Project (i.e., copy of contractor's license)

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**BID FORM**

PROJECT: 2017 Aerial Sewer Replacement Project

CITY BID NO.: WS-2014-42

BID FROM: \_\_\_\_\_

**TABLE OF CONTENTS**

	<b>Page</b>
Article 1 – Bid Recipient .....	1
Article 2 – Bidder’s Acknowledgements.....	1
Article 3 – Bidder’s Representations.....	2
Article 4 – Bidder’s Certification .....	3
Article 5 – Basis of Bid.....	3
Article 6 – Time of Completion .....	7
Article 7 – Attachments to This Bid .....	7
Article 8 – Defined Terms.....	8
Article 9 – Bid Submittal .....	8

**ARTICLE 1 – BID RECIPIENT**

- 1.01 This Bid is submitted to:  
Dennis Lassiter, Construction Projects Administrator  
City of Raleigh, Public Utilities Department  
One Exchange Plaza, Suite 620  
Raleigh, North Carolina 27601
  
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

**ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS**

- 2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 consecutive calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

**ARTICLE 3 – BIDDER’S REPRESENTATIONS**

3.01 In submitting this bid, bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

No. \_\_\_\_\_, dated \_\_\_\_\_

No. \_\_\_\_\_, dated \_\_\_\_\_

No. \_\_\_\_\_, dated \_\_\_\_\_

No. \_\_\_\_\_, dated \_\_\_\_\_

No. \_\_\_\_\_, dated \_\_\_\_\_

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Supplemental Conditions - 5.02 as containing reliable Technical Data, and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in SC-5.06 as containing reliable Technical Data.

E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific sequences of construction expressly required by the Bidding Documents; and (3) Bidder’s safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.



**ARTICLE 4 – BIDDER’S CERTIFICATION**

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
  - 1. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
  - 2. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
  - 3. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.A:
    - a. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
    - b. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
    - c. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
    - d. coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

**ARTICLE 5 – BASIS OF BID**

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

- A. For Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in the Bid Schedule below.
- B. Reimbursable Sales Taxes are to be excluded from the bid price for this project in accordance with specification Section 00805 - Procedure For Reporting North Carolina Sales Tax Expenditures On City Of Raleigh Contracts.

**THIS AREA INTENTIONALLY LEFT BLANK**

### UNIT PRICE BID SCHEDULE

Bid Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Extended Bid Price
1	Mobilization (Max. 3% of Total Bid Price)	LS	1		
2	Bypass Pumping	LS	1		
3	12-inch DIP, RJ, Aerial Pipe Replacement	LF	1,346		
4	Removal of Existing Pipe Support Steel Piers	EA	11		
5	HP 12x53 Steel Pile	LF	744		
6	Pile Supported Steel Cap and Pipe Cradle	EA	13		
7	Aerial Crossing Concrete Structures	EA	2		
8	Testing Lead-Based Paint	EA	50		
9	Pipe and Manhole Support Steel Piers Blast Cleaning and Painting (No Lead-Based Paint Removal)	LS	1		
10	Add-on for Blast Cleaning Pipe and Manhole Support Steel Piers having Lead Base Paint	LS	1		
11	0 - 6 feet deep, 6-inch DIP, RJ Sewer Main	LF	128		
12	6 - 8 feet deep, 6-inch DIP, RJ Sewer Main	LF	11		
13	8 - 10 feet deep, 6-inch DIP Sewer Main	LF	10		
14	0 - 6 feet deep, 8-inch DIP Sewer Main	LF	108		
15	6 - 8 feet deep, 8-inch DIP Sewer Main	LF	160		
16	8 - 10 feet deep, 8-inch DIP Sewer Main	LF	110		
17	10 - 12 feet deep, 8-inch DIP Sewer Main	LF	73		
18	12 - 14 feet deep, 8-inch DIP Sewer Main	LF	84		
19	Reconnect 4-inch Sewer Service Lateral	EA	1		
20	6 - 8 feet deep, 4' Dia. New Manhole	EA	2		
21	10 - 12 feet deep, 4' Dia. New Manhole	EA	2		
22	12 - 14 feet deep, 4' Dia. New Manhole	EA	1		
23	Connection to Existing Manholes	EA	10		
24	4' Dia. Manhole Rehabilitation	VF	26		
25	Replace Existing Manhole Ring and Cover	EA	3		
26	Rebuild Manhole Bench and Channel	EA	4		

Bid Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Extended Bid Price
27	Access Platform for Existing Aerial Manholes	EA	3		
28	Steel Encasement Pipe, Aerial Installation, 14" x 0.375"	LF	85		
29	Rock Excavation	CY	20		
30	Removal of Existing 6-inch DI Sewer Pipe	LF	484		
31	Removal of Existing Manhole	EA	2		
32	Abandonment of Existing 6-inch DI Sewer Pipe in Place	LF	171		
33	Demolition of Exist. Aerial Crossing Structures	EA	6		
34	Asphalt Roadway Patching	SY	11		
35	Concrete Curb and Gutter Replacement	LF	20		
36	Stone Construction Entrance	EA	4		
37	Tree Removal & Disposal	EA	46		
38	Tree Protection Fence	LF	3,568		
39	Temporary Stream Crossing	SY	267		
40	Silt Fence	LF	2,933		
41	Silt Fence Outlet	EA	10		
42	Erosion Control Matting	SY	25		
43	Sandbag Protection	EA	2		
44	Inlet Protection	EA	1		
45	Wattle Barrier	LF	187		
46	Ditch with Rip-Rap Liner	SY	4		
47	Temporary Gravel Access Road	SY	62		
48	15" RCP Storm Drain Pipe	LF	10		
49	Clean Up and Seeding	LS	1		
50	Allowance for 3 <sup>rd</sup> Party Vibration, Monitoring and Soil Compaction Testing	LS	1	\$20,000	\$20,000
51	Contingency Allowance	LS	1	\$50,000	\$60,000

**TOTAL BID PRICE (Sum of Items 1 through 51) \$ \_\_\_\_\_**

5.02 Bidders are hereby notified that GS 143-128(d), requires all bidders on single prime projects to identify on their Bid form the contractors they have selected for the subdivisions for branches of work for (1) HVAC, (2) Plumbing, (3) Electrical, and (4) General. Accordingly, bidder shall list below applicable selected contractors for the following branches of work (write "N/A" if not applicable or self-performed).

HVAC	_____	_____
	Name	License No.
Plumbing	_____	_____
	Name	License No.
Electrical	_____	_____
	Name	License No.
General	_____	_____
	Name	License No.

- A. Unit Prices have been computed in accordance with Paragraph 13.03.B of the General Conditions.
- B. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.
- C. Bidder acknowledges that the rights of the Owner and the recommendations of the Engineer are not to be questioned in the Award of Contracts.
- D. Bidder acknowledges that it is the intention of the Mayor and City Council to let contracts on a basis of the Bids received in accordance with GS 143-129 and in such manner as they deem to be for the best interests of the Owner.
- E. Bidder acknowledges that the Owner reserves the right to accept or reject any or all bids and to waive any informalities in the bidding.
- F. Bidder acknowledges that should the total bid exceed the funds available to construct the project, the Owner reserves the right to reduce the scope of work from the project by deleting certain lump sum or unit price bid items prior to awarding the contract to bring the project within the funds available.
- G. Bidder acknowledges that if this contract is awarded, Bidder must, with every pay request, furnish to the Public Utilities Director of the City of Raleigh an accurate itemized statement of North Carolina Sales Taxes paid on materials, supplies, equipment, and other items charged to this contract, and otherwise fully comply with the "Procedure for Reporting North Carolina Sales Tax Expenditures.". A sales tax form must be submitted even if there is no sales tax incurred.
- H. Bidder agrees to begin work within 10 days from the date of the Notice to Proceed.
- I. Bidder agrees that should the Owner reduce the scope of work by 25% or less of the Total Bid price prior to award of the contract, the lump sum and the unit price on all bid items shall remain unchanged.
- J. Bidder agrees that in the case of failure on his part to execute the said Contract and the Bonds within 15 consecutive calendar days after written notice being given of the award of the Contract, the check, cash or Bid Bond accompanying this Bid shall be paid into the funds of the Owner's

Account set aside for this Project, as liquidated damages for such failure; otherwise the check, cash or Bid Bond accompanying this Bid shall be returned to the Bidder.

- K. Bidder agrees to provide all necessary tools, machinery, equipment, apparatus, and all other means necessary to do all the work and will furnish all labor, materials and all else required to complete such Contract as may be entered into, in the manner prescribed in and in accordance with the terms of the Specifications and Contract and in accordance with the true intent and meaning thereof, and in accordance with the Plans and/or Drawings and the requirements of the Engineers under them, in a first class manner.

## **ARTICLE 6 – TIME OF COMPLETION**

- 6.01 Bidder agrees that the Work will be substantially complete within 300 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06.B of the General Conditions within 330 calendar days after the date when the Contract Times commence to run.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the Contract Times. This amount is agreed upon as the proper measure of liquidated damages the Owner will sustain, per day, by the failure of the undersigned to complete the work, within the stipulated time, and it is not to be construed, in any sense, as a penalty.

## **ARTICLE 7 – ATTACHMENTS TO THIS BID**

- 7.01 The following documents are submitted with and made a condition of this Bid:
  - A. Required Bid security in the form of a Bid Bond or Certified Check (Section 00430);
  - B. In accordance with GS 143-128.2(c), Bidder shall identify on its bid the minority businesses that it will use on the project and the total dollar value of the bid that will be performed by the minority businesses and list the good faith efforts (Affidavit A) made to solicit participation. A Bidder that will perform all of the work with its own workforce may submit an Affidavit B to that effect in lieu of the affidavit A required above.
    - 1. Nondiscrimination Agreement (Section 00440);
    - 2. Use of MWBE Businesses (Section 00440);
    - 3. Identification of Minority Business Participation (Section 00440), and;
    - 4. Affidavit A, Listing of Good Faith Effort, or Affidavit B, Intent to Perform Contract with Own Workforce (Section 00440).
  - C. Contractor's Certificates, Affidavit of Organization and Authority of Sworn Statement (Section 00441);
  - D. City of Raleigh – Contractor's Poor Performance Policy (Section 00442);
  - E. Non-Collusive Affidavit (Section 00443);
  - F. Notice to Contractor Regarding Intrusions Beyond Project Limits (Section 00444);
  - G. Evidence of authority to do business in the state of the Project (i.e., copy of contractor's license);
- 7.02 Submit the Bidder's Checklist as provided in the bidding documents with the bid submittal. The Checklist shall be completed and included as the first page of the submittal.

- 7.03 After the bid opening the Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low Bidder, the Bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:
- A. An Affidavit (C) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the goal established by the Owner and indicated in the Instruction to Bidders, paragraph Minority Participation Goals. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort; or,
  - B. Affidavit (D) of its good faith effort to meet the goal. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.
- 7.04 Bidder understands that if this Bid is accepted by the Owner, Bidder shall not substitute for the subcontractors named in the Bid Documents except as allowed in the Supplementary Conditions.

**ARTICLE 8 – DEFINED TERMS**

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

**ARTICLE 9 – BID SUBMITTAL**

9.01 Bidder’s License

- A. Number: \_\_\_\_\_
- B. Classification: \_\_\_\_\_
- C. Limitation: \_\_\_\_\_
- D. Employer’s Tax ID No.: \_\_\_\_\_
- E. Business Address: \_\_\_\_\_
- F. Phone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_
- G. Contact Person: \_\_\_\_\_ E-mail Address: \_\_\_\_\_
- H. Phone No. w/ Ext.: \_\_\_\_\_

9.02 This Bid is submitted by:

If Bidder is:

**An Individual**

Name (typed or printed): \_\_\_\_\_

By: \_\_\_\_\_

(Individual’s signature)

Doing business as: \_\_\_\_\_

**A Partnership**

Partnership Name: \_\_\_\_\_

The Organization and Internal Affairs of the Partnership are governed by the laws of the State of: \_\_\_\_\_

By: \_\_\_\_\_

(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): \_\_\_\_\_

Title (typed or printed): \_\_\_\_\_

Attest: \_\_\_\_\_

(Signature of Corporate Secretary)

**A Corporation**

Corporation Name: \_\_\_\_\_ (SEAL)

State of Incorporation: \_\_\_\_\_

Type (General Business, Professional, Service, Limited Liability): \_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_

(Signature -- attach evidence of authority to sign)

Name (typed or printed): \_\_\_\_\_

Title (typed or printed): \_\_\_\_\_

(CORPORATE SEAL)

Attest: \_\_\_\_\_

(Signature of Corporate Secretary)

Date of Qualification to do business in North Carolina is \_\_\_\_/\_\_\_\_/\_\_\_\_.

**Limited Liability Company - LLC**

Name of LLC: \_\_\_\_\_

Name of State under whose Laws the Limited Liability Company was formed:

\_\_\_\_\_

By: \_\_\_\_\_

(Signature of Manager)

Name (typed or printed): \_\_\_\_\_

Title (typed or printed): \_\_\_\_\_



## BID BOND (PENAL SUM FORM)

<b>Bidder</b> Name: Address <i>(principal place of business)</i> :	<b>Surety</b> Name: Address <i>(principal place of business)</i> :
<b>Owner</b> Name: <b>City of Raleigh</b> Address <i>(principal place of business)</i> : <b>222 W. Hargett Street</b> <b>Raleigh, NC 27601</b>	<b>Bid</b> Project <i>(name and location)</i> :  Bid Due Date:
<b>Bond</b> Penal Sum: Date of Bond:	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder	Surety
_____ <i>(Full formal name of Bidder)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature) (Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i>	

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
  - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
  - 3.2. All Bids are rejected by Owner, or
  - 3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

## **INFORMATION FOR BIDDERS REGARDING COMPLIANCE WITH THE CITY OF RALEIGH'S MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISE (MWBE) PROGRAM**

### **Policy**

In accordance with North Carolina law, the City of Raleigh encourages and provides an equal opportunity for Certified Minority and Women-Owned Business Enterprises (MWBE) to participate in all aspects of the City's contracting and procurement programs.<sup>1</sup> The prime contractor or a first-tier subcontractor on a construction manager at risk (CMAR) project (collectively, "Bidder") shall be required to identify participation of MWBE businesses in its proposal, and document how that participation will be achieved. Bidders are subject to the City's MWBE subcontracting requirements (including good faith efforts as applicable), regardless if a Bidder is itself a Certified MWBE.<sup>2</sup>

The City has an aspirational goal of 15% of the total contract amount to be performed by MWBE businesses in contracts awarded by the City for: (i) construction and building projects of \$300,000 or more; and (ii) construction and building projects of \$100,000 or more that have any state funding.

### **Definitions**

#### *Certified Minority Business (MWBE)*

A business which:

- a. At least fifty-one percent (51%) is owned by one or more Minority Persons or Socially and Economically Disadvantaged Individuals; or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more Minority Persons or Socially and Economically Disadvantaged Individuals;
- b. The management and daily business operations are controlled by one or more Minority Persons or Socially and Economically Disadvantaged Individuals; and
- c. Is certified in one of the MWBE categories as defined by the NC Department of Administration/Historically Underutilized Business (HUB) and the NC Department of Transportation/Disadvantaged Business Enterprise (DBE).

#### *Minority Person*

A person who is a citizen or lawful permanent resident of the United States and who is:

- a. Black, that is, a person having origins in any of the black racial groups in Africa;
- b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
- c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia, Asia, the Indian subcontinent, or the Pacific Islands;
- d. American Indian, that is, a person having origins in any of the original peoples of North America; or
- e. Non-minority Female.

#### *Socially and Economically Disadvantaged Individual*

Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities. Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged.<sup>3</sup>

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<sup>1</sup> See, N.C.G.S. §§ 143-128.2, 143-128.4, 143-129, and 143-131.

<sup>2</sup> See, City of Raleigh SOP 505-2.

<sup>3</sup> See, 15 U.S.C. 637.

## **Bidder Responsibilities**

Bidders agree to comply with all the terms and conditions of the City of Raleigh's Minority and Women-Owned Business Enterprise (MWBE) Program. Bidders must use good faith efforts (if applicable) to meet participation goals through the award of subcontracts to certified MWBE businesses consistent with City policy and North Carolina law.

## **Pre-Bid Opening**

The City's Solicitation Documents include forms that: (a) capture information about MWBEs and any other subcontractors or suppliers that a Bidder intends to use on a contract ("Identification of MWBE Participation") and (b) affidavits to be completed by the Bidder.

### *Identification of MWBE Participation*

The "Identification of MWBE Participation" must be completed by the Bidder on the City's form and submitted with its bid. If the project work is to be self-performed by the Bidder, the Bidder must so designate by checking the appropriate box on the form. For all Bidders which will not be self-performing the project work, the "Identification of MWBE Participation" form must be completed in its entirety. The Bidder must list on the City's form all MWBE businesses which will be construction subcontractors, vendors, or suppliers (collectively, "Subcontractors") on the project, and the total dollar value of its bid that will be performed by MWBEs. The failure to complete the "Identification of MWBE Participation" form in its entirety, or the failure to submit a completed "Identification of MWBE Participation" form with its bid, will render the bid non-responsive and the Bidder's bid will not be considered for award. The City will only credit MWBE participation for those Subcontractors listed on the "Identification of MWBE Participation" form.

### *Affidavit A: Listing of Good Faith Efforts*

If the Bidder intends to subcontract any portion of the project work on a contract, an Affidavit A must be properly executed and submitted with its bid, listing the good faith efforts the Bidder made to achieve MWBE subcontracting goals for the contract prior to submitting its bid. The Affidavit A must be completed using the City's form. A minimum of fifty (50) good faith efforts points is required, the failure to achieve at least 50 points is grounds for rejection of a bid.

### *Affidavit B: Intent to Perform Contract with Own Workforce*

In lieu of an Affidavit A, a Bidder that intends to perform 100% of the project work on a contract with its own current workforce may submit an Affidavit B with its bid. In submitting an Affidavit B, a Bidder certifies that the Bidder does not customarily subcontract elements of this type of project, and normally performs, has the capability to perform, and will perform all elements of the project work on the contract with its own current workforce. The Affidavit B must be completed using the City's form.

The failure to submit a properly executed Affidavit A or Affidavit B with a bid will render the bid non-responsive and the bid will not be considered for award.

## **Bid Opening**

At the project bid opening, the total MWBE participation for each bid will be recorded. Upon being named the apparent low bidder, the Bidder must comply with the following:

- a. If the Bidder submitted an Affidavit B with its bid indicating its intent to perform 100% of the project work on the contract with its own current workforce, then the Bidder is not required to resubmit its Affidavit B or to submit any additional affidavits (i.e., Affidavit C or Affidavit D). The City, in its discretion, may request that the Bidder submit additional information or documentation, including, but not limited to, information relating to the Bidder's subcontracting history and its ability to perform all elements of the project work on the contract with its own current workforce.

- b. If the Bidder submitted an Affidavit A with its bid and the amount of MWBE participation as a percentage of the total contract price meets or exceeds the applicable goal, then the Bidder must submit to the City an Affidavit C within three (3) business days after being notified by City Staff that it is the apparent low bidder. The Bidder must complete the Affidavit C in its entirety using the City's form.
- c. If the Bidder submitted an Affidavit A with its bid and the amount of MWBE participation as a percentage of the total contract price does not meet the applicable goal, then the Bidder must submit an Affidavit D to the City within three (3) business days after being notified by City Staff that it is the apparent low bidder. The Bidder must complete Affidavit D in its entirety on the City's form. In conjunction with the Affidavit D, the Bidder must include supplemental documentation of the good faith efforts made to meet the applicable goal. The City, in its discretion, may request that the Bidder submit additional information or documentation, including, but not limited to, information or documentation relating to any good faith efforts claimed by the Bidder, and completion of the City's Good Faith Negotiation Form and Solicitation Form. Good faith efforts can be demonstrated using, among other factors, the following:
  - i. Attending pre-solicitation or pre-bid meetings that are scheduled by the City to inform MWBE firms of contracting, subcontracting, and supply opportunities.
  - ii. Advertising in general circulation, trade association, or minority-focus media concerning subcontracting opportunities.
  - iii. Providing written notice, to a reasonable number of specific MWBE firms that their interest in the contract is being solicited, at least 10 days before bids are due, to allow MWBE firms time to participate.
  - iv. Following up initial solicitation of interest by contacting MWBE firms to determine with certainty whether the MWBE firms are interested.
  - v. Identifying and selecting portions of the work to be performed by MWBE firms in order to increase the likelihood of MWBE participation (including where appropriate, breaking down contracts into economically feasible units to facilitate MWBE participation).
  - vi. Providing interested MWBE firms with equal access to plans, specifications, and requirements of the contract.
  - vii. Negotiating fairly with interested MWBE firms, not rejecting MWBE firms as unqualified without sound reasons based on a thorough investigation of their capabilities.
  - viii. Using the services of the City's MWBE office; available minority community organizations; minority contractors' groups; local, state, and federal minority business offices; and other organizations that provide assistance in the recruitment and placement of MWBE firms.
  - ix. Assisting interested MWBE firms in need of equipment, loan capital, lines of credit or joint pay agreements to secure loans, supplies or letters of credit, including waiving credit that is ordinarily required.
  - x. Assisting interested MWBE firms in obtaining bonding, insurance, or providing alternatives to bonding or insurance for Subcontractors.
  - xi. Negotiating joint venture and partnership arrangements with minority businesses to increase the opportunities for minority participation when possible.
  - xii. Provide for quick pay agreements and policies to enable minority contractors and suppliers to meet cash flow demands.

For each unmet MWBE participation goal, for which an Affidavit D is submitted, a Bidder must earn at least fifty (50) good faith efforts points. The failure to achieve at least fifty (50) points is grounds for rejection of a bid. All

actions necessary to earn good faith efforts points must occur prior to bid opening. In determining whether a Bidder has made good faith efforts, the City will evaluate the efforts made by the Bidder and will determine compliance with regard to quantity, intensity, and results of these efforts prior to recommendation of award.

## **Post-Award**

### *Payment*

For purposes of this section the word "Contractor" means both the prime contractor and the CMAR for CMAR projects. The Contractor must submit a completed **Payment Affidavit - Subcontractor / Supplier Utilization Form** with each payment application, including periodic payments and final payment. Payment applications will not be processed by the City until a completed Payment Affidavit – Subcontractor/ Supplier Utilization Form is submitted. Within seven (7) days of receipt by the Contractor of a periodic or final payment from the City, the Contractor must pay each first-tier Subcontractor based on work completed or services provided under each subcontract. If the Contractor has made a quick pay commitment with any MWBE Subcontractor, they must comply with the provisions of their quick pay commitment.

### *Changing a Certified MWBE Subcontractor*

If the situation arises that it becomes necessary to terminate, replace, or reduce the work of a MWBE Subcontractor counted toward a committed MWBE subcontracting goal, the Contractor must submit a completed **Request to Change MWBE Subcontractor** form to the applicable department project manager and the City's MWBE Program Manager. Any change in the work of a MWBE Subcontractor, including its termination and/or replacement, must first be approved by the City based upon good cause shown. Any further explanation or detail to the City in addition to what is identified in the Request to Change MWBE Subcontractor form must be on company letterhead. Good faith efforts shall apply to the selection of any substitute Subcontractor.

## ACKNOWLEDGMENT OF MWBE POLICY

The City's policy is to encourage bidders in the participation of MWBE businesses. A presentation of that policy has been made at the pre-bid or pre-proposal conference. By submission of a bid or proposal in response to this solicitation, the Bidder acknowledges consents to all the terms and conditions of the City of Raleigh Minority and Women-Owned Business Enterprise (MWBE) Policy. A copy of the policy may be provided upon request by the MWBE Program Office or online at [www.raleighnc.gov](http://www.raleighnc.gov).

Bidder recognizes that the City of Raleigh encourages and provides equal opportunity for MWBE businesses to participate in all aspects of the City's contracting and procurement. The City's MWBE participation aspirational goal is at least fifteen percent (15%) of the total contract amount to MWBEs on construction projects of \$300,000 or more and building related contracts of \$100,000 or more that include any State funding. The Bidder on the subject Contract/Proposal must document good faith efforts to provide meaningful participation by MWBEs in the performance of the Contract. Bidder agrees that the City may reject a bid for MWBE Policy violations, including but not limited to, providing inaccurate information or for failure to provide required MWBE documentation.

The Prime Contractor will be required to identify participation of MWBE businesses and how that participation will be achieved. Bidder must identify anticipated subcontractors, including any Minority & Women-Owned Businesses, intended to be used. Bidder further agrees, if awarded a Contract, it will, upon request, submit to the City, the proper affidavit identifying the workforce actually utilized on the Contract. All MWBE related bid documents have been provided to the Bidder. MWBE information provided by the Bidder is subject to the NC Public Records Act. Bidder acknowledges that the City must be notified of any change of subcontractors, suppliers, or subconsultants.

To the extent permitted by North Carolina law, the Bidder, their agents, officials, contractors, employees and servants agree not to discriminate in any manner on the basis of race, color, creed, national origin, sex, age, handicap, or sexual orientation with reference to the subject matter of this Contract/Proposal. The Bidder further agree, to the extent permitted by law, to conform with the provisions and intent of City of Raleigh Ordinance 1969-889, as amended. This provision is hereby incorporated herein for the benefit of the City of Raleigh and its residents, and may be enforced by action for specific performance, injunctive relief, or other remedy as provided by law. This provision shall be binding on the successors and assigns of the parties with reference to the subject matter of the Contract/Proposal.

I have read and understand the City of Raleigh's MWBE policy.

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Signature

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Printed Name and Title

---

Company

---

Date

## IDENTIFICATION OF MWBE PARTICIPATION

*Formal Contracts & Construction Contracts Equal or Exceeding \$300,000*

This Identification of MWBE Participation Form is for the purpose of capturing information regarding the utilization of MWBEs and other subcontractors and suppliers on Formally Bid City Contracts and Construction Contracts equal or exceeding \$300,000. MWBE participation is encouraged for all City of Raleigh contracting opportunities. Please refer to the City's MWBE Policy for any contract specific requirements. *Copy this Form as needed.*

<b>BIDDER NAME</b>			
<b>PROJECT NAME</b>			
<b>PROJECT NUMBER</b>		<b>CITY DEPARTMENT</b>	
<b>CONTRACT TYPE</b>	<input type="checkbox"/> Construction <input type="checkbox"/> Services <input type="checkbox"/> Other _____*		
<input type="checkbox"/> <b>PRIME IS MWBE</b>	Classification: _____ <input type="checkbox"/> Certified with NCHUB <input type="checkbox"/> Certified with NCDOT-DBE	<b>BID SUBMITTAL DATE</b>	

MWBE Classifications: American Indian (AI), Asian American (AA), Black/African-American (B), Hispanic (H), Non-Minority Female (NMF), Socially/Economic Disadvantaged (D)  
 \*For Professional Services Contracts, please use the Identification of MWBE Participation for Professional Services Form

**WORK TO BE SELF-PERFORMED**

Check this box **only** if you intend to perform 100% of the work on this Project/Contract with your own current work forces, and you normally perform and have the capability to perform all elements of this work on this Project/Contract with your own current work forces.

**MWBE SUBCONTRACTORS**

Complete the chart below for all MWBE subcontractors that you intend to use on this Project/Contract regardless of dollar amount.

Company Name	MWBE Classification	Description of Services	Percentage of Total Contract*	Total Projected Utilization (\$)*

MWBE Classifications: American Indian (AI), Asian American (AA), Black/African-American (B), Hispanic (H), Non-Minority Female (NMF), Socially/Economic Disadvantaged (D)  
 \*If the proposal is subject to an RFQ process, you may enter "N/A".

**Total Estimated MWBE Utilization\*** \$ \_\_\_\_\_

**Total Proposal Amount\*** \$ \_\_\_\_\_

**Percent Estimated MWBE Utilization\*** \_\_\_\_\_ %

(Total Estimated MWBE Utilization divided by Total Bid Amount)

\*If the proposal is subject to an RFQ process, you may enter "N/A".



**AFFIDAVIT A**  
**Listing of Good Faith Efforts (GFE)**

Affidavit of \_\_\_\_\_  
(Name of Bidder)

<b>Project Name</b>			
<b>Project Number</b>			
<b>Total Project Bid</b>		<b>Bid Submittal Date</b>	

Total Available GFE Points: <b>155</b>		Minimum Number GFE Points Required: <b>50</b>	
POINTS	GOOD FAITH EFFORT (GFE)		
<input type="checkbox"/>	10	Contacted MWBE businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government-maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.	
<input type="checkbox"/>	10	Made construction plans, specifications and requirements available for review by prospective MWBE businesses or provided these documents at least 10 days before bids are due.	
<input type="checkbox"/>	15	Broken down or combined elements of work into economically feasible units to facilitate MWBE business participation.	
<input type="checkbox"/>	10	Worked with MWBE businesses trade, community, or contractor organizations identified by the MWBE Office and included in the bid documents that provide assistance in recruitment of MWBE businesses.	
<input type="checkbox"/>	10	Attended pre-bid meetings schedule by the public owner.	
<input type="checkbox"/>	20	Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.	
<input type="checkbox"/>	15	Negotiated in good faith with interested MWBE businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a MWBE business based on lack of qualification should have the reasons documented in writing.	
<input type="checkbox"/>	25	Provided assistance to MWBE businesses in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted MWBE businesses in obtaining the same unit pricing with the bidder's suppliers in order to help MWBE businesses in establishing credit.	
<input type="checkbox"/>	20	Negotiated joint venture and partnership arrangements with MWBE businesses in order to increase opportunities for MWBE businesses participation on a public construction or repair project when possible.	
<input type="checkbox"/>	20	Provided quick pay agreements and policies to enable MWBE business contractors and suppliers to meet cash flow demands.	
<b>Total GFE Points _____</b>			

The undersigned certifies the preceding representation is a true and accurate statement of Good Faith Efforts made toward the participation of MWBE businesses in the performance of this Project/Contract. Failure to provide accurate and truthful information is a violation of the City of Raleigh MWBE Policy and may result in the sanctions prescribed therein.

This the \_\_\_\_ of \_\_\_\_\_, 20 \_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name/Title

**AFFIDAVIT B**  
**Intent to Perform Contract with Own Workforce**

Affidavit of \_\_\_\_\_  
(Name of Bidder)

<b>Project Name</b>			
<b>Total Project Bid</b>		<b>Bid Submittal Date</b>	
<b>Project Number</b>			
<input type="checkbox"/> <b>PRIME IS MWBE</b>	Classification: _____	<input type="checkbox"/> Certified with NCHUB	<input type="checkbox"/> Certified with NCDOT-DBE

\*MWBE Classifications: American Indian (AI), Asian American (AA), Black/African-American (B), Hispanic (H), Non-Minority Female (NMF), Socially/Economic Disadvantaged (D)

The Bidder hereby certifies having read and understood the City of Raleigh MWBE Policy, and affirms that it is the intent of the Bidder to **perform 100% of the work** required for the above-named Contract.

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform **all elements of work on this project** with the Bidder's own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the City of Raleigh in support of the above statement. If additional scopes of work are added after the Bidder has been awarded the Contract, then the Bidder agrees to make a Good Faith Effort to utilize Minority and Women-Owned Business Enterprises (MWBEs), as applicable, where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: \_\_\_\_\_ Name of Authorized Officer: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

State of North Carolina, County of \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

Notary Public \_\_\_\_\_ My commission expires \_\_\_\_\_

SEAL

**AFFIDAVIT C**  
**MWBE SUBCONTRACTOR UTILIZATION COMMITMENT**

This affidavit is to be provided by the Prime Contractor within three (3) business days after notification by the City of being the apparent lowest, responsible, responsive bidder (LRRB) if the portion of the work to be performed by MWBE Businesses equals or exceeds fifteen percent (15%) of the total contract price. *Copy this Form as needed.*

**SECTION 1. PROJECT INFORMATION**

<b>Project Name</b>			
<b>Project Number</b>		<b>City Department</b>	
<b>Project Manager</b>			
<b>Phone Number</b>		<b>Email Address</b>	
<b>Bidder</b>		<b>Contact Name</b>	
<b>Phone Number</b>		<b>Email Address</b>	
<input type="checkbox"/> <b>PRIME IS MWBE</b>	Classification: _____ <input type="checkbox"/> Certified with NCHUB <input type="checkbox"/> Certified with NCDOT-DBE	<b>Bid Submittal Date</b>	
<b>Prime to Perform</b>	\$ _____	<b>Prime to Perform</b>	_____ %

**Total Base Bid Amount** \$ \_\_\_\_\_

**Total Contract Amount** (including Contingency) \$ \_\_\_\_\_

**Total MWBE Subcontractor / Supplier Utilization** \$ \_\_\_\_\_

**Percent MWBE Subcontractor Utilization** (Total MWBE \$ divided by Total Base Bid) \_\_\_\_\_ %

**SECTION 2. MWBE SUBCONTRACTORS**

Complete the chart below for all MWBE subcontractors to be used on this Project/Contract regardless of dollar amount.

Company Name	Contact Information (Name, Email, Phone)	MWBE Classification	Description of Services	Percentage of Total Contract	Total Projected Utilization (\$)

\*MWBE Classifications: American Indian (AI), Asian American (AA), Black/African-American (B), Hispanic (H), Non-Minority Female (NMF), Socially/Economic Disadvantaged (D)

**Letters of Intent Submitted Upon Notice from the City**

Within three (3) Business Days after receiving a request from the City (or within such longer time as may be communicated by the City in writing), Bidders must submit a separate Letter of Intent for each MWBE listed on Affidavit C. Each Letter of Intent must be executed by both the MWBE and the Bidder. The City shall not count proposed MWBE utilization for which it has not received a Letter of Intent by this deadline.

**Adding Subcontractors or Suppliers After Submitting This Form**

Nothing in this Affidavit shall be deemed to preclude you from entering into subcontracting arrangements after submission of this form. However, per the City of Raleigh MWBE Policy, you must comply with the following:

- You must maintain the level of MWBE participation proposed on this Affidavit throughout the duration of the Contract, except as may be otherwise specifically allowed by the City.
- If you need to terminate or replace a MWBE, you must complete a Request to Change a MWBE Subcontractor Form.
- If the scope of work on the Contract increases, or if you elect to subcontract any portion of work not identified on this form as subcontracted, then you must comply with City of Raleigh MWBE Policy, including Good Faith Efforts.
- A Letter of Intent must also be submitted for each MWBE you add subsequent to contract award.

**Signature**

Your signature below indicates that the undersigned firm certifies and agrees that:

- a. You have complied with all provisions of the City of Raleigh MWBE Policy;
- b. The information provided is a true and accurate statement of MWBE businesses intended to be used as subcontractors, subconsultants, or suppliers in the performance of this Project/Contract; and
- c. Failure to provide accurate and truthful information or to properly document such compliance in the manner and within the time periods established by the City of Raleigh MWBE Policy shall constitute a violation of the City of Raleigh MWBE Policy and may result in the sanctions prescribed therein, including rejection of your bid.

This the \_\_\_ of \_\_\_\_\_, 20 \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name/Title

**AFFIDAVIT D  
GOOD FAITH EFFORTS (GFE) AND STATEMENT OF GFE COMPLIANCE**

This affidavit is to be provided by the Prime Contractor within three (3) business days after notification by the City of being the apparent lowest, responsible, responsive bidder (LRRB) if the Bidder has not fully met the established MWBE Goal (15%) for this Project. The Bidder must document it has met the GFE requirements by completing this Form. GFE Points will be calculated independently by the City.

**SECTION 1. PROJECT INFORMATION**

<b>Project Name</b>			
<b>Project Number</b>		<b>City Department</b>	
<b>Project Manager</b>			
<b>Phone Number</b>		<b>Email Address</b>	
<b>Bidder</b>		<b>Contact Name</b>	
<b>Phone Number</b>		<b>Email Address</b>	
<input type="checkbox"/> <b>PRIME IS MWBE</b>	Classification: _____ <input type="checkbox"/> Certified with NCHUB <input type="checkbox"/> Certified with NCDOT-DBE	<b>Bid Submittal Date</b>	
<b>Prime to Perform</b>	\$ _____	<b>Prime to Perform</b>	_____ %

**Total Base Bid Amount** \$ \_\_\_\_\_

**Total Contract Amount** (including Contingency) \$ \_\_\_\_\_

**Total MWBE Subcontractor / Supplier Utilization** \$ \_\_\_\_\_

**Percent MWBE Subcontractor Utilization** (Total MWBE \$ divided by Total Base Bid) \_\_\_\_\_ %

**SECTION 2. MWBE SUBCONTRACTORS**

Complete the chart below for all MWBE subcontractors to be used on this Project/Contract regardless of dollar amount.

<b>Company Name</b>	<b>Contact Information (Name, Email, Phone)</b>	<b>MWBE Classification</b>	<b>Description of Services</b>	<b>Percentage of Total Contract</b>	<b>Total Projected Utilization (\$)</b>

\*MWBE Classifications: American Indian (AI), Asian American (AA), Black/African-American (B), Hispanic (H), Non-Minority Female (NMF), Socially/Economic Disadvantaged (D)

**SECTION 3. GOOD FAITH EFFORTS**

Below is a list of Good Faith Efforts as defined in the City’s MWBE Policy. To the left of each item is the number of points assigned to that item. Please place an “X” in the first column for each item you are claiming credit. Please provide any documentation, if available. Failure to achieve the minimum number of GFE points stated in the box below may constitute grounds for rejection of your bid.

**NOTE: All actions necessary to earn GFE Points must be undertaken prior to Bid Opening.**

Total Available GFE Points: <b>155</b>		Minimum Number GFE Points Required: <b>50</b>
<b>POINTS</b>		<b>GOOD FAITH EFFORT (GFE)</b>
<input type="checkbox"/>	10	Contacted MWBE businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government-maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
<input type="checkbox"/>	10	Made the construction plans, specifications and requirements available for review by prospective MWBE businesses or providing these documents to them at least 10 days before the bids are due.
<input type="checkbox"/>	15	Broken down or combined elements of work into economically feasible units to facilitate MWBE business participation.
<input type="checkbox"/>	10	Worked with MWBE businesses trade, community, or contractor organizations identified by the MWBE Office and included in the bid documents that provide assistance in recruitment of MWBE businesses.
<input type="checkbox"/>	10	Attended pre-bid meetings schedule by the public owner.
<input type="checkbox"/>	20	Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
<input type="checkbox"/>	15	Negotiated in good faith with interested MWBE businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a MWBE business based on lack of qualification should have the reasons documented in writing.
<input type="checkbox"/>	25	Provided assistance to MWBE businesses in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted MWBE businesses in obtaining the same unit pricing with the bidder’s suppliers in order to help MWBE businesses in establishing credit.
<input type="checkbox"/>	20	Negotiated joint venture and partnership arrangements with MWBE businesses in order to increase opportunities for MWBE businesses participation on a public construction or repair project when possible.
<input type="checkbox"/>	20	Provided quick pay agreements and policies to enable MWBE business contractors and suppliers to meet cash flow demands.
<b>Total GFE Points (Claimed by Bidder)</b> _____		<b>Total GFE Points (Assessed by City)</b> _____

**Letters of Intent Submitted Upon Notice from the City**

Within three (3) Business Days after receiving a request from the City (or within such longer time as may be communicated by the City in writing), Bidders must submit a separate Letter of Intent for each MWBE listed on this Affidavit D. Each Letter of Intent must be executed by both the MWBE and the Bidder. The City shall not count proposed MWBE utilization for which it has not received a Letter of Intent by this deadline.

**Adding Subcontractors or Suppliers After Submitting This Form**

Nothing in this Affidavit shall be deemed to preclude you from entering into subcontracting arrangements after submission of this form. However, per the City of Raleigh MWBE Policy, you must comply with the following:

- You must maintain the minimum level of MWBE participation proposed on this Affidavit throughout the duration of the Contract, except as may be otherwise specifically allowed by the City.
- If you need to terminate or replace a MWBE, you must complete a Request to Change a MWBE Subcontractor Form.
- If the scope of work on the Contract increases, or if you elect to subcontract any portion of work not identified on this form as subcontracted, then you must comply with City of Raleigh MWBE Policy, including Good Faith Efforts.
- A Letter of Intent must also be submitted for each MWBE you add subsequent to contract award.

**Signature**

Your signature below indicates that the undersigned firm certifies and agrees that:

- a. You have complied with all provisions of the City of Raleigh MWBE Policy;
- b. The information provided is a true and accurate statement of Certified MWBE businesses intended to be used as subcontractors, subconsultants, or suppliers in the performance of this Project/Contract; and
- c. Failure to provide accurate and truthful information or to properly document such compliance in the manner and within the time periods established by the City of Raleigh MWBE Policy shall constitute a violation of the City of Raleigh MWBE Policy and may result in the sanctions prescribed therein, including rejection of your bid.

This the \_\_\_ of \_\_\_\_\_, 20 \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name/Title

**APPENDIX E - CERTIFIED SUBCONTRACTOR PAYMENT FORM**

\*\*SUBMIT WITH EACH PAYMENT REQUEST AND FINAL PAYMENT\*\*

City of Raleigh MWBE Report For Subcontractor Payments

Prime Contractor: \_\_\_\_\_ City of Raleigh Contract ID Number: \_\_\_\_\_

Total Contract Amount: \$ \_\_\_\_\_ City of Raleigh Project Manager Name: \_\_\_\_\_

Total MWBE Subcontractor Amount: \$ \_\_\_\_\_ Total MWBE \_\_\_\_\_%

City of Raleigh Project Name: \_\_\_\_\_

Prime Contractor's Pay Application Number: \_\_\_\_\_ Thru Date: \_\_\_\_\_ Project Completed Date: \_\_\_\_\_

The Prime Contractor shall list below all payments for work completed by MWBEs including amounts requested for this pay application period.

MWBE Subcontractor Name	Contact Person Name	Contact Phone	Description of work being performed	Total Subcontract amount	% of total contract per sub	Amount billed previously	Amount billed this period	Amount billed to date	% of total subcontract amount completed	MWBE	PROJECT COMPLETE D DATE
Totals:											

MWBE Categories: American Indian (IA), Asian American (AA), Black African-American (B), Hispanic (H), Non-Minority (NMF), Socially and Economic Disadvantaged (D)

Date: \_\_\_\_\_

Submitted By: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_



## Letter of Intent

In accordance with City of Raleigh MWBE Policy, within three (3) Business Days after receiving a request from the City (or within such longer time as may be communicated by the City in writing), a Bidder must submit **a separate** Letter of Intent for each MWBE subcontractor listed on Affidavit C or Affidavit D, as may be applicable.

<b>Project Name</b>	
<b>Project Number</b>	

Section 1: TO BE COMPLETED BY THE BIDDER					
<b>Name of Bidder</b>					
<b>Address</b>					
<b>Contact Person</b>					
<b>Telephone</b>		<b>E-mail</b>		<b>Fax</b>	

If the Bidder has entered into a Quick Pay Agreement, in association with this Letter of Intent and as defined in the City's MWBE Policy, please attach a copy of the executed Agreement with the undersigned MWBE.

Identify in complete detail the scope of work to be performed or item(s) to be supplied by the MWBE.

---



---

Cost of Work to be Performed by MWBE    \$ \_\_\_\_\_

Section 2: TO BE COMPLETED BY MWBE SUBCONTRACTOR					
<b>Name of MWBE</b>					
<b>Address</b>					
<b>Contact Person</b>					
<b>Telephone</b>		<b>E-mail</b>		<b>Fax</b>	

Upon execution of a Prime Contract with the City for the above referenced project, the Bidder certifies that it intends to utilize the MWBE listed above, and that the description, cost and percentage of work to be performed by the MWBE as described above is accurate. The MWBE firm certifies that it has agreed to provide such work/supplies for the amount stated above.

<b>BIDDER</b>		
	Signature	Date
	Print Name and Title	
<b>MWBE</b>		
	Signature	Date
	Print Name and Title	

**CONTRACT SUBCONTRACTOR IDENTIFICATION FORM**

*Building Project/Construction Contracts*

(This form **MUST** be submitted within 30 days after award of the Contract)

This Final Subcontractor Identification Form is to provide a list of all subcontractors that the Contractor will use in the performance of the Contract with the City, in accordance with NCGS §143-128.2. *Copy this Form as needed.*

<b>CONTRACTOR NAME</b>			
<b>PROJECT NAME</b>			
<b>PROJECT NUMBER</b>		<b>CITY DEPARTMENT</b>	
<input type="checkbox"/> <b>PRIME IS MWBE</b>	Classification: _____ <input type="checkbox"/> Certified with NCHUB <input type="checkbox"/> Certified with NCDOT-DBE	<b>CONTRACT AWARD DATE</b>	

MWBE Classifications: American Indian (AI), Asian American (AA), Black/African American (B), Hispanic (H), Non-Minority Female (NMF), Socially/Economic Disadvantaged (D)

**WORK TO BE SELF-PERFORMED**

Check this box **only** if you intend to perform 100% of the work on this Project/Contract with your own current work forces, and you normally perform and have the capability to perform all elements of this work on this Project/Contract with your own current work forces.

**ALL CONTRACT SUBCONTRACTORS**

Complete the chart below for **all** subcontractors that will be used on this Contract regardless of dollar amount.

<b>Company Name</b>	<b>Contact</b>	<b>Description of Service/Trade</b>	<b>Total (\$)</b>
	Name:		
<input type="checkbox"/> Certified MWBE <input type="checkbox"/> Registered Raleigh SCS	E-mail:	Address:	
	Name:		
<input type="checkbox"/> Certified MWBE <input type="checkbox"/> Registered Raleigh SCS	E-mail:	Address:	
	Name:		
<input type="checkbox"/> Certified MWBE <input type="checkbox"/> Registered Raleigh SCS	E-mail:	Address:	
	Name:		
<input type="checkbox"/> Certified MWBE <input type="checkbox"/> Registered Raleigh SCS	E-mail:	Address:	
	Name:		
<input type="checkbox"/> Certified MWBE <input type="checkbox"/> Registered Raleigh SCS	E-mail:	Address:	
	Name:		
<input type="checkbox"/> Certified MWBE <input type="checkbox"/> Registered Raleigh SCS	E-mail:	Address:	

Certification must be with NCHUB or the NCDOT-DBE. Proof of Certification may be required upon request by the City.

**Total Contract Amount** \$ \_\_\_\_\_

**Total MWBE Utilization** \$ \_\_\_\_\_

**Percent MWBE Utilization** \_\_\_\_\_%

(Total MWBE Utilization divided by Total Contract Amount)

**APPENDIX E - CERTIFIED SUBCONTRACTOR / SUPPLIER PAYMENT APPLICATION FORM**

Contractors must submit this form with **each** request for payment from the City of Raleigh, including any invoice or request for final payment. Requests for payment are limited to work that has been **completed and approved** for all subcontractors and suppliers in connection with the Contract. Copy this form as needed. The Contractor on the Prime Contract (i.e., Prime) is responsible for collecting and submitting this Appendix E from all subsequent lower tier contractors.

**Section 1: PROJECT INFORMATION**

<b>Project Name</b>			<b>Contractor Name</b>		
<b>Total Contract Amount</b>	\$		<b>Pay App #/Contract ID #</b>		
<b>Total MWBE Sub (\$/%)</b>	\$	%	<b>Invoice Amount</b>	\$	
<b>Payment Period</b>	___/___/20___ through ___/___/20___		<b>City Department</b>		
<b>FINAL PAYMENT</b> <input type="checkbox"/> Check <b>only</b> when submitting Final Pay Request.			<b>Project Completion Date</b>		

**Section 2: PAYMENTS TO SUBCONTRACTORS**

Complete the chart below for all MWBE subcontractors used on the Project/Contract regardless of dollar amount.

Company Name	MWBE Classification	Work Performed	Percentage of Total Contract	Percent of Subcontract Completed	Payment this Period	Cumulative Payments to Date

\*MWBE Classifications: American Indian (AI), Asian American (AA), Black/African-American (B), Hispanic (H), Non-Minority Female (NMF), Socially/Economic Disadvantaged (D)

**Section 3: PAYMENTS TO SUPPLIERS**

All suppliers providing goods under City contracts must be listed on the Sales Tax Statement submitted with each pay request. The City may request, on a case-by-case basis, that the Contractor require certain suppliers to be registered in the Raleigh Supplier Connection System and may withhold payment of any amounts due the Contractor in the event the Contractor fails to comply with such request.

The undersigned certifies the preceding chart is a true and accurate statement of all payments that have been made to subcontractors on this Project/Contract, and that all Suppliers providing goods under this contract have been listed in the Sales Tax Statements submitted to the City in connection with this Payment Appendix E. If no subcontractors or suppliers are listed on the preceding chart or Sales Tax Statements, the undersigned certifies that no subcontractors or suppliers were used in performing the Project/Contract for the payment period indicated. Failure to provide accurate and truthful information is a violation of the City of Raleigh MWBE Policy and may result in the sanctions prescribed therein.

This \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

**Signature**

**Print Name and Title**

To be completed by City for FINAL PAYMENT

Total Paid to Contractor	\$	Proposed MWBE Amount	\$	MWBE Commitment:_____%
<input type="checkbox"/> Prime Contractor MWBE				
Total Paid to Subcontractors	\$	Total to MWBE Subcontractors	\$	MWBE Final:_____%

## REQUEST TO CHANGE A MWBE SUBCONTRACTOR

Contractors must submit this form for **any request** to change any MWBE subcontractor or supplier in connection with the Contract. The Contractor on the Prime Contract (i.e. prime) is responsible for collecting and submitting this form from all subsequent lower tier contractors.

<b>PROJECT NAME</b>			
<b>PROJECT MANAGER</b>		<b>CONTRACT NUMBER</b>	
<b>PRIME CONTRACTOR</b>		<b>CONTACT NAME</b>	
<b>PHONE NUMBER</b>		<b>E-MAIL ADDRESS</b>	
<b>DATE OF CHANGE</b>		<b>CITY DEPARTMENT</b>	

**SECTION 1: PREVIOUS REQUESTS FOR CHANGE**

**NO PREVIOUS REQUEST FOR THIS PROJECT/CONTRACT.**

Complete the chart below for all previous Requests to Change a MWBE Subcontractor.

Date of Request	Subcontractor's Company Name	MWBE Classification	Request Approved: Y/N	Work Performed

MWBE Classifications: American Indian (AI), Asian American (AA), Black/African-American (B), Hispanic (H), Non-Minority Female (NMF), Socially/Economic Disadvantaged (D)

**Section 2: CURRENT MWBE SUBCONTRACTOR INFORMATION**

<b>CURRENT MWBE SUBCONTRACTOR</b>			
<b>SERVICE PROVIDED</b>			
<b>PERCENT OF TOTAL CONTRACT</b>	_____ %	<b>PERCENT OF SUBCONTRACT COMPLETE</b>	_____ %
<b>TOTAL AMOUNT OF SUBCONTRACT</b>	\$ _____	<b>TOTAL AMOUNT PAID TO DATE</b>	\$ _____

**Section 3: PROPOSED ACTION (SELECT ONE)**

**WORK TO BE SELF-PERFORMED**

Check this box **only** if the work previously performed by the above MWBE subcontractor will be performed with your own current work forces, and you normally perform and have the capability to perform all elements of this work on this Project/Contract with your own current work forces.

**REPLACE MWBE SUBCONTRACTOR**

**Section 4: REASON FOR CHANGE (SELECT AT LEAST ONE)**

- The listed MWBE, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract.
- The listed MWBE is bankrupt or insolvent.
- The listed MWBE fails or refuses to perform the subcontract or furnish the listed materials.

- The work performed by the listed subcontractor is unsatisfactory according to industry standards and is not in accordance with the plans and specifications.
- The subcontractor is substantially delaying or disrupting the progress of the work.
- Other - explain in detail on company letter head and attach to this Request.

**Section 5: NEW SUBCONTRACTOR INFORMATION (IF APPLICABLE)**

Complete the information below for the new MWBE subcontractor requested to be changed on the Project/Contract.

Company Name	Contact Person	MWBE Classification	Work to be Performed	Amount of Subcontract	Subcontractor's Percentage of Total Contract

MWBE Classifications: American Indian (AI), Asian American (AA,) Black/African-American (B), Hispanic (H), Non-Minority Female (NMF), Socially/Economic Disadvantaged (D)

**If new subcontractor(s) is not MWBE, attach documentation of Good Faith Efforts (Affidavit A).**

This the \_\_\_ of \_\_\_\_\_, 20 \_\_\_\_\_  
 \_\_\_\_\_  
 Signature Printed Name/Title

<b>TO BE COMPLETED BY CITY</b>		<b>SIGNATURE:</b>	
<b>Original Total Contract Amount:</b>	\$ _____	<b>Original Total MWBE Participation</b>	_____ %
<b>New Total Contract Amount:</b>	\$ _____	<b>New Total MWBE Participation</b>	_____ %
<b>Contract Amount Impact</b>	Increase \$ _____ Decrease \$ _____ No Change <input type="checkbox"/>	<b>MWBE Participation Change</b>	Increase _____ % Decrease _____ % No Change <input type="checkbox"/>
			<input type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED
<b>NOTES:</b>			



# Minority and Women-owned Business Enterprise Program (MWBE)

## Explanation of Affidavit A

### A Listing of the Good Faith Effort (GFE)

Company has made a good faith effort to recruit minority businesses in accordance with N.C. Gen. Stat. § 143-128.2 and represents that it has performed the following (**check all that apply; note that a minimum of fifty (50) points must be achieved**):

*Examples of ways to satisfy requirements are given for each criterion below:*

- ❑ 1. (10 points) Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
  - ***Provide a list of potential bidders with proof of acknowledged responses (i.e. quotes)***
  - ***Provide confirmation of notification at least 10 days before bid date***
  - ***Newspaper/trade ads do not qualify as GFE notification***
  
- ❑ 2. (10 points) Made the construction plans, specifications and requirements available for review by prospective minority businesses, or provided these documents to them at least 10 days before the bids are due.
  - ***Provide confirmation of notification at least 10 days before bid date***
  - ***Include in the notice that plan specs are available in office/online (location/link) and at no cost to MWBEs***
  - ***Newspaper/trade ads do not qualify as GFE notification***
  
- ❑ 3. (15 points) Broke down or combined elements of work into economically feasible units to facilitate minority participation.
  - ***Provide confirmation of solicitation that include subcontracting opportunities (i.e. itemize or group trades such as flooring/trim or divide one sub does flooring and another sub does trim)***
  
- ❑ 4. (10 points) Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
  - ***Obtain letter or other documentation from one of these organizations indicating that you are working with them in the recruitment of minority businesses – NCMWBE Coordinators Network, The Institute, NCIEDI or HCAC.***
  - ***A list of organizations can be found at [www.raleighnc.gov/mwbe](http://www.raleighnc.gov/mwbe)***

- ❑ 5. (10 points) Attended pre-bid meetings scheduled by the public owner.
  - **Attendance is recorded (make sure you sign-in)**
- ❑ 6. (20 points) Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
  - **Include one of the following statements in solicitation to MWBEs as it applies:**
    - **Bonds are not required for this project**
    - **Bidder will assist in procuring bonds or insurance if necessary**
- ❑ 7. (15 points) Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
  - **“MWBE Solicitation Form” is attached to the Explanation Affidavit A Form**
    - **Provide completed MWBE Solicitation Form to document the following:**
    - **Did not receive low quotes from MWBEs**
    - **Bidder accepted other low quotes from MWBEs**
    - **Written reasons for rejection of any low quotes from MWBEs**
- ❑ 8. (25 points) Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder’s suppliers in order to help minority businesses in establishing credit.
  - **Indicate in solicitation the following are available: equipment, loan capital, lines of credit, or joint pay agreements for qualified MWBEs or any other needs.**
  - **Document recent history of doing joint pay agreements such as “in the recent past, we have done joint pay agreements (lines of credit, waiving of credit, etc.) with the following MWBEs (x company, y company, z company) and intend to offer the same on this project for qualified MWBEs”**
  - **Provide letter from vendor/supplier indicating that they will give the same pricing to MWBEs quoting to you as vendor/supplier gives directly to you**
- ❑ 9. (20 points) Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
  - **Indicate in solicitation that opportunities to negotiate joint venture and partnership arrangements are available**
- ❑ 10. (20 points) Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash flow demands.
  - **Indicate in solicitation that quick pay agreements are available for certified MWBEs to include payment terms (i.e., Net 30).**
  - **Document recent history of doing quick pay agreements such as “in the recent past, we have done quick pay agreements with the following MWBE’s (x company, y company, z company) and intend to offer the same on this project for qualified MWBE’s”**

## SOLICITATION FORM

*Copy this Form as needed to document MWBE contacts.*

The Bidder must make the required contacts no less than ten (10) Days before Bid Opening to receive credit for this Good Faith Effort. All contacts must be verifiable with supporting documentation reflecting the methods and content of the solicitation. All documentation must be submitted with this form.

A Bidder must submit this Solicitation Form within the time specified in the City Solicitation Documents. If no time period is specified in the City Solicitation Documents, the Bidder must submit this form within three (3) Business Days after the City requests it.

<b>SECTION 1. PROJECT INFORMATION</b>
---------------------------------------

<b>Project Name</b>			
<b>Project Number</b>		<b>City Department</b>	
<b>Bidder</b>		<b>Number MWBEs Contacted</b>	

<b>SECTION 2. SOLICITATION INFORMATION</b>
--

If “No” is checked for “Selected” below, the Bidder must document the reasons for rejecting each bid submitted by a MWBE on the Good Faith Negotiation Form.

<b>MWBE FIRM</b>		<b>CONTACT PERSON</b>	
<b>SCOPE OF WORK</b>			
<b>INITIAL CONTACT</b>	DATE: ___/___/20___	<b>METHOD</b> (select all used):	<input type="checkbox"/> Email <input type="checkbox"/> Telephone <input type="checkbox"/> Fax <input type="checkbox"/> In-Person <input type="checkbox"/> Mail
<b>FOLLOW-UP</b>	DATE: ___/___/20___	<b>METHOD</b> (select all used):	<input type="checkbox"/> Email <input type="checkbox"/> Telephone <input type="checkbox"/> Fax <input type="checkbox"/> In-Person <input type="checkbox"/> Mail
<b>RESPONSE</b>	<input type="checkbox"/> No Response	<input type="checkbox"/> Not Bidding	<input type="checkbox"/> Bidding (\$_____) <input type="checkbox"/> Other (Explain)
<b>SELECTED</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No (Explain)	

<b>MWBE FIRM</b>		<b>CONTACT PERSON</b>	
<b>SCOPE OF WORK</b>			
<b>INITIAL CONTACT</b>	DATE: ___/___/20___	<b>METHOD</b> (select all used):	<input type="checkbox"/> Email <input type="checkbox"/> Telephone <input type="checkbox"/> Fax <input type="checkbox"/> In-Person <input type="checkbox"/> Mail
<b>FOLLOW-UP</b>	DATE: ___/___/20___	<b>METHOD</b> (select all used):	<input type="checkbox"/> Email <input type="checkbox"/> Telephone <input type="checkbox"/> Fax <input type="checkbox"/> In-Person <input type="checkbox"/> Mail
<b>RESPONSE</b>	<input type="checkbox"/> No Response	<input type="checkbox"/> Not Bidding	<input type="checkbox"/> Bidding (\$_____) <input type="checkbox"/> Other (Explain)
<b>SELECTED</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No (Explain)	

<b>MWBE FIRM</b>		<b>CONTACT PERSON</b>	
<b>SCOPE OF WORK</b>			
<b>INITIAL CONTACT</b>	DATE: ___/___/20___	<b>METHOD</b> (select all used):	<input type="checkbox"/> Email <input type="checkbox"/> Telephone <input type="checkbox"/> Fax <input type="checkbox"/> In-Person <input type="checkbox"/> Mail
<b>FOLLOW-UP</b>	DATE: ___/___/20___	<b>METHOD</b> (select all used):	<input type="checkbox"/> Email <input type="checkbox"/> Telephone <input type="checkbox"/> Fax <input type="checkbox"/> In-Person <input type="checkbox"/> Mail
<b>RESPONSE</b>	<input type="checkbox"/> No Response	<input type="checkbox"/> Not Bidding	<input type="checkbox"/> Bidding (\$_____) <input type="checkbox"/> Other (Explain)
<b>SELECTED</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No (Explain)	



**CONTRACTOR'S CERTIFICATES**  
**AFFIDAVIT OF ORGANIZATION AND AUTHORITY**  
**AND**  
**SWORN STATEMENT**

STATE OF \_\_\_\_\_ )

COUNTY \_\_\_\_\_ )  
OF \_\_\_\_\_

\_\_\_\_\_ being the first duly sworn on oath deposes and says that the Bidder on the attached Bid is organized as indicated below and that all statements herein made are made on behalf of such Bidder and that this deponent is authorized to make them.

(Fill Out Applicable Paragraph)

**1. CORPORATION:**

The Bidder is a Corporation organized and existing under the laws of the State of \_\_\_\_\_ and its President is \_\_\_\_\_ ; its Secretary is \_\_\_\_\_ , and it does have a corporate seal. The President is authorized to sign construction contracts and bids for the Company by action of its Board of Directors taken \_\_\_\_\_ a certified copy of which is hereto attached. (Strike out last sentence if not applicable.)

**2. PARTNERSHIP:**

The Bidder is a partnership consisting of \_\_\_\_\_ and \_\_\_\_\_ , partners doing business under the name of: \_\_\_\_\_

**3. SOLE TRADER:**

The Bidder is an individual and if operating under a trade name, such trade name is as follows: \_\_\_\_\_

**4. ADDRESS:**

The business address of the Bidder is as follows: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Its phone number is \_\_\_\_\_

\_\_\_\_\_  
Bidder  
By: \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_ .  
Co.

\_\_\_\_\_  
Notary Public

My Commission Expires:

\_\_\_\_\_

**CITY OF RALEIGH**  
**CONTRACTOR'S POOR PERFORMANCE POLICY**

RESOLUTION NO. (1992) 790

A RESOLUTION TO REGULATE THE PARTICIPATION IN CITY CONSTRUCTION PROJECTS BY CONTRACTORS WHO MAY NOT BE CAPABLE OF TIMELY AND PROPER COMPLETION OF CITY PROJECTS.

WHEREAS, the City of Raleigh wishes to minimize cost and inconvenience to the citizenry caused by the failure of contractors to complete projects in a timely manner in accordance with approved project schedules; and

WHEREAS, North Carolina law allows cities to award bids to responsible bidders and the inability to complete work on time is one indication of a lack of responsibility.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF RALEIGH:

Section 1. That the City Manager may disqualify bidders from participation in bidding and award of contracts for city construction projects based on the following conditions existing simultaneously:

- A. The dollar value of the work completed is less than the dollar value of the work which should have been completed on the basis of the contractor's approved progress schedule by more than twenty percent of the current contract amount. The dollar amount of the work completed will be the total estimate to date shown in the latest partial pay estimate. The current contract amount will be the contract estimate plus accumulated overruns and less accumulated underruns shown in the latest partial pay estimate.
- B. The percentage of the work completed is less than the percentage of contract time elapsed on the work by more than twenty percent. The percentage of work completed will be the dollar value of the work completed as defined above divided by the current contract amount as defined above. The percentage of contract time elapsed will be the number of calendar days elapsed as shown in the latest partial pay estimate divided by the total contract time in calendar days.

Section 2. The City Manager shall not include any late days which are caused by the City in any of his calculations directed at determining bid status.

Section 3. All City construction project specifications shall contain a specific provision clearly outlining the policies set out in this Resolution, including the criteria for determining whether a contractor is behind schedule, and the specifications shall clearly state the City's intent to enforce the provisions of this Resolution.

Section 4. The terms of this Resolution shall apply only to contracts for which the specifications for bidders are issued after the effective date of this Resolution.

Section 5. Any contractor who wishes to contest the decision of the City Manager declaring ineligibility may appeal to the City Council by delivering a notice of appeal to the City Clerk no later than ten days after receipt of the City Manager's decision. The notice of appeal shall clearly set out the reasons why the Contractor believes that the terms of this Resolution have been inappropriately applied or the equitable arguments for not applying this Resolution's terms. When considering an appeal the City Council shall consider, among other things, the report of the City manager, the notice of appeal, and the contractor's current status on any other current City contracts and its performance on any other contracts to which the contractor and the City have been parties to within the two calendar years immediately preceding the filing of the notice of appeal.

Section 6. Bidders so disqualified shall remain disqualified for any period in which they are still in conflict with the schedule provisions of this section.

Section 7. This Resolution is effective upon adoption.

ADOPTED: 10/6/92

EFFECTIVE: 10/6/92

I have read and understand the City of Raleigh's policy as stated above.

---

Signature

---

Printed Name

---

Title

---

Date

**NON-COLLUSIVE AFFIDAVIT**

State of \_\_\_\_\_ )  
 )ss.  
County of \_\_\_\_\_ )

First being duly sworn deposes and says that:

- (1) He is the \_\_\_\_\_  
(Owner, Partner, Officer, Representative or Agent)  
of \_\_\_\_\_ 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, have 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 have in any manner, directly or indirectly, sought by agreement or collusion, or communication, or conference with any 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 elements 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 (Recipient), or any person interested in the proposed Contract;
- (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 other of its agents, representatives, owners, employees or parties in interest, including this affidavit.

BY \_\_\_\_\_

PRINTED OR TYPED NAME \_\_\_\_\_

ITS \_\_\_\_\_  
(Title)

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public My commission expires \_\_\_\_\_

END OF AFFIDAVIT

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**NOTICE TO CONTRACTOR REGARDING INTRUSIONS BEYOND PROJECT LIMITS**

The Contractor and Owner hereby acknowledge that the Owner has acquired permanent and temporary easements on private property for the construction of the Project (the "Easements"), and that the Easements, together with public street rights-of-way (and previously acquired easements) comprise the sole areas where the Contractor is allowed to work on the Project, or to use for mobilization, access, staging, storage, and other purposes associated with the Project.

**ANY OCCUPANCY OF OR INTRUSIONS ONTO PRIVATE PROPERTY OUTSIDE THE EASEMENTS OR RIGHTS-OF-WAY OWNED OR CONTROLLED BY THE CITY WILL CONSTITUTE A TRESPASS UPON PRIVATE PROPERTY AND MAY RESULT IN SERIOUS LEGAL CONSEQUENCES FOR THE CITY OF RALEIGH.**

The Contractor shall be solely responsible for any intrusions onto private property outside the Easements or rights-of-way owned or controlled by the City. The Contractor hereby agrees to save, defend, hold harmless, and indemnify the City from all actions, claims, and liabilities , arising from such actions including, but not limited to, the payment of attorney's fees.

The only exception to the above stated limitations on the Contractor's work area will be in those instances where the Contractor has independently negotiated and secured agreements for temporary work and/or access privileges from Property Owners. These independently negotiated agreements must be in writing, and a copy of any such agreement shall be provided to the City in advance of any use or occupancy of private property pursuant to the agreement. The terms of any independently negotiated agreement shall clearly express to the Property Owner that the Contractor is seeking such use, occupancy, or access independently from the City of Raleigh and its Contract with the City of Raleigh, and that the Contractor shall be solely responsible for activities carried out on such areas.

I have read and understand the City of Raleigh's policy as stated above.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

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**NOTICE OF AWARD**

Date of Issuance:

Owner: City of Raleigh

Owner's Project No.:

Engineer:

Engineer's Project No.:

Project:

Contract Name:

Bidder:

Bidder's Address:

You are notified that Owner has accepted your Bid dated **[date]** for the above Contract, and that you are the Successful Bidder and are awarded a Contract for: **[Describe Work, alternates, or sections of Work awarded]**

The Contract Price of the awarded Contract is **[\$[Contract Price]**. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

**[Number of copies sent]** unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner **[number of copies sent]** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): **[Describe other conditions that require Successful Bidder's compliance]**

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within **[90]** days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: **City of Raleigh**

By (signature): \_\_\_\_\_

Name (printed): \_\_\_\_\_

Title: \_\_\_\_\_

Copy: Engineer

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AGREEMENT

**INSTRUCTIONS TO CONTRACTORS AND  
REQUIREMENTS AS TO FORM FOR CITY OF RALEIGH, NC AGREEMENTS**

**DO NOT REMOVE FROM AGREEMENT**

Please observe the following in executing the attached Contract:

1. The Owner may enter into an Agreement with three types of legal entities.
  - (a) If the Agreement is with an individual, that individual should sign the Agreement exactly as his name is set out. If the Agreement is with an individually-owned business, the Agreement should be with the individual owner, and not the named business.
  - (b) Execution on behalf of a corporation should be by an authorized corporate officer, with a second corporate officer signing to attest, with the corporate seal affixed. An official other than a corporate officer should attach documentation of their authority to execute and bind the company.
  - (c) If the Agreement is with a partnership, a general partner may execute unless an authorized partner is designated to execute. Documentation of such authorization should be attached.
2. After signing the Agreement, the appropriate notary's acknowledgement, either in the corporate form or individual/partnership form should be completed.
3. The Performance and Payment Bonds should be attached to the Agreement package. They should be signed by the Agree mentor, and his signature should be acknowledged with the appropriate acknowledge form. Next, the Bonds, in approved form, must be signed by the authorized agent of the Surety Company issuing the Bonds, and an executed Power of Attorney document authorizing the agent to sign must accompany the Bond Documents.
4. The Agreement should not be dated, except by the last person executing the Agreement, normally the City Clerk.
5. The Bid Form and all other documents submitted with the Bid shall be included with the Agreement and as noted in Article 9.
6. Page 00510 -1: Complete the Acceptance of Notice section on this page.
7. Pages 00520-3 through 00520-13: Complete in entirety.
8. Section 00610, 00615, 00616, 00617, and 00618: Complete in entirety.

9. Section 00618: Certificate of Insurance, Article 5 of the General and Supplementary Conditions requires the Certificate of Insurance to have those named as Additional Insured in each policy issued.
10. Most Certificates of Insurance state under the cancellation clause that "the issuing company will endeavor to mail 30 days written notice to the ..." and "but failure to mail such notice shall impose no obligation or liability of any kind upon the Company, its agents or representatives. Direct Notice of Cancellation endorsement is to be attached to corresponding Certificates of Insurance. With regard to expiration, cancellation, reduction, restriction, or any other change, certificates shall state:

"Should any of the following described policies be canceled before expiration date or be due to expire within thirty (30) days, the insurer shall mail thirty (30) days prior written notice to named certificate holder."
11. Four copies of the Contract are sent to the Contractor. The original and duplicates should be signed and returned to the Owner for signature, after which two duplicates will be returned to the Contractor. One copy may be retained by the Contractor and the other is for the use of the Bonding Company(s).
12. Failure to fully complete all four sets of the Contract Documents will cause delays in the approval by the Owner and therefore delay the issuance of the Notice to Proceed.

**AGREEMENT  
BETWEEN OWNER AND CONTRACTOR  
FOR CONSTRUCTION CONTRACT**  
CITY PURCHASE ORDER NO. [enter number]

THIS AGREEMENT is by and between The City of Raleigh (Owner) and [Contractor's Name] (Contractor).

Owner and Contractor hereby agree as follows:

**ARTICLE 1 – WORK**

Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Replacement of approximately 550 feet of 12-inch aerial sewer mains and steel support piers, replacement of approximately 800 feet of 12-inch aerial sewer mains on existing support piers, manhole rehabilitation, installation of three steel access platforms around existing elevated manholes, all in the State Street Area; removal of approximately 500 feet of 6-inch sewer mains and manholes, and installation of 8-inch replacement sewer mains and manholes in the Banbury Road Area; and removal of approximately 150 feet of 6-inch sewer mains including aerial and supports, and installation of 6-inch replacement sewer mains including aerial and supports in the Woodrow Drive Area.

**ARTICLE 2 – THE PROJECT**

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows: 2017 Aerial Sewer Replacement Project

**ARTICLE 3 – ENGINEER**

The Project has been designed by AECOM Technical Services of North Carolina, Inc. However, the Owner shall act as the Engineer and Resident Project Representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

**ARTICLE 4 – CONTRACT TIMES**

4.01 *Time of the Essence*

- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Days to Achieve Substantial Completion and Final Payment*

- A. The Work will be substantially completed within 300 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 330 calendar days after the date when the Contract Times commence to run.

#### 4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):
1. *Substantial Completion*: Contractor shall pay Owner \$1,000 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete.
  2. *Completion of Remaining Work*: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times or any proper extension thereof granted by Owner, Contractor shall pay Owner \$1,000 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.
  3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

#### **ARTICLE 5 – CONTRACT PRICE**

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A, *below*:

**The Contract Price shall not exceed the Total Contract amount of insert written out Contract Price here Dollars [\$insert Contract Price in numerical form here] unless changed by a duly authorized amendment or change order.**

- A. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the actual quantity of that item:

**UNIT PRICE WORK**

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
	<b>SEE SECTION 00410</b>				
Total of all Bid Prices (Unit Price Work)					<b>\$ XXX.XX</b>

The Bid prices for Unit Price Work set forth as of the Effective Date of the Agreement are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 10.05 of the General Conditions.

- B. For all Work, at the prices stated in Contractor’s Bid, attached hereto as an exhibit.

**ARTICLE 6 – PAYMENT PROCEDURES**

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor’s Applications for Payment on or about the 25th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.05 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

1. Prior to Final Completion, progress payments will be made in an amount equal to the percentage indicated in the Supplemental Conditions but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 15.01 of the General Conditions.

### 6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

## **ARTICLE 7 – INTEREST**

- 7.01 Once a Progress or Final Payment Application has been submitted by the contractor, recommended by the Engineer, and Approved by the Owner, if payment is not made, the Contractor will be due interest beginning on the 46<sup>th</sup> day following Owner acceptance at a rate of 1% per month or fraction thereof in accordance with NC General Statute 143-134.1(a).

## **ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS**

- 8.01 *In order to induce Owner to enter into this Agreement, Contractor makes the following representations:*

- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- C. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- D. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- E. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-5.03 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-5.06 of the Supplementary Conditions as containing reliable "technical data."
- F. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.
- G. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract



Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

- H. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- I. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## **ARTICLE 9 – CONTRACT DOCUMENTS**

### **9.01 Contents**

- A. The Contract Documents consist of the following:
  - 1. This Agreement (pages 00520-1 to 00520-11, inclusive).
  - 2. Performance bond (pages 00610-1 to 00610-4, inclusive).
  - 3. Payment bond (pages 00615-1 to 00615-4, inclusive).
  - 4. Certificate of Owner's Attorney (page 00616)
  - 5. Affidavit (page 00617)
  - 6. Certificate of Insurance (pages 00618-1 to 00618-          , inclusive).
  - 7. General Conditions (pages 00700-1 to 00700-70, inclusive).
  - 8. Supplementary Conditions (pages 00800-1 to 00800-41, inclusive).
  - 9. Specifications as listed in the table of contents (pages 00010-1 to 00010-          ) of the Project Manual.
  - 10. Drawings consisting of 18 sheets with each sheet bearing the following general title: 2017 Aerial Sewer Replacement Project.
  - 11. Addenda as follows: [1 through xx or N/A]
  - 12. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid (Sections 00410, 00411, and 00430).
    - b. Documentation submitted by Contractor prior to Notice of Award (City of Raleigh Bid Documentation; Sections 00440, 00441, 00442, 00443, and 00444).
    - c. Notice of Award (Section 00510).

13. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
  - a. Notice to Proceed (Section 00550).
  - b. Work Change Directives (Section 00940).
  - c. Change Orders (Section 00941).
  - d. Field Orders (Section 00942).
  - e. Warranty Bonds, if any.
- K. The documents listed in Paragraph 9.01.A are attached to this Agreement (**except as expressly noted otherwise above**).
- L. There are no Contract Documents other than those listed above in this Article 9.
- M. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

## ARTICLE 10 – MISCELLANEOUS

### 10.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

### 10.02 *Assignment of Contract*

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

### 10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

### 10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

#### 10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
  2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
  3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
  4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

#### 10.06 *Right to Audit Clause*

- A. Contractor's, subcontractors' and sub-subcontractors' "records" shall upon reasonable notice be open to inspection and subject to audit and/or reproduction during normal business working hours. Such audits may be performed by a City's representative or an outside representative engaged by City. The City or its designee may conduct such audits or inspections throughout the term of this Contract and for a period of three years after final payment or longer if required by law. City's representatives may (without limitation) conduct verifications such as counting employees at the Construction Site, witnessing the distribution of payroll, verifying information and amounts through interviews and written confirmations with Contractor employees, field and agency labor, subcontractors, and vendors.
- B. Such records shall include (hard copy, as well as computer readable data if it can be made available): written policies and procedures; time sheets; payroll registers; payroll records; cancelled payroll checks; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, negotiation notes, etc.); original bid estimates; estimating work sheets; correspondence; Change Order files (including documentation covering negotiated settlements); back charge logs and supporting documentation; invoices and related payment documentation; general ledger information detailing cash and trade discounts earned, insurance rebates and dividends; and any other Contractor records which may have a bearing on matters of interest to the City in its sole discretion in connection with the Contractor's dealings with the City, including but not limited to:
1. Compliance with Contract requirements for deliverables;
  2. Compliance with Construction Documents;
  3. Compliance with City's business ethics expectations;

4. Compliance with Contract provisions regarding the pricing of Change Orders;
  5. Accuracy of Contractor representations regarding the pricing of invoices; or
  6. Accuracy of Contractor representations related to claims submitted by the Contractor or any of its payees.
- C. Contractor shall require all payees (examples of payees include subcontractors, material suppliers, insurance carriers, etc.) to comply with the provisions of this article by including the requirements hereof in a written contract agreement between Contractor and payee. Contractor will ensure that all payees (including those entering into lump sum contracts) have the same right to audit provisions contained in this Contract.
- D. City's authorized representative or designee shall have reasonable access to the Contractor's facilities, shall be allowed to interview all current or former employees to discuss matters pertinent to the performance of this Contract and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this article.
- E. If an audit, inspection or examination in accordance with this article, discloses overpricing or overcharges (of any nature) by the Contractor to the City in excess of one percent (1%) of the total contract billings, in addition to making adjustments for the overcharges, the reasonable actual cost of the City's audit shall be reimbursed to the City by the Contractor. Any adjustments and/or payments which must be made as a result of any such audit or inspection of the Contractor's invoices and/or records shall be made within a reasonable amount of time (not to exceed 90 days) from presentation of City's findings to Contractor.
- F. The Contractor agrees to maintain all information pertaining to billing for services performed under this Contract in accordance with state law for public records. The Contractor shall afford the City access to these records for audit at such intervals as may be desired by the City. The Contractor shall also preserve the records for a period of three (3) years after Final Payment (or, alternatively, for a period of three years after termination of this Contract), or longer if required by law, during which time the City shall have access for audit purposes.
- G. The rights established under this section shall survive the expiration or termination of this Contract, and shall not be deleted, circumvented, limited, confined, or restricted by contract or any other section, clause, addendum, attachment or subsequent amendment to this Contract or any of the other Contract Documents.

10.07 *Iran Divestment Act Certification*

- A. Contractor certifies that, as of the date listed below, it is not on the Final Divestment List as created by the State Treasurer pursuant to N.C.G.S. § 147-86.55, et seq. In compliance with the requirements of the Iran Divestment Act and N.C.G.S. § 147-86.59, Contractor shall not utilize in the performance of the contract any subcontractor that is identified on the Final Divestment List.

10.08 *E - Verify*

- A. Contractor shall comply with E-Verify, the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law and as in accordance with N.C.G.S. §64-25 et seq. In addition, to the best of Contractor's knowledge, any subcontractor employed by Contractor as a part of this contract shall be in compliance with the requirements of E-Verify and N.C.G.S. §64-25 et seq.

10.09 *Companies Boycotting Israel Divestment Act Certification*

- A. Contractor certifies that it has not been designated by the North Carolina State Treasurer as a company engaged in the boycott of Israel pursuant to N.C.G.S. 147-86.81.

10.10 *Applicability of North Carolina Public Records Law*

- A. Notwithstanding any other provisions of this Contract, this Contract and all materials submitted to the City by the Contractor are subject to the public records laws of the State of North Carolina and it is the responsibility of the Contractor to properly designate materials that may be protected from disclosure as trade secrets under North Carolina law as such and in the form required by law prior to the submission of such materials to the City. Contractor understands and agrees that the City may take any and all actions necessary to comply with federal, state, and local laws and/or judicial orders and such actions will not constitute a breach of the terms of this Contract. To the extent that any other provisions of this Contract conflict with this paragraph, the provisions of this section shall control.

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in quintuplicate. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective on \_\_\_\_\_ (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR

**CITY OF RALEIGH, N.C.**  
\_\_\_\_\_

**\*\*Name of Contractor\*\***  
\_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: **City Manager or Authorized Designee**  
\_\_\_\_\_

Title: \_\_\_\_\_

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

Attest: **Gail G. Smith**  
\_\_\_\_\_

Attest: \_\_\_\_\_

Title: **City Clerk**  
\_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

Address for giving notices:

**City of Raleigh**  
\_\_\_\_\_

**222 W. Hargett Street**  
\_\_\_\_\_

**Raleigh, North Carolina 27601**  
\_\_\_\_\_

License No.: \_\_\_\_\_

THIS INSTRUMENT APPROVED AS TO FORM:

(Where applicable)

\_\_\_\_\_  
City Attorney

Agent for service of process:

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, and thus shall attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

\_\_\_\_\_

NOTE: If the Contractor is a Corporation, the legal name of the Corporation shall be set forth above, together with the signature of the officer or officers authorized to sign contracts on behalf of the Corporation; if Contractor is a partnership, the true name of the firm shall be set forth above, together with the signatures of all the partners; and if Contractor is an individual, his signature shall be placed above. If signature is by an agent other than an officer of a Corporation or a member of a partnership, a Power of Attorney must be attached hereto. Signature of Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgement.

(PLEASE COMPLETE ACKNOWLEDGEMENTS)  
(CORPORATE ACKNOWLEDGEMENT)

STATE OF NORTH CAROLINA  
COUNTY OF WAKE

This is to certify that on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_  
before me personally came \_\_\_\_\_, with whom I am personally  
acquainted, who, being by me duly sworn, says that \_\_\_he is the President and  
\_\_\_\_\_ is the Secretary of \_\_\_\_\_, the  
corporation described in and which executed the foregoing instrument: that (s)he knows the  
common seal of said corporation: that the seal affixed to the foregoing instrument is said common  
seal, and the name of the corporation was subscribed thereto by the said Secretary and the said  
corporate seal was affixed, all by order of the Board of Directors of said corporation, and that the  
said instrument is the act and deed of said corporation.

Witness my hand and official seal this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

\_\_\_\_\_  
Notary Public

(SEAL)

My Commission Expires:

\_\_\_\_\_

(CITY ACKNOWLEDGEMENT)

STATE OF NORTH CAROLINA  
COUNTY OF WAKE

This is to certify that on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, before me  
personally came R, with whom I am personally acquainted, who, being by me duly sworn, says  
that he is the City Manager and Gail G. Smith is the City Clerk of the City of Raleigh, the municipal  
corporation described in and which executed the foregoing: that she knows the corporate seal of  
the said municipal corporation; that the name of the municipal corporation was subscribed thereto  
by the said City Clerk and that the said corporate seal was affixed, all by order of the governing  
body of said municipal corporation, and that the said instrument is the act and deed of said  
municipal corporation.

Witness my hand and official seal this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_

\_\_\_\_\_  
Notary Public

(SEAL)

My Commission Expires:

\_\_\_\_\_

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## NOTICE TO PROCEED

Owner: City of Raleigh Owner's Project No.: \_\_\_\_\_  
Engineer: \_\_\_\_\_ Engineer's Project No.: \_\_\_\_\_  
Contractor: \_\_\_\_\_ Contractor's Project No.: \_\_\_\_\_  
Project: \_\_\_\_\_  
Contract Name: \_\_\_\_\_  
Effective Date of Contract: \_\_\_\_\_

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date Contract Times are to start]** pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement: **[Insert number of days and dates.]**

The number of days to achieve Substantial Completion is **[number of days, from Agreement]** from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of **[date, calculated from commencement date above]**; and the number of days to achieve readiness for final payment is **[number of days, from Agreement]** from the commencement date of the Contract Times, resulting in a date for readiness for final payment of **[date, calculated from commencement date above]**.

Before starting any Work at the Site, Contractor must comply with the following:

**[Note any access limitations, security procedures, or other restrictions]**

Owner: City of Raleigh  
By (signature): \_\_\_\_\_  
Name (printed): \_\_\_\_\_  
Title: \_\_\_\_\_  
Date Issued: \_\_\_\_\_  
Copy: Engineer

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## PERFORMANCE BOND

<p><b>Contractor</b></p> <p>Name: <b>[Full formal name of Contractor]</b></p> <p>Address (as registered with Secretary of State, if applicable):  <b>[Address of Contractor]</b></p>	<p><b>Surety</b></p> <p>Name: <b>[Full formal name of Surety]</b></p> <p>Address (as registered with Secretary of State, if applicable):  <b>[Address of Surety]</b></p>
<p><b>Owner</b></p> <p>Name: <b>City of Raleigh</b></p> <p>Mailing address:  <b>222 W. Hargett Street  Raleigh, NC 27601</b></p>	<p><b>Contract</b></p> <p>Description (name and location):  <b>[Owner's project/contract name, and location of the project]</b></p> <p>Contract Price: <b>[Amount from Contract]</b></p> <p>Effective Date of Contract: <b>[Date from Contract]</b></p>
<p><b>Bond</b></p> <p>Bond Amount: <b>[Amount]</b></p> <p>Date of Bond: <b>[Date]</b></p> <p><i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form:  <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
<p>_____</p> <p><i>(Full formal name of Contractor)</i></p>	<p>_____</p> <p><i>(Full formal name of Surety) (corporate seal)</i></p>
<p>By: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>	<p>By: _____</p> <p style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></p>
<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p>Attest: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>	<p>Attest: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>
<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor **satisfactorily** performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
  - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
  - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
  - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
  - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
  - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
  - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
  - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
  - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
  - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
  - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
  - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
  - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
  - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
  - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
  - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows: **None**

## PAYMENT BOND

<b>Contractor</b> Name: <b>[Full formal name of Contractor]</b> Address <i>(as registered w/ Secretary of State, if applicable)</i> : <b>[Address of Contractor]</b>	<b>Surety</b> Name: <b>[Full formal name of Surety]</b> Address <i>(as registered w/ Secretary of State, if applicable)</i> : <b>[Address of Surety]</b>
<b>Owner</b> Name: <b>City of Raleigh</b> Mailing address: <b>222 W. Hargett Street                  Raleigh, NC 27601</b>	<b>Contract</b> Description <i>(name and location)</i> : <b>[Owner's project/contract name, and location of the project]</b>  Contract Price: <b>[Amount, from Contract]</b> Effective Date of Contract: <b>[Date, from Contract]</b>
<b>Bond</b> Bond Amount: <b>[Amount]</b> Date of Bond: <b>[Date]</b> <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
  - 5.1. Claimants who do not have a direct contract with the Contractor
    - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
    - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
  - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that **is shall be** sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
  - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
  - 7.2. Pay or arrange for payment of any undisputed amounts.
  - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety



shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
  - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
    - 16.1.1. The name of the Claimant;
    - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

- 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
  - 16.1.4. A brief description of the labor, materials, or equipment furnished;
  - 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
  - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
  - 16.1.7. The total amount of previous payments received by the Claimant; and
  - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of “labor, materials, or equipment” that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: **None**

CERTIFICATE OF OWNER'S ATTORNEY

I hereby certify that I am the duly appointed attorney for the Owner of this project and that I have examined the foregoing instrument and Bond, and approve the same as being legal and in proper form.

This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Attorney-at Law

CERTIFICATE OF PAYMENTS

I hereby certify that I am the legal and duly appointed Finance Officer for the Owner of this project and that provision for the payment of any monies due under this agreement has been made by appropriation duly made, or by Bonds or notes duly authorized, as required by the North Carolina Local Government Budget and Fiscal Control Act.

City of Raleigh

Date: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

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AFFIDAVIT

(To be attached to all Contracts)

STATE OF \_\_\_\_\_ )  
 ) SS  
COUNTY OF \_\_\_\_\_ )

\_\_\_\_\_ being first duly sworn on oath deposes and says that (s)he is \_\_\_\_\_  
\_\_\_\_\_  
(attorney-in-fact or agent) of \_\_\_\_\_  
(bonding company) surety on the attached Contract on \_\_\_\_\_  
\_\_\_\_\_ executed by \_\_\_\_\_ (Contractor).

Affiant further deposes and says that no officer, official, or employee of the Owner has any direct or indirect interest, or is receiving any premium, commission, fee, or other thing of value on account of the same or the furnishing of the Bond, undertaking, contract of indemnity, guaranty, or suretyship in connection with the above-mentioned contract.

Signed \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, A.D., 20\_\_\_\_.

\_\_\_\_\_  
(Notary Public, \_\_\_\_\_ County, \_\_\_\_\_)

My Commission Expires \_\_\_\_\_.

PAGE FOR ATTACHING

CERTIFICATE OF INSURANCE

**Contractor's Application for Payment**

<b>Owner:</b> _____	<b>Owner's Project No.:</b> _____
<b>Engineer:</b> _____	<b>Engineer's Project No.:</b> _____
<b>Contractor:</b> _____	<b>Contractor's Project No.:</b> _____
<b>PO #:</b> _____	
<b>Project:</b> _____	
<b>Contractor</b>	
<b>Address:</b> _____	
<b>Contract:</b> _____	
<b>Application No.:</b> _____	<b>Application Date:</b> _____
<b>Application Period: From</b> _____	<b>to</b> _____

1. Original Contract Price	\$	-
2. Net change by Change Orders		
3. Current Contract Price (Line 1 + Line 2)	\$	-
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)	\$	-
5. Retainage		
a. _____ X \$ - Work Completed	\$	-
b. _____ X \$ - Stored Materials	\$	-
c. Total Retainage (Line 5.a + Line 5.b)	\$	-
6. Amount eligible to date (Line 4 - Line 5.c)	\$	-
7. Less previous payments (Line 6 from prior application)		
8. Contract Subtotal this application (Excludes Sales Tax)	\$	-
9. Sales Tax due this period		
10. Amount due this application	\$	-
11. Balance to finish, including retainage (Line 3 - Line 6)	\$	-

**Contractor's Certification**

The undersigned Contractor certifies, to the best of its knowledge, the following:

(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;

(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and

(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

**Contractor:** \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

<b>Recommended by Engineer</b>	<b>Approved by Owner</b>
<b>By:</b> _____	<b>By:</b> _____
<b>Title:</b> _____	<b>Title:</b> _____
<b>Date:</b> _____	<b>Date:</b> _____
<b>Approved by Funding Agency</b>	
<b>By:</b> _____	<b>By:</b> _____
<b>Title:</b> _____	<b>Title:</b> _____
<b>Date:</b> _____	<b>Date:</b> _____

**Progress Estimate - Unit Price Work**

**Contractor's Application for Payment**

Owner: \_\_\_\_\_  
 Engineer: \_\_\_\_\_  
 Contractor: \_\_\_\_\_  
 Project: \_\_\_\_\_  
 Contract: \_\_\_\_\_

Owner's Project No.: \_\_\_\_\_  
 Engineer's Project No.: \_\_\_\_\_  
 Contractor's Project No.: \_\_\_\_\_

A		B		C		D		E		F		G		H		I		J		K		L	
												Contract Information		Contract Information		Contract Information		Contract Information		Contract Information		Contract Information	
Bid Item No.	Description	Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E) (\$)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) (\$)	Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)	Application Date:											
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Original Contract Totals											\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$









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# CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: **City of Raleigh**  
Engineer:  
Contractor:  
Project:  
Contract Name:

Owner's Project No.:  
Engineer's Project No.:  
Contractor's Project No.:

This  Preliminary  Final Certificate of Substantial Completion applies to:

All Work  The following specified portions of the Work:

**[Describe the portion of the work for which Certificate of Substantial Completion is issued]**

Date of Substantial Completion: **[Enter date, as determined by Engineer]**

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's Responsibilities:  None  As follows:

**[List amendments to Owner's Responsibilities]**

Amendments to Contractor's Responsibilities:  None  As follows:

**[List amendments to Contractor's Responsibilities]**

The following documents are attached to and made a part of this Certificate:

**[List attachments such as punch list; other 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.

Engineer

By *(signature)*: \_\_\_\_\_  
Name *(printed)*: \_\_\_\_\_  
Title: \_\_\_\_\_

PAGE FOR ATTACHING

POWER OF ATTORNEY

*Note: If the recorded POA from the Register of Deeds  
is attached, page 00634-2 is not necessary.*

STATE OF NORTH CAROLINA  
COUNTY OF \_\_\_\_\_

This is to certify that on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, before me personally appeared before me to the undersigned Notary Public, \_\_\_\_\_ who, being first duly sworn, acknowledged the due execution of the foregoing instrument for the purpose therein stated.

Witness my hand and notarial seal this the \_\_\_\_\_ day of \_\_\_\_\_, 20

(SEAL)

\_\_\_\_\_

\_\_\_\_\_

Notary Public

My Commission Expires:

\_\_\_\_\_

STATE OF NORTH CAROLINA  
COUNTY OF \_\_\_\_\_

This is to certify that on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, before me personally came \_\_\_\_\_, with whom I am personally acquainted, who, being by me duly sworn, says that (s)he is the President and \_\_\_\_\_ is the Secretary of \_\_\_\_\_, Incorporated, the corporation described in and which executed the foregoing instrument; that (s)he knows the common seal of said corporation; that the seal affixed to the foregoing instrument is said common seal, and the name of the corporation was subscribed thereto by the said Secretary and the said corporate seal was affixed, all by order of the Board of Directors of said corporation, and that the said instrument is the act and deed of said corporation.

Witness my hand and notarial seal this the \_\_\_\_\_ day of \_\_\_\_\_, 20

(SEAL)

\_\_\_\_\_

\_\_\_\_\_

Notary Public

My Commission Expires:

\_\_\_\_\_



STATE OF NORTH CAROLINA  
COUNTY OF \_\_\_\_\_

I, \_\_\_\_\_, a Notary Public duly commissioned and qualified to act in \_\_\_\_\_ County, State of \_\_\_\_\_, do hereby certify that \_\_\_\_\_, Attorney-in Fact for \_\_\_\_\_, a corporation, personally appeared before me this day, and being by me duly sworn, says that (s)he executed the foregoing and attached Payment and Performance Bonds, dated \_\_\_\_\_, 20\_\_, for and in behalf of \_\_\_\_\_ as Surety and that his authority to execute and acknowledge said Bonds is contained in an instrument duly executed, acknowledged, and recorded in the Office of Register of Deeds of \_\_\_\_\_ County, State of \_\_\_\_\_, on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, being recorded in Book Number \_\_\_\_\_, Page \_\_\_\_\_, of said Registry, and that the foregoing and attached Bonds were executed under and by virtue of the authority given by said instrument granting (him) (her) the said \_\_\_\_\_, Power of Attorney; and that the said \_\_\_\_\_

\_\_\_\_\_, Attorney-in-Fact, acknowledged the due execution of the foregoing and annexed Bonds for the purpose therein expressed for and in behalf of said \_\_\_\_\_.

Witness my hand and notarial seal this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

(SEAL)

\_\_\_\_\_

\_\_\_\_\_  
Notary Public

My Commission Expires:

\_\_\_\_\_

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**00700**  
**STANDARD GENERAL CONDITIONS**  
**OF THE CONSTRUCTION CONTRACT**

**TABLE OF CONTENTS**

	<b>Page</b>
Article 1—Definitions and Terminology.....	1
1.01 Defined Terms.....	1
1.02 Terminology.....	6
Article 2—Preliminary Matters.....	7
2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance.....	7
2.02 Copies of Documents.....	7
2.03 Before Starting Construction.....	7
2.04 Preconstruction Conference; Designation of Authorized Representatives.....	8
2.05 Acceptance of Schedules.....	8
2.06 Electronic Transmittals.....	8
Article 3—Contract Documents: Intent, Requirements, Reuse.....	9
3.01 Intent.....	9
3.02 Reference Standards.....	9
3.03 Reporting and Resolving Discrepancies.....	10
3.04 Requirements of the Contract Documents.....	10
3.05 Reuse of Documents.....	11
Article 4—Commencement and Progress of the Work.....	11
4.01 Commencement of Contract Times; Notice to Proceed.....	11
4.02 Starting the Work.....	11
4.03 Reference Points.....	11
4.04 Progress Schedule.....	12
4.05 Delays in Contractor’s Progress.....	12
Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions.....	13
5.01 Availability of Lands.....	13
5.02 Use of Site and Other Areas.....	14
5.03 Subsurface and Physical Conditions.....	15

5.04	Differing Subsurface or Physical Conditions .....	16
5.05	Underground Facilities.....	17
5.06	Hazardous Environmental Conditions at Site .....	19
Article 6—Bonds and Insurance.....		21
6.01	Performance, Payment, and Other Bonds.....	21
6.02	Insurance—General Provisions.....	22
6.03	Contractor’s Insurance.....	24
6.04	Builder’s Risk and Other Property Insurance.....	25
6.05	Property Losses; Subrogation .....	25
6.06	Receipt and Application of Property Insurance Proceeds .....	27
Article 7—Contractor’s Responsibilities .....		27
7.01	Contractor’s Means and Methods of Construction .....	27
7.02	Supervision and Superintendence .....	27
7.03	Labor; Working Hours .....	27
7.04	Services, Materials, and Equipment .....	28
7.05	“Or Equals” .....	28
7.06	Substitutes .....	29
7.07	Concerning Subcontractors and Suppliers.....	31
7.08	Patent Fees and Royalties.....	32
7.09	Permits.....	33
7.10	Taxes .....	33
7.11	Laws and Regulations.....	33
7.12	Record Documents.....	33
7.13	Safety and Protection .....	34
7.14	Hazard Communication Programs .....	35
7.15	Emergencies.....	35
7.16	Submittals .....	35
7.17	Contractor’s General Warranty and Guarantee .....	38
7.18	Indemnification .....	39
7.19	Delegation of Professional Design Services .....	39
Article 8—Other Work at the Site.....		40
8.01	Other Work .....	40
8.02	Coordination .....	41

8.03	Legal Relationships.....	41
Article 9	—Owner’s Responsibilities.....	42
9.01	Communications to Contractor .....	42
9.02	Replacement of Engineer.....	42
9.03	Furnish Data.....	42
9.04	Pay When Due.....	42
9.05	Lands and Easements; Reports, Tests, and Drawings.....	43
9.06	Insurance.....	43
9.07	Change Orders .....	43
9.08	Inspections, Tests, and Approvals.....	43
9.09	Limitations on Owner’s Responsibilities .....	43
9.10	Undisclosed Hazardous Environmental Condition.....	43
9.11	Evidence of Financial Arrangements.....	43
9.12	Safety Programs .....	43
Article 10	—Engineer’s Status During Construction .....	44
10.01	Owner’s Representative.....	44
10.02	Visits to Site.....	44
10.03	Resident Project Representative.....	44
10.04	Engineer’s Authority .....	44
10.05	Determinations for Unit Price Work .....	45
10.06	Decisions on Requirements of Contract Documents and Acceptability of Work.....	45
10.07	Limitations on Engineer’s Authority and Responsibilities .....	45
10.08	Compliance with Safety Program.....	45
Article 11	—Changes to the Contract .....	46
11.01	Amending and Supplementing the Contract .....	46
11.02	Change Orders .....	46
11.03	Work Change Directives.....	46
11.04	Field Orders.....	47
11.05	Owner-Authorized Changes in the Work.....	47
11.06	Unauthorized Changes in the Work.....	47
11.07	Change of Contract Price .....	47
11.08	Change of Contract Times.....	49
11.09	Change Proposals.....	49

11.10	Notification to Surety.....	50
Article 12	—Claims.....	50
12.01	Claims.....	50
Article 13	—Cost of the Work; Allowances; Unit Price Work.....	51
13.01	Cost of the Work.....	51
13.02	Allowances.....	55
13.03	Unit Price Work.....	55
Article 14	—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work.....	56
14.01	Access to Work.....	56
14.02	Tests, Inspections, and Approvals.....	56
14.03	Defective Work.....	57
14.04	Acceptance of Defective Work.....	58
14.05	Uncovering Work.....	58
14.06	Owner May Stop the Work.....	58
14.07	Owner May Correct Defective Work.....	59
Article 15	—Payments to Contractor; Set-Offs; Completion; Correction Period.....	59
15.01	Progress Payments.....	59
15.02	Contractor’s Warranty of Title.....	62
15.03	Substantial Completion.....	62
15.04	Partial Use or Occupancy.....	63
15.05	Final Inspection.....	64
15.06	Final Payment.....	64
15.07	Waiver of Claims.....	65
15.08	Correction Period.....	66
Article 16	—Suspension of Work and Termination.....	67
16.01	Owner May Suspend Work.....	67
16.02	Owner May Terminate for Cause.....	67
16.03	Owner May Terminate for Convenience.....	68
16.04	Contractor May Stop Work or Terminate.....	68
Article 17	—Final Resolution of Disputes.....	69
17.01	Methods and Procedures.....	69
Article 18	—Miscellaneous.....	69
18.01	Giving Notice.....	69

18.02	Computation of Times.....	69
18.03	Cumulative Remedies .....	70
18.04	Limitation of Damages .....	70
18.05	No Waiver .....	70
18.06	Survival of Obligations .....	70
18.07	Controlling Law .....	70
18.08	Assignment of Contract.....	70
18.09	Successors and Assigns .....	70
18.10	Headings.....	70

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

## ARTICLE 1—DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. 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, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
  3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  5. *Bidder*—An individual or entity that submits a Bid to Owner.
  6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
  7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
  8. *Change Order*—A document 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, or other revision to the Contract, issued on or after the Effective Date of the Contract.
  9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
  10. *Claim*
    - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the



- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
  - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
  - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
  12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
  13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
  14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
  15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
  16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
  17. *Cost of the Work*—See Paragraph 13.01 for definition.
  18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
  19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
  20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
  21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
  - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
  - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
  - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *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.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *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, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *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.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, 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 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 of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, 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 a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
  - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
  - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *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; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

## 1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* 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 information in the Contract Documents and with the design concept of the 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 Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
1. does not conform to the Contract Documents;
  2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
  3. 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 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
1. The word “furnish,” when used in connection with services, materials, or equipment, means 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, means 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, means to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## **ARTICLE 2—PRELIMINARY MATTERS**

### **2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance***

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

### **2.02 *Copies of Documents***

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

### **2.03 *Before Starting Construction***

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), 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;
  - 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.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- 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 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *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 the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will 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 the component parts of the Work.
  - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

## ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

### 3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document 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.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
  - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
  - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

### 3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
  - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract 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, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer 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 part of the Contract Documents prepared by or for Engineer.

### 3.03 *Reporting and Resolving Discrepancies*

#### A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then 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 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
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 had actual knowledge thereof.

#### B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
  - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); 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).

### 3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

### 3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers 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 its consultants, including electronic media versions, or reuse any 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 adaptation by Engineer; or
  - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

## **ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK**

### 4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract 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 Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

### 4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

### 4.03 *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.

#### 4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 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 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
  - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

#### 4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, 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 Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
  - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
  - 2. Abnormal weather conditions;
  - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
  - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
  2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
  3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
  2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
  3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
  4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
  5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

## **ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS**

### **5.01 *Availability of Lands***

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing 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.

- 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 permanent improvements are to be made 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.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
  2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all 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 directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will 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 and adjacent areas 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 of 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 structures or land to stresses or pressures that will endanger them.

### 5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

#### 5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
  2. is of such a nature as to require a change in the Drawings or Specifications;
  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 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, 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 fall within any one or more of the categories described in Paragraph 5.04.A;
  - 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 Paragraph 13.03; and,
  - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
- a. Contractor knew of the existence of such condition at the time Contractor made a 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 otherwise;
  - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
  - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

#### 5.05 *Underground Facilities*

- A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
  2. complying with applicable state and local utility damage prevention Laws and Regulations;



3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
  4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
  5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then 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 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
  2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
  3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
  4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. 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 Paragraph 13.03;
  - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
  - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
  3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
  4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

#### 5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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;
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 removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) 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. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. 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, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. 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, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, 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, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, 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 failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

## **ARTICLE 6—BONDS AND INSURANCE**

### **6.01 *Performance, Payment, and Other Bonds***

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

#### 6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
  - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
  - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, 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.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

#### 6.03 Contractor's Insurance

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
  - 1. include at least the specific coverages required;
  - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
  - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
  - 4. apply with respect to the performance of the Work, whether such performance is 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; and
  - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
  - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
  - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
  - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

#### 6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

#### 6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against



Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, 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, risks, 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 Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
  2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, 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 fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights 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 insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, 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 fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

**ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES**

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *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.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *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 maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. 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 will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

#### 7.04 *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, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will 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.
- C. All materials and equipment must 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.

#### 7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item 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 is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
  - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
      - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) 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) has a proven record of performance and availability of responsive service; and
  - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
  - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

#### 7.06 Substitutes

- A. *Contractor's Request; Governing Criteria:* Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
  2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
  - a. will certify that the proposed substitute item will:
    - 1) perform adequately the functions and achieve the results called for by the general design;
    - 2) be similar in substance to the item specified; and
    - 3) be suited to the same use as the item specified.
  - b. will state:
    - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
    - 2) whether 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
    - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
  - c. will identify:
    - 1) all variations of the proposed substitute item from the item specified; and
    - 2) available engineering, sales, maintenance, repair, and replacement services.
  - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable 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.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *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 or copyrights held by others. If an 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 will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, 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.

#### 7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. 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 the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

#### 7.10 *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.

#### 7.11 *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. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, 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 such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

#### 7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.



### 7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. 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, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.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 at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer 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).
- E. 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.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as 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.

7.15 *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 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 by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
  - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determine and verify:
    - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
    - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
    - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
  - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
    - a. Contractor shall submit the number of copies required in the Specifications.
    - b. Data shown on the Shop Drawings must 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 7.16.C.
  2. *Samples*
    - a. Contractor shall submit the number of Samples required in the Specifications.
    - b. Contractor shall 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 7.16.C.
  3. 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. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. 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, comply with the requirements of 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, or to safety precautions or programs incident thereto.
  3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
  4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.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 will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

*D. Resubmittal Procedures for Shop Drawings and Samples*

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 direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

*E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
  - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
  - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
  - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
  2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

**7.17 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 is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
  2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, 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.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
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;
  6. The issuance of a notice of acceptability by Engineer;
  7. The end of the correction period established in Paragraph 15.08;
  8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

**7.18 Indemnification**

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (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 from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage 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.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 7.18.A will 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.

**7.19 Delegation of Professional Design Services**

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
  - 1. Checking for conformance with the requirements of this Paragraph 7.19;
  - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
  - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

## **ARTICLE 8—OTHER WORK AT THE SITE**

### **8.01 *Other Work***

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. 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 such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, 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 in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

#### 8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
  - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
  - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
  - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

#### 8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.



- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
  - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
  - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all 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 damage, delay, disruption, or interference.

## **ARTICLE 9—OWNER'S RESPONSIBILITIES**

### **9.01 *Communications to Contractor***

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

### **9.02 *Replacement of Engineer***

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

### **9.03 *Furnish Data***

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

### **9.04 *Pay When Due***

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
  - B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
  - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *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.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *Evidence of Financial Arrangements*
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
  - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

## ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

### 10.01 *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.

### 10.02 *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 10.07. 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.

### 10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

### 10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, 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, will 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 Contractor under Paragraph 15.06.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 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

## ARTICLE 11—CHANGES TO THE CONTRACT

### 11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

### 11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
  - 1. Changes in 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;
  - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
  - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
  - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

### 11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
  - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
  - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

#### 11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes 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. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

#### 11.05 *Owner-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. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

#### 11.06 *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, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

#### 11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. 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, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
  2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
  3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will 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 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
    - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 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 Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
    - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
    - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
    - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

#### 11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

#### 11.09 *Change Proposals*

A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

#### B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
  - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
  - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change



Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

#### 11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety 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), 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.

### **ARTICLE 12—CLAIMS**

#### 12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
  1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
  2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
  3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
  4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
  - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
  - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
  - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

## **ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

### **13.01 *Cost of the Work***

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
  - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
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 in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will 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 accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will 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, which 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 will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
  4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
  5. Other costs consisting of 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, 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.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
- 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as 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 builder's risk or other property insurance established in accordance with Paragraph 6.04), 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 include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will 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 communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general 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 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
- 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 5. 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.
- 6. Expenses incurred in preparing and advancing Claims.
- 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
  - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
  - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
    - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
    - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

### 13.02 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*: Contractor agrees that:
1. 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
  2. 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 for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's 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 for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

### 13.03 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. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. 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, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
  - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
  - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

**ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK**

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- 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, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
  2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
  3. by manufacturers of equipment furnished under the Contract Documents;
  4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
  5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. 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, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

#### 14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,



losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

#### 14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

#### 14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then 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, and provide all necessary labor, material, and equipment.
  - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages 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 pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
  - 2. 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, 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, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

#### 14.06 *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, then 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 will 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.

**14.07 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 defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, 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, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. 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 14.07.

**ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD**

**15.01 Progress Payments**

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *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.
  - 2. 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 must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, 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 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, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and 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; or
  - b. 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;
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
  - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; 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 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
  - a. the Work is defective, requiring correction or replacement;
  - b. the Contract Price has been reduced by Change Orders;
  - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
  - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

**D. *Payment Becomes Due***

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

**E. *Reductions in Payment by Owner***

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
  - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
  - c. Contractor has failed to provide and maintain required bonds or insurance;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
  - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
  - f. The Work is defective, requiring correction or replacement;
  - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - h. The Contract Price has been reduced by Change Orders;
  - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
  - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
  - k. 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; or
  - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, 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, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
  3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

#### 15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

#### 15.03 *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 and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- 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 preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

#### 15.04 *Partial Use or Occupancy*

- 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. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work 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 15.03 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 6.04 regarding builder's risk or other property insurance.

#### 15.05 *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, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### 15.06 *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, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents;
  - b. consent of the surety, if any, to final payment;
  - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
  - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, 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, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* 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 have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

#### 15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,



appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

#### 15.08 *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 Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. correct the defective repairs to the Site or such adjacent areas;
  - 2. correct such defective Work;
  - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly 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. Contractor shall pay all 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). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. 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.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, 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.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

## **ARTICLE 16—SUSPENSION OF WORK AND TERMINATION**

### **16.01 *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 written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

### **16.02 *Owner May Terminate for Cause***

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and 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);
  - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
  - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
  - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
  - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
  - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, 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 complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.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 the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds 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.

- F. 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, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

#### 16.03 *Owner May Terminate for Convenience*

- A. Upon 7 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;
  - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, 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; and
  - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

#### 16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 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 16.03.
- 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, 7 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 are not intended to preclude Contractor from submitting a Change Proposal 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.

## **ARTICLE 17—FINAL RESOLUTION OF DISPUTES**

### **17.01 *Methods and Procedures***

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
  2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
  2. agree with the other party to submit the dispute to another dispute resolution process; or
  3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## **ARTICLE 18—MISCELLANEOUS**

### **18.01 *Giving Notice***

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
  2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
  3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

### **18.02 *Computation of Times***

- A. When any period of time is referred to in the Contract 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.

18.03 *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. 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.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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# SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

## TABLE OF CONTENTS

	<b>Page</b>
Article 1 - Definitions and Terminology .....	2
Article 2 - Preliminary Matters .....	3
Article 3 - Contract Documents: Intent, Requirements , Reuse .....	4
Article 4 - Commencement and Progress of the Work.....	4
Article 5 - Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions.....	5
Article 6 - Bonds and Insurance.....	8
Article 7 - Contractor’s Responsibilities .....	22
Article 8 - Other Work at the Site .....	28
Article 9 - Owner’s Responsibilities.....	29
Article 10 - Engineer’s Status During Construction.....	29
Article 11 - Changes to the Contract.....	32
Article 12 - Claims.....	33
Article 13 - Cost of the Work; Allowances; Unit Price Work.....	33
Article 14 - Tests and Inspections; Correction, Removal, or Acceptance of Defective Work.....	35
Article 15 - Payments to Contractor; Set-offs; Completion; Correction Period.....	36
Article 16 - Suspension of Work and Termination.....	39
Article 17 - Final Resolution of Disputes .....	39
Article 18 - Miscellaneous .....	40

## SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix “SC” added—for example, “Paragraph SC-4.05.”

### ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

#### 1.01 *Defined Terms*

SC-1.01.A.3. Add the following language to the end of Paragraph 1.01.A.3:

The Application for Payment form to be used on this Project is per City of Raleigh standards. Standard form to be used as a summary and signature sheet is included in Section 00620. Contractor shall use the City’s standard computerized forms, as included in these Contract Documents, for providing detail payment breakdown as an attachment to summary sheet. Contractor shall also include as part of the Application for Payment the “Certificate of the Contractor or His Duly Authorized Representative”.

SC-1.01.A.8. Add the following language to the end of Paragraph 1.01.A.8:

The Change Order form to be used on this Project is the City of Raleigh standard. The Standard Form to be used is included in these Contract Documents.

SC-1.01.A.9. Add the following language to the end of Paragraph 1.01.A.9:

The Change Proposal form to be used on this Project is the City of Raleigh standard. The Standard Form to be used is included in these Contract Documents.

SC-1.01.A.42. Amend the first sentence of Paragraph 1.01.A.42 to read as follows:

The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer and 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 utilized for the purposes for which it is intended.

SC-1.01.A.51. Add the following definitions after Paragraph 1.01.A.50:

A.51 *City* – City of Raleigh.

A.52 *Minority Business* - A business:

- a. In which at least fifty-one percent (51%) is owned by one or more minority persons or socially and economically disadvantaged individuals, or in the case of a corporation,



in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and

- b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

A.53 *Minority Person* - A person who is a citizen or lawful permanent resident of the United States and who is:

- a. Black, that is, a person having origins in any of the black racial groups in Africa;
- b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
- c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, or the Pacific Islands;
- d. American Indian, that is, a person having origins in any of the original Indian peoples of North America; or
- e. Female.

A.54 *Notice of Violation* - A written notification from a governmental agency that the Owner has violated a law or regulation that the agency has jurisdiction over. Notice will take the form used by the agency and may outline action to be taken by the Owner to correct the violation and may include a monetary fine.

A.55 *Small Tools* - Tools and equipment with an individual cost of less than \$1,000.

A.56 *Socially and Economically Disadvantaged Individual* - Same as defined in 15 U.S.C. 637; "Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities". "Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged."

## **ARTICLE 2 - PRELIMINARY MATTERS**

2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance

SC-2.01.A Amend the first sentence of Paragraph 2.01.A by striking out the following words:

“(if the Contract requires Contractor to furnish such bonds).”

2.02 *Copies of Documents*

SC-2.02.A Delete the word "four" and insert "five" in its place in Paragraph 2.02.A.

## **ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, REQUIREMENTS , REUSE**

### *3.01 Intent*

SC-3.01 Add the following new paragraphs immediately after Paragraph 3.01.G:

- H. The Contract Drawings may be supplemented from time to time with additional Drawings by the Engineer as may be required to illustrate the Work or, as the Work progresses, with additional Drawings, by the Contractor, subject to the approval of the Engineer. Supplementary Drawings, when issued by the Engineer or by the Contractor, after approval by the Engineer, shall be furnished in sufficient quantity to all those who, in the opinion of the Engineer, are affected by such Drawings.

## **ARTICLE 4 - COMMENCEMENT AND PROGRESS OF THE WORK**

### *4.01 Commencement of Contract Times; Notice to Proceed*

SC-4.01.A Delete Paragraph 4.01.A in its entirety and insert the following in its place:

The Contract Times will commence to run on the day indicated in the Notice to Proceed; but in no event will the Contract Time commence to run later than the thirtieth day after the effective date of the Agreement. By mutual consent of the parties to the Contract, these time limits may be changed.

### *4.05 Delays in Contractor's Progress*

SC-4.05.C Amend Paragraph 4.05.C by adding the following subparagraphs:

#### *5. Weather-Related Delays*

- a. If "abnormal weather conditions" as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions adversely affected an activity on the critical path to completion of the Work, as of the time of the weather condition.
- b. The existence of abnormal weather conditions will be determined on a month-by-month basis in accordance with the following.
  - 1) Bad Weather Day: a workday where weather conditions adversely affect the Work and the impacted Work is on the critical path.
    - a) Determination of actual Bad Weather Days during performance of the Work will be based on weather at the Site. When Site weather data is not available, use nearest USGS weather station data.

- b) A workday after a daily rainfall amount greater than 1 inch will be considered an additional Bad Weather Day, subject to having an adverse effect on the Work as scheduled.
- 2) Foreseeable Bad Weather Days: determination of Foreseeable Bad Weather Days during performance of the Work will be based on the weather records measured and recorded by the National Oceanic & Atmospheric Administration, National Centers for Environmental Information (NOAA-NCEI) at the nearest weather monitoring station. For example, one source of weather records is from the NOAA-NCEI website: <https://www.ncdc.noaa.gov/cdo-web/datatools/normals>. From the website, click on the "View Station Report" link to find the Summary of Monthly Totals report.
- a) Contractor shall anticipate and factor into its bid and construction schedule the number of Foreseeable Bad Weather Days per month.
- 3) Abnormal Weather Conditions: is defined as the total Bad Weather Days in each month minus the Foreseeable Bad Weather Days.
- a) The existence of Abnormal Weather Conditions will not relieve Contractor of the obligation to demonstrate and document that delays caused by Abnormal Weather Conditions are specific to the planned work activities or that such activities thus delayed were on Contractor's then-current Progress Schedule's critical path for the Project.

SC-4.05 Add the following new paragraph immediately after Paragraph 4.05.G:

- H. Claims for additional Contract Time for delays beyond the Contractor's control shall be submitted within 30 days following the event(s) that caused the delay.

## **ARTICLE 5 - SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS**

### **5.02 Use of Site and Other Areas**

SC-5.02.A Delete Paragraph 5.02.A.2 in its entirety and insert the following in its place:

- 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or its Derivative Parties (as defined in SC-7.18.E.3), Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise and (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction. In addition, the Contractor's indemnity, defense and hold harmless obligations to the Indemnified Parties (as defined in SC-7.18.A) under SC-7.18 shall apply as to any and all Losses (as defined in SC-7.18.E.2),

liabilities, damages, expenses and costs arising out of, resulting from, or in connection with any and all claims or actions brought by any such owner or occupant against one or more of the Indemnified Parties when the Fault of the Contractor or its Derivative Parties is a proximate cause of the Losses, liabilities, damages, expenses and costs so indemnified. Provided, however, nothing herein shall require the Contractor to indemnify the Indemnified Parties against any Losses, liabilities, damages, expenses and costs arising out of, resulting from, or in connection with any negligent acts of one or more of the Indemnified Parties.

5.03 *Subsurface and Physical Conditions*

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

- E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
None		

- F. The following table lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data in the drawings upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
None		

- G. Contractor may examine copies of reports and drawings identified in SC-5.03.E and SC-5.03.F that were not included with the Bidding Documents at **(N/A)** during regular business hours or may request copies from Engineer.

5.05 *Underground Facilities*

SC-5.05.A Add the following new subparagraphs immediately after Subparagraph 5.05.A.5:

6. following the North Carolina General Statutes, Chapter 87, Article 8 Underground Damage Prevention;
7. notifying owners of Underground Facilities prior to start of Work;
8. investigating ahead of the Work to verify the existence of Underground Facilities;

9. assuming risks and repairing damage caused by the Work to existing Underground Facilities whether indicated or not in the Contract Documents. Repairs to Underground Facilities shall be done to the satisfaction of the Underground Facility owner. Underground Facility owner reserves the right to repair damage by the Contractor to their Underground Facilities. If the owner exercises this right, the owner's cost of this Work shall be deducted from the money due the Contractor;
10. uncovering Underground Facilities, with that Owners approval, that are located within the Work as necessary for Engineer to determine the requirements for the change in the Work;
11. unforeseen Underground Facilities unless a design change is required; this includes Underground Facilities not shown on the Drawings/ Bidding Documents. The Engineer and the Owner assume no responsibility for the locations of Underground Facilities shown or not shown. There will be no compensation for "lost time" due to unforeseen utilities. If existing Underground Facilities require change(s) to the design, the Contractor shall provide a price to complete revised Work.

5.06 *Hazardous Environmental Conditions at Site*

SC-5.06.A Add the following new subparagraphs immediately after subparagraph 5.06.A.3:

4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) contained in such reports upon which Contractor may rely:

<b>Report Title</b>	<b>Date of Report</b>	<b>Technical Data</b>
None		

5. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely:

<b>Drawings Title</b>	<b>Date of Drawings</b>	<b>Technical Data</b>
None		

SC-5.06.B Delete Paragraph 5.06.B in its entirety and insert the following:

- B. Not used.

SC-5.06.I In the first line, insert "North Carolina" between "by" and "Laws".

SC-5.06.I Add the following language at the end of Paragraph 5.06.I:

The parties understand and acknowledge that no North Carolina case, statute, or Constitutional provision authorizes a local government to indemnify a Contractor and that this contract provision may be unenforceable.

SC-5.06.J Delete Paragraph 5.06.J in its entirety and insert the following in its place:

- J. Contractor's indemnity, defense and hold harmless obligations to the Indemnified Parties under SC-7.18 shall apply as to any and all Losses, liabilities, damages, expenses and costs caused by, arising out of, resulting from, or in connection with the Contractor's or its Derivative Parties' failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or its Derivative Parties, or to a Hazardous Environmental Condition created by Contractor or its Derivate Parties when the Fault of the Contractor or its Derivative Parties is a proximate cause of the Losses, liabilities, damages, expenses and costs so indemnified. Provided, however, nothing herein shall require the Contractor to indemnify the Indemnified Parties against any such Losses, liabilities, damages, expenses and costs arising out of, resulting from, or in connection with any negligent acts of one or more of the Indemnified Parties.

## **ARTICLE 6 - BONDS AND INSURANCE**

Article 6 Delete Article 6 in its entirety and insert the following in its place:

SC-6.01 *Performance and Payment Bonds*

- A. Concurrent with execution of the Contract and within fifteen (15) days of the Notice of Award, the successful Contractor shall procure, execute and deliver to the Owner and maintain, at Contractor's own cost and expense, the following bonds, in the forms included (Sections 00610 and 00615), of a surety company approved by the State of North Carolina as a Surety:
- B. Performance Bond - in an amount not less than 100% of the total amount payable to the Contractor by the terms of the Contract as security for the faithful performance of the Work. Bond must be valid until one year after the date of issuance of the certificate of Substantial Completion.
- C. Payment Bond - in an amount not less than 100% of the total amount payable to the Contractor by the terms of the Contract as security for the payment of all persons performing labor and furnishing material in connection with the Work. Bond must be valid until one (1) year after date of issuance of the certificate of Substantial Completion.
- D. All bonds signed by an agent must be accompanied by a certified copy of the authority to act.
- E. If the surety on any bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business in the State of North Carolina is revoked, the Contractor shall within five (5) days thereafter substitute another.

## SC-6.02 *Insurance Requirements*

- A. The Owner shall not be required under this Contract to procure or maintain any insurance for the Project or for the benefit of the Project participants.
- B. The Contractor shall ensure that it and all its Subcontractors shall procure and maintain insurance as required herein and as required by Laws and Regulations.
- C. All insurance required by the Contract to be purchased and maintained by Contractor shall be obtained from insurance companies that are duly licensed or authorized to do business in the state of North Carolina and to issue insurance policies for the required limits and coverages. Unless a different standard is authorized by the Owner in writing, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- D. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract.
- E. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.
- F. Owner, only if specified in this agreement, shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). None Required.
- G. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- H. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's sole option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

- I. Contractor shall require:
1. Subcontractors to purchase and maintain workers' compensation, commercial general liability and other insurance coverages required by Contractor where appropriate and applicable for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability, automobile liability, and excess or umbrella insurance policy. Owner, Engineer and other additional insureds shall be covered under Subcontractors' commercial general liability and any umbrella insurance with respect to liabilities arising out of both ongoing and completed operations of Subcontractor(s). Such additional insured coverage shall be subject to the terms of ISO additional insured endorsement forms CG 20 10 (ongoing operations) and CG 20 37 (products-completed operations), or substitute form(s) providing equivalent coverage and utilizing 10/01 as the edition date of the ISO endorsements; and
  2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project; and
  3. If the Scope of Work to be performed and/or the work site and surrounding area creates a special or high risk exposure to on-site individuals or the public, the Owner reserves the right to require the Contractor to ensure its Subcontractors, Suppliers, or categories of Subcontractor or Supplier, to provide specific insurance with policy limits as follows: **None**.
- J. If either party does not purchase or maintain the insurance required of such party by the Contract, 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.
- K. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, without at least 30 days prior written to Owner ( 10



days for cancellation due to non-payment of premium). Direct Notice of Cancellation endorsement is to be attached to corresponding certificates of insurance. In the event of any such cancellation, non-renewal or material limitation, the Contractor or subcontractor, as applicable, is obligated to replace such insurance within seven (7) days of any such cancellation, non-renewal or material limitation without a gap in coverage and file accordingly such notice with the Owner and other interested parties.

- O. The Work under this Contract shall not commence until the Contractor has verified to the Owner that all required insurance coverage as described herein, have been obtained and verifying Certificates of Insurance have been approved in writing by the Owner. The Owner's review and/or acceptance of certificates of insurance shall neither relieve Contractor of any requirement to provide the specific coverages set forth herein nor shall it constitute a waiver or acknowledgement of satisfaction of the specific insurance coverage requirements set forth in this Contract.
1. The Description of Operations/Locations/Vehicles section in the certificates of insurance should include the City of Raleigh Department/Division, Name of Project or Services, Project Dates of contract.

The Certificate holder address should read:

City of Raleigh  
Post Office Box 590  
Raleigh, NC 27602-0590

#### SC-6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, Automobile Liability, Excess/Umbrella insurance and any other insurance specified within these Supplementary Conditions. Any and all deductibles and Self-insured Retentions (SIRs) in the insurance policies shall be assumed by, and at the sole risk of the Contractor.
- B. *Supplemental Provisions:* The policies of insurance required by this SC-6.03 as supplemented must:
1. include at least the specific coverages required;
  2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
  3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
  4. apply with respect to the performance of the Work, whether such performance is 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;

5. be primary and noncontributory, evidenced by ISO form CG 20 01 04 13 (Primary and Non-Contributory – Other Insurance condition) endorsement or its equivalent, with respect to the Owner's insurance or self-insurance to the extent of the Contractor's liability hereunder. Any other insurance or self-insurance maintained by the Owner shall be excess of, and non-contributory with the coverage afforded by Contractor's commercial general liability insurance and commercial umbrella insurance, if any;
  6. provide for reinstatement of full coverage after payment of any claim;
  7. state insurers have no right of recovery or subrogation against the Owner, its agents and agencies and shall have no recourse against them for the payment of any premiums or assessments under any form of policy; and
  8. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must:
1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in this agreement;
  2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
  3. afford primary and noncontributory coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations); and
  4. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.
- D. *Other Additional Insureds*: If specified herein, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following: **None**.
- E. *Workers' Compensation and Employer's Liability*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
  2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
4. Foreign voluntary worker compensation (if applicable).

<b>Workers' Compensation and Related Policies</b>	<b>Policy limits of not less than:</b>
<b>Workers' Compensation</b>	
North Carolina - State	Statutory
<b>Employer's Liability</b>	
Each accident	\$1,000,000
Each employee	\$1,000,000
Policy limit	\$1,000,000

- F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:
1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
  2. damages insured by reasonably available personal injury and advertising liability coverage, and
  3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on an Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage.
    - a. Such insurance must be maintained for the period of the applicable statute of repose for any and all claims that may arise from operations of this Contract.
    - b. Contractor shall furnish Owner and each other additional insured (as identified in herein or elsewhere in the Contract) certificates of insurance evidencing continuation of such insurance at final payment and for the period of the applicable statute of limitations and repose.
  2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in this Contract in accordance with ISO policy form CG 00 01.
    - a. Premises/Operations liability
    - b. Underground fault, explosion, and collapse coverage

- c. Independent Contractor's and Independent Subcontractor's coverage
  - d. Broad form property damage
  - e. Personal injury and advertising coverage
  - f. Cross Liability/Severability of Interest clause
  - g. Employer's Stop Gap Liability endorsement, if applicable
  - i. Amendment of the Pollution Exclusion Endorsement to allow coverage for bodily injury or property damage caused by heat, smoke, or fumes from a hostile fire
  - j. Designated General Aggregate Limit Endorsement, if required in Contract
  - k. Products completed operations including construction defect and contractual liability
  - l. Insurance coverage limits to be on a "per project" basis
3. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
  4. For design professional additional insureds, ISO Endorsement CG 20 32 07 13 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- H. *Commercial General Liability—Excluded Content*: The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:
1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
  2. Any exclusion for water intrusion or water damage.
  3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
  4. Any exclusion of coverage relating to earth subsidence or movement.
  5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
  6. Any limitation or exclusion based on the nature of Contractor's Work.

7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

<b>Commercial General Liability</b>	<b>Policy limits of not less than:</b>
General Aggregate	\$5,000,000
Products—Completed Operations Aggregate	\$5,000,000
Bodily Injury and Property Damage—Each Occurrence	\$2,000,000
Personal and Advertising Injury	\$2,000,000

J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance 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 owned, hired or otherwise operated or used by or on behalf of the Contractor or any of its Derivative Parties and as used in the execution of the Work. The automobile liability policy must be written on an occurrence basis.

<b>Automobile Liability</b>	<b>Policy limits of not less than:</b>
<b>Combined Single Limit</b>	
Combined Single Limit (Bodily Injury and Property Damage) (Any/Owned, Hired, and Leased)	\$1,000,000

K. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies using a follows form coverage for all layers and coverage shall remain continuously in effect and without interruption from the date of commencement of construction until the end of the applicable statute of limitations and repose.

<b>Excess or Umbrella Liability</b>	<b>Policy limits of not less than:</b>
Each Occurrence	\$2,000,000
General Aggregate	\$2,000,000

L. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* Contractor may meet the policy limits specified for employer’s liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy’s policy limits and limits of an umbrella or excess liability policy.

M. *Contractor’s Pollution Liability Insurance:* Contractor shall purchase and maintain a policy that must include Asbestos Legal Liability and Errors and Omissions due to potential environmental hazards.

1. Coverage shall apply to the scope of work described in this Contract including transportation and shall include coverage for bodily injury, property damage, including loss of use of damaged property, clean-up costs, mold, defense and investigative costs. Contractor shall maintain Completed Operations coverage for three (3) years following final acceptance of the project or termination of the Contract.
2. If the insurance policy is written on a claims-made basis, Contractor warrants that continuous coverage will be maintained or an extended discovery period will be exercised for a period of three (3) following final acceptance of the Work under the Contract is completed or termination of the Contract.
3. If coverage is canceled or non-renewed, and not replaced with another claims made policy form with a retroactive date prior to the Contract effective date or start of work date the Contractor must purchase an extended period coverage for a minimum of five (5) years following final acceptance of the Work or termination of the Contract. A copy of the claims reporting requirements must be submitted to Owner for review. Pollution Liability shall not contain lead-based paint or asbestos exclusions.

This insurance must be maintained for no less than three years after final completion.

<b>Contractor's Pollution Liability</b>	<b>Policy limits of not less than:</b>
Each Occurrence/Claim	\$3,000,000
General Aggregate	\$3,000,000

N. *Contractor's Professional Liability Insurance:* If Contractor will provide or furnish professional services under this *Contract*, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance to protect Owner from liability arising out of or resulting from the performance of professional services by Contractor or its Derivative Parties.

1. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable and shall contain full prior acts coverage.
2. Coverage shall not include any exclusions or limitations related to a) Scope of professional services; b) Delays in project completion or cost overruns; c) Who is authorized to notify the carrier of a claim or a potential claim; and d) Mold, fungus, asbestos, pollutants or hazardous substances.
3. The insurance must be maintained continuously throughout the duration of the Contract and through the applicable statute of limitations and repose.
4. Claims made coverage is permitted providing the retroactive date on the policy pre-dates the commencement of furnishing services on the Project.

<b>Contractor's Professional Liability</b>	<b>Policy limits of not less than:</b>
Each Claim	\$1,000,000
Annual Aggregate	\$3,000,000

- O. *Railroad Protective Liability Insurance:* Prior to commencing any Work within 50 feet of railroad-owned and controlled property, Contractor shall (1) endorse its commercial general liability policy with ISO CG 24 17, removing the contractual liability exclusion for work within 50 feet of a railroad, (2) purchase and maintain railroad protective liability insurance from an insurer or directly from the subject railroad(s) meeting their specific requirements, (3) furnish a copy of the endorsement to Owner, and (4) submit a copy of the railroad protective policy and other railroad-required documentation to the railroad, and notify Owner of such submittal.

<b>Railroad Protective Liability Insurance</b>	<b>Policy limits of not less than:</b>
Each Claim	\$6,000,000
Aggregate	\$6,000,000

- P. *Unmanned Aerial Vehicle Liability Insurance:* If Contractor or its Subcontractors uses unmanned aerial vehicles (UAV—commonly *referred* to as drones) at the Site or in support of any aspect of the Work, Contractor shall obtain UAV liability insurance in the amounts stated; name Owner, Engineer, and all individuals and entities identified herein as additional insureds; and provide a certificate to Owner confirming Contractor's compliance with this requirement.

1. Such insurance will provide coverage for property damage, bodily injury or death, and invasion of privacy. The operator of the aircraft and their insurer(s) must hold the Owner and all additional insureds harmless and waive subrogation with respect to damage to the aircraft. If the aircraft is to be used to perform lifts at the Site, a "slung cargo" endorsement must be included to cover the full replacement value of any equipment being lifted.

<b>Unmanned Aerial Vehicle Liability Insurance</b>	<b>Policy limits of not less than:</b>
Each Claim	\$1,000,000
General Aggregate	\$1,000,000

- Q. *Other Required Insurance:* **None.**

#### SC-6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk:* If applicable, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in this Section or required by Laws and Regulations) and name the Owner a Loss Payee on the insurance coverage(s).
- B. *Property Insurance for Facilities of Owner Where Work Will Occur:* Owner is responsible for obtaining and maintaining property insurance covering each Owner owned structure, building, or facility in which any part of the Work will occur, or to

which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

- C. *Property Insurance for Substantially Complete Facilities:* Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this SC-6.04, it may do so at Contractor's sole expense.
- F. *Builder's Risk Requirements:* The builder's risk insurance must:
  - 1. be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks:

Blasting and explosion, fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse of or structural injury to any structure due to the Contractor's operations; damage to underground structures, pipes or conduits; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).

    - a. The builder's all-risk coverage shall not contain an exclusion for resulting damage caused by faulty workmanship, design or materials.
    - b. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake, volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk



policies, by endorsement or otherwise, such insurance will be provided through other insurance policies acceptable to Owner and Contractor.

2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of Contractors, Engineers, and Architects).
4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
5. extend to cover damage or loss to insured property while in transit.
6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.
7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.
8. include performance/hot testing and start-up, if applicable.
9. be maintained in effect until the Work is complete, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.
10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), all lenders with security interests in the Site or the Project, and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of SC-6.04, SC-6.05, and SC-6.06 of this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds." In addition to Owner, Contractor, and Subcontractors of every tier, include as insureds the following:
  - a. **None.**
11. if applicable, include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties:
  - a. **None.**

G. *Installation Floater*

**Not Required.**

1. Contractor shall provide and maintain installation floater insurance on a broad form or "all risk" policy providing coverage for materials, supplies, machinery, fixtures, and equipment that will be incorporated into the Work ("Covered Property"). Coverage under the Contractor's installation floater will include loss from covered "all risk" causes (perils) to Covered Property:
    - a. of the Contractor, and Covered Property of others that is in Contractor's care, custody, and control;
    - b. while in transit to the Site, including while at temporary storage sites;
    - c. while at the Site awaiting and during installation, erection, and testing;
    - d. continuing at least until the installation or erection of the Covered Property is completed, and the Work into which it is incorporated is accepted by Owner.
  2. The installation floater coverage cannot be contingent on an external cause or risk, or limited to property for which the Contractor is legally liable.
  3. The installation floater coverage will be in an amount sufficient to protect Contractor's interest in the Covered Property. The Contractor will be solely responsible for any deductible carried under this coverage.
  4. This policy will include a waiver of subrogation applicable to Owner, Contractor, Engineer, all Subcontractors, and the officers, directors, partners, employees, agents and other consultants and Subcontractors of any of them.
- H. *Builder's Risk and Other Property Insurance Deductibles:* The purchaser of any required builder's risk, installation floater, or other property insurance will be responsible for costs not covered because of the application of a policy deductible.
1. The builder's risk policy (or if applicable the installation floater) will be subject to a deductible amount of no more than **\$10,000** for direct physical loss in any one occurrence.

SC-6.05 *Property Losses; Subrogation/Waiver of Rights*

- A. The builder's risk insurance policy purchased and maintained in accordance with SC-6.04 (or an installation floater policy if new construction is limited and authorized by the Owner), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.
  1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, 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, risks, 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 Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03 as modified by these Supplemental Conditions, or after final payment pursuant to Paragraph 15.06 as modified by these Supplemental Conditions, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, 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 fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this SC-6.05 include the waiver of rights 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 insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, 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 fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

#### *SC-6.06 Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by SC-6.04 will be adjusted and settled with the named insured that

purchased the policy. Such named insured shall act as fiduciary for the other insureds and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after receipt of notice of such claim.

- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by SC-6.04 shall maintain such proceeds in a segregated account and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

## **ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES**

### *7.02 Supervision and Superintendence*

SC-7.02 Add the following new paragraph immediately after Paragraph 7.02.B:

C. Contractor's On-Site Supervision: For pipeline Contractors who have more than two construction crews performing work under one contract, a general superintendent shall be assigned to the Project Site to supervise all construction crews on site. The general superintendent shall be responsible for addressing any construction related issues from the Owner, the Engineer, and/or the Department of Transportation having jurisdiction.

### *7.03 Labor; Working Hours*

SC-7.03 Add the following new paragraphs immediately after Paragraph 7.03.C:

- D. Regular Working Hours: 8:00 am to 5:00 pm, Eastern Standard Time.
- E. Overtime Work: If Contractor's Work requires inspection, as determined by the Owner, more than 10 hours in a work day or 40 hours in a work week, Monday through Friday excluding holidays, or on the weekends, Contractor shall submit a written request to the Owner five (5) working days prior to the scheduled Work. Contractor shall pay for the Resident Project Representative's time beyond the above hours at the rate of \$(To be Determined) / hour.
- F. Paragraph 7.03.C will not prevent the Contractor from working outside the regular working hours provided the work will not require the inspector to be present. Such work may include start up, clean up, seeding, painting (after the base surface has been approved by the inspector), and similar items. Contractor shall submit a written request to the Owner one (1) working day prior to the scheduled Work.

- G. Contractor shall not be charged for RPR's time for Work specifically identified by the Contract Documents to be performed outside the above Work time or on weekends.

7.05 *"Or Equals"*

SC-7.05 Add the following new paragraph immediately after Paragraph 7.05.E:

- F. Requirements for "or equals" shall be submitted prior to bidding. Reference Section 00100 (Advertisement for Bids) and Section 00200, Article 11 (Instructions to Bidders) for submission deadlines of requirements for "or equals".

7.07 *Concerning Subcontractors and Suppliers*

SC-7.07.C Add the following sentences to the end of Paragraph 7.07.C:

1. Bidder shall indicate subcontractors as required on the Bid Form.
2. Bidder shall indicate Minority Business Participation on the attachment to the Bid Forms. Low Bidder shall be required to submit the followings Affidavits as included in the City of Raleigh Business Assistance Program Guidelines:
  - a. Affidavit C, Portion of the Work to be Performed by Minority Firms.
  - b. Affidavit D, Good Faith Efforts
3. Contractor whose Bid is accepted shall not substitute any person as Subcontractor in the place of the Subcontractor listed in the Bid, except:
  - a. If the listed Subcontractor's bid is later determined by the Contractor to be non-responsible or non-responsive, or the listed Subcontractor refuses to enter into a contract for the complete performance of the bid work;
  - b. or with the approval of the City for good cause shown by the Contractor.

SC-7.07.K Delete Paragraph 7.07.K in its entirety and insert the following in its place:

- K. All work performed for Contractor by a Subcontractor shall be pursuant to an appropriate agreement between the Contractor and Subcontractor. The Subcontractor shall not commence work until the Contractor has obtained all insurance as required by Paragraphs 6.02 through 6.03 inclusive as amended by these Supplementary Conditions.

SC-7.07.N Add the following new paragraph immediately after Paragraph 7.07.M:

- N. Contractor shall not award work valued at more than fifty (50%) percent of the Contract Price to Subcontractor(s). Contractor shall perform at least fifty (50%) percent of the labor with own forces, unless prior written approval is provided by the Owner.

7.08 *Patent Fees and Royalties*

SC-7.08.B In the first line, insert "North Carolina" between "by" and "Laws".

SC-7.08.B Add the following language at the end of Paragraph 7.08.B:

The parties understand and acknowledge that no North Carolina case, statute, or Constitutional provision authorizes a local government to indemnify a Contractor and that this contract provision may be unenforceable.

SC-7.08.C Delete Paragraph 7.08.C in its entirety and insert the following in its place:

- C. Contractor's indemnity, defense and hold harmless obligations to the Indemnified Parties under SC-7.18 shall apply as to any and all Losses, liabilities, damages, expenses and costs caused by, arising out of, resulting from, or in connection with 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 when the Fault of the Contractor or its Derivative Parties is a proximate cause of the Losses, liabilities, damages, expenses and costs so indemnified. Provided, however, nothing herein shall require the Contractor to indemnify the Indemnified Parties against any such Losses, liabilities, damages, expenses and costs arising out of, resulting from, or in connection with any negligent acts of one or more of the Indemnified Parties.

#### 7.09 *Permits*

SC-7.09.A Amend the last sentence of Paragraph 7.09.A to read as follows:

Contractor shall pay all charges of utility owners for connections for providing permanent service to the Work.

SC-7.09.B Add the following new paragraphs after Paragraph 7.09.A:

- B. Owner obtained encroachment agreements and permits are included as part of the Contract Documents. The encroachment agreements and permits are attached as an appendix to the specifications or project manual. This Paragraph does not relieve Contractor of responsibility to comply with applicable Laws and Regulations as stated in Paragraph 7.11.
- C. Contractor shall be responsible for compliance with the terms of the encroachment agreements and permits issued by Federal/State/Local regulatory agencies. Compliance with the terms listed in the encroachment agreements and permits shall be at no additional cost to the Owner. This shall include generating and submitting any reports that may be required as a condition of the encroachment agreements and permits. All costs shall be included in the bid prices of applicable items.

#### 7.10 *Taxes*

SC-7.10 Add the following new paragraphs after Paragraph 7.10.A:

- B. Procedures for reporting sales tax are included in Section 00805.

## 7.11 *Laws and Regulations*

SC-7.11.B Delete Paragraph 7.11.B in its entirety and insert the following in its place:

- B. If Contractor observes that the Specifications or Drawings are at variance with any Laws or Regulations, Contractor shall give Engineer prompt written notice thereof. If Contractor performs any Work knowing it to be contrary to such Laws or Regulations, and without such notice to Engineer, Contractor shall bear all costs arising therefrom. Contractor shall, at all times, observe and comply with and shall cause its Derivative Parties to observe and comply with all such existing Laws or Regulations. Further, Contractor's indemnity, defense and hold harmless obligations to the Indemnified Parties under SC-7.18 shall apply as to any and all Losses, liabilities, damages, expenses and costs caused by, arising out of, resulting from, or in connection with any claim, civil penalty, fine or liability arising from or based on the violation of any such Law or Regulations by the Contractor or its Derivative Parties.

SC-7.11 Add the following new paragraphs after Paragraph 7.11.C:

- D. Contractor shall be responsible for conforming to the requirements of the approved sedimentation control plan, the rules and regulations of the Erosion Control Laws of the State of North Carolina, specifically the Sedimentation Pollution Control Act of 1973 (G.S. 113A) as amended, and the local jurisdiction where the Project is located as it relates to land disturbing activities undertaken by Contractor. Contractor shall be responsible to Owner for any fines imposed on Owner as a result of Contractor's failure to comply with the above as it is further described in the Erosion Control Section of the Specifications.
- E. Contractor shall be responsible for conforming to the requirements of the NC Department of Transportation Encroachment Agreement, if attached to the Contract Documents.
- F. Should the Contractor cause the Owner to receive a Notice of Violation from a governmental agency, Contractor shall pay costs associated with Notice of Violation within ten (10) days of receipt of written notification. Costs shall include, but not be limited to:
  - 1. Fines imposed on the Owner by the agency.
  - 2. Required legal newspaper publications concerning violation.
  - 3. Required mailings to customers concerning notification of violation.
  - 4. Administrative and engineering costs associated with resolving the Notice of Violation.
- G. Notice of Violation may include, but not be limited to, the following problems:
  - 1. Sewage spill.
  - 2. Inadequate erosion control measures.

- 3 Equipment failure during the warranty period.
- H. In the event of a sewage spill during construction, Contractor shall take the following steps as a minimum:
1. Take immediate action to contain the spill.
  2. Notify the Owner and Engineer within 30 minutes of realizing a spill has occurred.
  3. Clean up the spill as directed by the Owner. Contractor shall bear all costs associated with the cleanup.

7.12 *Record Documents*

SC-7.12 Add the following new paragraph after Paragraph 7.12.A:

- B. Record Documents shall be updated daily. Should the Owner or Engineer determine that the Record Documents are not being properly maintained, approval of future payment requests shall be withheld.

7.13 *Safety and Protection*

SC-7.13.A Add the following new subparagraph after Paragraph 7.13.A:

1. When tasks (operating valves, lock out – tag out, etc.) must be accomplished by City staff to allow Contractor to perform or continue its Work, Contractor shall independently verify and confirm the performance of the tasks prior to performing the impacted Work.

SC-7.13.D Delete Paragraph 7.13.D its entirety and insert the following in its place:

- D. Contractor shall be responsible for remedying damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 as follows:
1. To the fullest extent allowed by Laws and Regulations, Contractor shall remedy at its own expense any and all damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 arising out of, or resulting from the sole negligence of the Contractor, the Contractor's agents, the Contractor's employees, 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.
  2. In matters other than those covered by subsection SC-7.18.A, and to the fullest extent allowed by Laws and Regulations, Contractor shall remedy at its own expense any and all damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 arising out of, resulting from, or in connection with the execution of the Work provided for in this Contract when the Fault of the Contractor or its Derivative Parties is a proximate cause of such damage, injury, or loss. For the purposes of this section, the terms "Fault" and



“Derivative Parties” shall have the same meaning as that set forth in SC-7.18.E.

7.16 *Submittals*

SC-7.16D.2 In the first sentence, replace “two” with “three”.

SC-7.16 Add the following new paragraph immediately after Paragraph 7.16.F:

- G. All materials or equipment delivered to the Site shall be accompanied by certificates, signed by an authorized officer of the supplier, and notarized guaranteeing that the materials or equipment conform to specification requirements. Such certificates shall be immediately turned over to the Engineer. Materials or equipment delivered to the Site without such certificates will be subject to rejection.

7.18 *Indemnification*

SC-7.18 Delete Paragraphs 7.18.A and 7.18.B in their entirety and insert the following in their place:

- A. To the fullest extent allowed by Laws and Regulations, Contractor shall indemnify, defend, and hold harmless the Owner, its officers, officials, employees, agents, or indemnities (collectively called “Indemnified Parties”) from and against those Losses, liabilities, damages, and costs proximately caused by, arising out of, or resulting from the sole negligence of the Contractor, the Contractor’s agents, or the Contractor’s employees.
- B. In matters other than those covered by subsection 7.18A, above, and to the fullest extent allowed by Laws and Regulations, Contractor shall indemnify, defend, and hold harmless the Indemnified Parties from and against those Losses, liabilities, damages, and costs caused by, arising out of, resulting from, or in connection with the execution of the Work provided for in this Contract when the Fault of the Contractor or its Derivative Parties is a proximate cause of the Loss, liability, damage, or expense indemnified.
- C. Costs and expenses shall include attorneys’ fees, litigation or arbitration expenses, or court costs actually incurred by the Indemnified Parties to defend against third-party claims alleged in any court, tribunal, or alternative dispute resolution procedure required of any of the Indemnified Parties by Laws and Regulations or by contract, only if the Fault of the Contractor or its Derivative Parties is a proximate cause of the attorney’s fees, litigation or arbitration expenses, or court costs to be indemnified.
- D. The Contractor’s duty to indemnify, defend, and hold harmless described hereinabove shall survive the termination or expiration of this Contract.
- E. Definitions:
  - 1. For the purposes of SC-7.18, the term “Fault” shall mean any breach of contract; negligent, reckless, or intentional act or omission constituting a tort

under applicable statutes or common law; or violation of applicable statutes or regulations.

2. For the purposes of SC-7.18, the term "Loss" or "Losses" shall include, but not be limited to, fines, penalties, and/or judgments issued or levied by any local, state, or federal governmental entity.
3. For the purposes of SC-7.18, the term "Derivative Parties" shall mean any of the Contractor's Subcontractors, agents, employees, or other persons or entities for which the Contractor may be liable or responsible as a result of any statutory, tort, or contractual duty.

## ARTICLE 8 - OTHER WORK AT THE SITE

### 8.01 *Other Work*

SC-8.01.E Amend the first sentence of Paragraph 8.01.E to read as follows:

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and within seven days 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.

SC-8.01 Add the following new paragraphs immediately after Paragraph 8.01.F.

- G. Prime contracts will be let in connection with the Project as outlined in Specification Section - Summary of Work.
- H. The Owner, Engineer, and Engineer's consultants shall not be liable to Contractor for any claims, costs, losses or damages incurred or sustained by Contractor on or in connection with any other project or anticipated project.

### 8.02 *Coordination*

SC-8.02 Add the following new Paragraph 8.02.C immediately after Paragraph 8.02.B:

- C. If Owner intends to contract with others for the performance of other work at or adjacent to the Site:
  1. **(Not Required)** shall have authority and responsibility for coordination of the various contractors and work forces at the Site;
  2. The following specific matters are to be covered by such authority and responsibility: **None**;
  3. The extent of such authority and responsibilities is: **None**.

8.03 *Legal Relationships*

SC-8.03 Delete Paragraph 8.03.C in its entirety and insert the following in its place:

- C. If Contractor or its Derivative Parties damage(s), delay(s), disrupt(s), or interfere(s) with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's or its Derivative Parties' failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's or its Derivative Parties' action(s), inaction(s), or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor or Owner, then Contractor shall promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction. In addition, the Contractor's indemnity, defense and hold harmless obligations to the Indemnified Parties under SC-7.18 shall apply as to any and all Losses, liabilities, damages, expenses and costs arising out of, resulting from, or in connection with any and all claims brought by any such other contractor or utility owner against one or more of the Indemnified Parties that arise out of or relate to any such damage, delay, disruption or interference when the Fault of the Contractor or its Derivative Parties is a proximate cause of the Losses, liabilities, damages, expenses and costs so indemnified. Provided, however, nothing herein shall require the Contractor to indemnify the Indemnified Parties against any such claims arising out of, resulting from, or in connection with any negligent acts of one or more of the Indemnified Parties.

**ARTICLE 9 - OWNER'S RESPONSIBILITIES**

9.11 *Evidence of Financial Arrangements*

SC-9.11 Add the following new paragraph immediately after Paragraph 9.11.A:

- B. On request of Contractor, prior to the execution of any Change Order involving a significant increase in the Contract Price, Owner shall furnish to Contractor reasonable evidence that adequate financial arrangements have been made by Owner to enable Owner to fulfill the increased financial obligations to be undertaken by Owner as a result of such Change Order.

**ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION**

10.01 *Owner's Representative*

SC-10.01.A Delete Paragraph 10.01.A in its entirety and replace with the following:

- A. Engineer will be Owner's representative during the construction period and Engineer's instructions shall be followed promptly and efficiently.

10.03 *Resident Project Representative*

SC-10.03.A Add the following new subparagraphs immediately following Paragraph 10.03.A:

1. The Resident Project Representative (RPR) will serve as the **Owner's** liaison with the Contractor, working principally through the Contractor's superintendent to assist the Contractor in understanding the intent of the Contract Documents.
2. The RPR shall conduct on-site observations of the Work in progress to confirm that the Work is proceeding in accordance with the Contract Documents. They will verify that tests, equipment and systems start-ups and operating and maintenance instructions are conducted as required by the Contract Documents. They will have the authority to disapprove or reject defective Work in accordance with Article 14.
3. The RPR will be **Owner's** representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with **Owner** and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:
  - a. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
  - b. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.
  - c. *Liaison*
    - i) Serve as **Owner's** liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
    - ii) Assist in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
    - iii) Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
  - d. *Review of Work; Defective Work*
    - i) Conduct on-Site observations of the Work to assist **Owner** in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
    - ii) Observe whether any Work in place appears to be defective.

- iii) Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.
  - e. *Inspections and Tests*
    - i) Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.
    - ii) Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.
  - f. *Payment Requests: Review Applications for Payment with Contractor.*
  - g. *Completion*
    - i) Participate in **Owner's** visits regarding Substantial Completion.
    - ii) Assist in the preparation of a punch list of items to be completed or corrected.
    - iii) Participate in **Owner's** visits to the Site in the company of Owner and Contractor regarding completion of the Work and assist in preparation of a final punch list of items to be completed or corrected by Contractor.
    - iv) Observe whether items on the final punch list have been completed or corrected.
- 4. Except upon written instructions of the **Owner**, the RPR or Owner's field staff shall not have authority to:
  - a. Authorize any deviation from the Contract Documents or approve any substitute materials or equipment (including "or-equal" items).
  - b. Exceed limitations of **RPR's** authority as set forth in the Contract Documents.
  - c. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
  - d. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.
  - e. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
  - f. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by **Owner**.

- g. Authorize Owner to occupy the Project in whole or in part.
  - h. 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.
  - i. Be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
  - j. 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.
5. Any decision made by RPR or Owner's field staff 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 RPR or Owner's field staff, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by RPR or Owner's field staff to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
  6. RPR's or Owner's field staff'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 Contractor under Paragraph 15.06.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.

SC-10.03.B Add the following new subparagraph immediately following Paragraph 10.03.B:

1. When the Owner assigns City field staff to monitor the project, such staff's limitations shall be as described in SC-10.03.A.4, SC-10.03.A.5 and SC-10.03.A.6.

## **ARTICLE 11 - CHANGES TO THE CONTRACT**

11.07 *Change of Contract Price*

SC-11.07.B.2 Delete this subparagraph in its entirety and replace with the following:

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (with allowances for overhead and profit in accordance with Paragraph 11.07.C.2); or"

11.08 *Change of Contract Times*

SC-11.08 Add the following paragraph after Paragraph 11.08.B:

- C. Time Extension: Contract time extensions for weather delays do not entitle Contractor to "extended overhead" recovery.

## **ARTICLE 12 - CLAIMS**

No Supplementary Conditions in this Article.

## **ARTICLE 13 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

13.01 *Cost of the Work*

SC-13.01.B.1 Delete Paragraph 13.01.B.1 in its entirety and replace with the following:

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 on the Work. 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. Labor will be based on direct labor cost, Contractor to provide certified payroll upon request. No claims for extra cost shall be considered based on an escalation of labor costs throughout the period of the Contract.

SC-13.01.B.2 Add the following language at the end of the Paragraph:

No claims for extra cost shall be considered based on an escalation of material costs throughout the period of the Contract.

SC-13.01.B.3 Delete the second sentence "If required...be acceptable."

SC-13.01.B.4 Delete in its entirety.

SC-13.01.B.5.a Delete Paragraph in its entirety.

SC-13.01.B.5.c Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:

c. Construction Equipment and Machinery:

1. Rentals of all construction equipment and machinery, and the parts thereof 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. The rental of any such equipment,

machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

2. Full rental cost for rented, leased, and/or owned equipment shall not exceed rates listed in the current version of Rental Rate Blue Book for Construction Equipment (Blue Book). If rental rates for the equipment being used for the Work are not listed in the Blue Book, the Contractor will receive the prevailing rental rates being paid for such equipment in the area where the Project is located. Computed durations will be based upon the Work completed. Computed rates will include all operating costs; costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than \$1,000 will be considered small tools. The Engineer/Owner reserves the right to request four rental quotes as backup.
3. The hours of operation shall be based upon actual equipment usage to the nearest full hour, as recorded by the Engineer.

<u>Usage</u>	<u>Blue Book Payment Category</u>
Less than 8 hours	Hourly Rate
8 or more hours but less than 4 days	Daily Rate
4 or more days but less than 16 days	Weekly Rate
16 or more days	Monthly Rate

SC-13.01.B.5.d Add the following language at the end of the Paragraph:

However, reimbursable sales and use taxes paid to the State of North Carolina or to local governments in North Carolina shall be included or excluded from the Cost of the Work as described in Section 00805.

SC-13.01.B.5.f Delete Paragraph in its entirety.

SC-13.01.B.5.g Delete Paragraph in its entirety.

SC-13.01.B.5.h Delete Paragraph in its entirety.

SC-13.01.C.1 Add the following language at the end of the Paragraph.

Project Management will not be included in the Cost of the Work.

13.03 *Unit Price Work*



SC-13.03.E.1.a Delete Paragraph 13.03.E.1.a in its entirety and insert the following in its place:

- a. The extended Bid price of a particular item of Unit Price Work (excluding rock excavation and undercut) amounts to five (5) percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than twenty-five (25) percent from the estimated quantity of such item indicated in the Agreement at the time of Contract formation; and

**ARTICLE 14 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK**

14.02 *Tests, Inspections, and Approvals*

SC-14.02.B Delete Paragraph 14.02.B in its entirety and insert the following in its place:

- B. Owner shall employ and pay for inspections and testing services specifically noted as such in the Contract. All others required shall be the responsibility of the Contractor.

SC-14.02.C Delete Paragraph 14.02.C in its entirety and insert the following in its place:

- C. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to be specifically inspected, tested, or approved by some public body, Contractor shall assume full responsibility therefore, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection, testing or approval.

SC-14.02.G Add the following paragraph(s) immediately following Paragraph 14.02.F:

- G. Owner reserves the right to independently perform at its own expense, laboratory tests on random samples of material or performance tests on equipment delivered to the Site. These tests if made will be conducted in accordance with the appropriate referenced standards or Specification requirements. The entire shipment represented by a given sample, samples or piece of equipment may be rejected on the basis of the failure of samples or pieces of equipment to meet specified test requirements. All rejected materials or equipment shall be removed from the Site, whether stored or installed in the Work, and the required replacement shall be made, all at no additional cost to the Owner.

14.03 *Defective Work*

SC-14.03.G Add a new paragraph after Paragraph 14.03.F:

- G. At any time during the progress of the Work and up to the date of final acceptance, the Engineer shall have the right to reject any Work which does not conform to the requirements of the Contract Documents, even though such Work has been previously inspected and paid for. Any omissions or failure on the part of the Engineer to disapprove or reject any Work or materials at the time of

inspection shall not be construed as an acceptance of any defective Work or materials.

14.06 *Owner May Stop the Work*

SC-14.06.A Add the following language to the first sentence of Paragraph 14.06.A after:

".....will conform to the Contract Documents," add "or if the Work interferes with the operation of the existing facility", and then continue "then Owner may order..."

## **ARTICLE 15 - PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD**

15.01 *Progress Payments*

SC-15.01.A Add the following paragraph immediately following Paragraph 15.01.A:

1. The Contractor shall submit for the Engineer's approval, a complete breakdown of all Lump Sum Items in the Bid. This breakdown, modified as directed by the Engineer, will be used as a basis for preparing estimates and establishing progress payments.

SC-15.01.B.4 Delete Subparagraph 15.01.B.4 in its entirety and replace with the following:

4. Progress payment request 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.

SC-15.01.B. Add the following new subparagraphs after Subparagraph 15.01.B.4:

5. Forms shall be prepared by the Contractor and submitted to the Engineer for approval. Forms to be used are included in Section 00620 and will be supplied by the Engineer.
6. At the option of the Owner, partial payment up to the estimated value, less retainage, may be allowed for any materials and equipment not incorporated in the Work, pursuant to the following conditions:
  - a. Major equipment items stored off site shall be stored in a bonded warehouse and properly maintained during storage.
  - b. Equipment or materials stored on the Site shall be properly stored, protected and maintained.
  - c. For any partial payment the Contractor shall submit, with the monthly progress payment from each material or equipment manufacturer, bills or invoices indicating actual material cost.
  - d. Contractor shall submit evidence that payment has been made for materials or equipment stored and for which the Engineer has authorized

partial payment and previous progress payments, prior to submission of the next monthly payment request.

7. The Owner will retain five percent (5%) of the amount of each such estimate until Work covered by the Contract is 50% complete. When 50% of the Work of the original Contract has been completed and in the opinion of the Owner the Contractor continues to perform satisfactorily and nonconforming Work identified in writing prior to that time by the Engineer or Owner has been corrected by the Contractor and accepted by the Owner, the Owner with written consent of surety will adjust future partial payments so that two and one-half percent (2-1/2%) of the original Contract Price is retained.
8. The Project shall be deemed 50% complete when the Contractor's gross project invoices, excluding the value of materials stored off-site, equals or exceeds 50% of the original value of the Contract, except the value of materials stored on-site shall not exceed 20% of the Contractor's gross invoices for the purpose of determining whether the project is 50% complete.
9. If the Owner determines it is appropriate to reduce retainage, the method used for such adjustment shall be to fix retainage at two and one-half percent (2-1/2%) of the original Contract amount (when the Work is 50% complete) and to pay all subsequent Partial Payment Requests to the full approved amount. The intent of such an adjustment is to gradually reduce retainage to two and one-half percent (2-1/2%) of the original Contract amount when the Work is 100% complete. Following 50% completion of the Project, the Owner may also withhold additional retainage from any subsequent periodic payment, not to exceed five percent (5%), in order to allow the Owner to retain two and one-half percent (2-1/2%) total retainage through the completion of the Project.
10. If the Owner determines the Contractor's performance is unsatisfactory, the Owner may reinstate retainage for each subsequent periodic payment application up to a maximum amount of five (5) percent of the original Contract amount.
11. Within 60 days after the submission of a final pay application, the Owner with written consent of the surety shall release to the Contractor all retainage on payments held by the Owner if (1) the Owner receives a certificate of substantial completion from the Engineer, or (2) the Owner receives beneficial occupancy or use of the Project. However, the Owner may retain sufficient funds to secure completion of the Project or corrections on any Work. If the Owner retains funds, the amount retained shall not be more than 2.5 times the Engineer's estimated value of the Work to be completed or corrected. Any reduction in the amount of the retainage on payments shall be with the written consent of the Contractor's surety.
12. Retainer provisions contained in Contractor's subcontracts may not exceed the terms and conditions for retainage provided herein. Contractor is further required to satisfy the retainage provisions of N.C.G.S. 143-134.1(b2) with regard to subcontracts for early finishing trades (structural steel, piling, caisson, and demolition) and to coordinate the release of retainage for such

trades from the retainage held by the Owner from the Contractor pursuant to statute.

13. Nothing shall prevent the Owner from withholding payment to the Contractor in addition to the amounts identified herein for unsatisfactory job progress, defective construction not remedied, disputed work, or third-party claims filed against the Owner or reasonable evidence that a third-party claim will be filed.

SC-15.01.C.6 Add the following new subparagraphs after Subparagraph 15.01.C.6.e:

- f. Sedimentation and erosion control are determined to be unsatisfactory or unacceptable. A deduction of up to 10% of the payment amount for bid items that include sedimentation and erosion control installed during the payment period may be withheld in order to ensure remediation of the unsatisfactory or unacceptable work. Upon remediation, Contractor may receive payment for the deduction in subsequent Application for Payment.
- g. Seeding and mulching are determined to be unsatisfactory or unacceptable. A deduction of up to 20% of the payment amount for bid items that include seeding and mulching installed during the payment period may be withheld in order to ensure remediation of the unsatisfactory or unacceptable work. Upon remediation, Contractor may receive payment for the deduction in subsequent Application for Payment.
- h. Record Documents are not maintained satisfactorily and in accordance with the Contract Documents. Payment requests shall not be approved until the deficiencies are satisfactorily corrected.

SC-15.01.D.1 Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

1. Upon receipt from Engineer of an Application for Payment bearing Engineer's recommendation of payment, Owner shall set off against the amount recommended by Engineer any sums to which Owner is entitled pursuant to Sec. 15.01.E of the General Conditions and shall then approve the Application for Payment. Owner shall tender the resulting balance due to Contractor within thirty (30) days of Owner's approval of the Application for Payment

15.03 *Substantial Completion*

SC-15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

15.06 *Final Payment*

SC-15.06.E Delete Paragraph 15.06.E in its entirety and insert the following in its place:

*Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment bearing Engineer's recommendation of payment, Engineer's notice of acceptability, and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled pursuant to Sec. 15.01.E of the General Conditions, and shall then approve the final Application for Payment. Owner shall tender the resulting balance due to Contractor within thirty (30) days of Owner's approval of the final Application for Payment.

## **ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION**

16.01 *Owner May Suspend Work*

SC-16.01 Add the following new paragraph immediately after Paragraph 16.01A:

- B. Should the Owner suspend Work due to unsafe Work conducted by the Contractor, the Contractor shall not be allowed any adjustment in Contract Price or extension of Contract Time attributed to this delay.

16.02 *Owner May Terminate for Cause*

SC-16.02.A.3 Add the following after "jurisdiction":

"(including those governing employee safety)"

SC-16.04.A Amend the first sentence of paragraph 16.04.A as follows:

Strike out the phrase "Owner fails for 30 days" and replace with "Owner fails for 45 days after Approval by Owner".

SC-16.04.B Amend the first sentence of paragraph 16.04.B as follows:

Strike out the phrase "Owner has failed for 30 days" and replace with "Owner has failed for 45 days after Approval by Owner".

## **ARTICLE 17 - FINAL RESOLUTION OF DISPUTES**

SC-17.01.B Delete in its entirety and replace with the following:

- B. Either Owner or Contractor may request mediation of any claim submitted to Engineer for a decision under Article 12 - Claims before such decision becomes final and binding.

SC-17.01 Add the following new paragraphs after SC-17.01.B:

- C. In accordance with GS 143-128(f), any claim, dispute or other matter in question (involving greater than \$15,000) arising out of or related to this Agreement shall be subject to mediation as a condition precedent to the institution of legal or

equitable proceeding by either party. The dispute resolution process adopted by the N.C. State Building Commission shall be followed. The process entitled "Rules Implementing Mediated Settlement Conferences in North Carolina Construction Projects" are included in Section 00810.

- D. All matters relating to this Contract shall be governed by the laws of the State of North Carolina, without regard to its choice of law provisions, and venue for any action relating to this Contract shall be Wake County Civil Superior Court or the United States District Court for the Eastern District of North Carolina, Western Division.

## **ARTICLE 18 - MISCELLANEOUS**

### 18.01 *Giving Notice*

SC-18.01.A.3 Delete in its entirety and replace with the following:

- 3. by e-mail to the recipient, with the words "Formal Notice" in the e-mail's subject line.

SC-18.01 Add the following new paragraph after Paragraph 18.01.A:

- B. No oral statement of any person whomsoever shall in any manner or degree modify or otherwise affect the terms of this Contract. Any notice by a party to this Contract to another party or parties to this Contract relative to any part of this Contract shall be in writing.

### 18.07 *Controlling Law*

SC-18.07.A Delete in its entirety and replace with the following:

- A. All matters relating to this Contract shall be governed by the laws of the State of North Carolina, without regard to its choice of law provisions, and venue for any action relating to this Contract shall be Wake County Civil Superior Court or the United States District Court for the Eastern District of North Carolina, Western Division.

END OF SECTION

**PROCEDURE FOR REPORTING NORTH CAROLINA SALES TAX  
EXPENDITURES ON CITY OF RALEIGH CONTRACTS**  
*(for projects with reimbursable sales tax excluded from Bid)*

1. The following procedure in handling the North Carolina Sales Tax is applicable to this project. Contractors shall comply fully with the requirements outlined hereinafter, in order that the owner may recover the amount of the tax permitted under the law. For the purposes of this section, "Sales Taxes" shall mean sales and use taxes paid to the State of North Carolina or to local governments in North Carolina.
  - (a) Reimbursable Sales Taxes are to be excluded from the bid price for this project.
  - (b) The City is entitled to refunds from the State of North Carolina for these reimbursable sales taxes. The Contractor that performs work under this contract is allowed to obtain a reimbursement from the City for those Sales Taxes for which the State will grant a refund to the City. The City will reimburse the Contractor, and the City later obtains a refund from the State.
  - (c) It shall be the general contractor's responsibility to furnish the City documentary evidence showing the materials used and sales tax paid by the general contractor and each of his subcontractors. Any county sales tax included in the contractor's statements must be shown separately from the state sales tax. If more than one county is shown, each county shall be listed separately.
  - (d) The documentary evidence shall be the attached Reimbursable Sales and Use Tax Statement. This evidence shall consist of a certified statement, by the general contractor and each of his subcontractors individually, showing total purchases of materials from each separate vendor and total sales taxes by each county paid each vendor. The certified statement must show the invoice number (s) covered and inclusive dates of such invoices. State sales tax shall be listed separately from county sales tax. If more than one county is shown, each county shall be listed separately. The invoices shall be provided to substantiate the information on the statement.
  - (e) Materials used from general contractor's or subcontractor's warehouse stock shall be shown in a certified statement at warehouse stock prices.
  - (f) The general contractor shall not be required to certify the subcontractor's statements. However, the subcontractor may submit for reimbursement by certifying a Reimbursable Sales and Use Tax Statement, submitting it to the general contractor for the general contractor to submit with the pay application for the properties listed on that form. The City will make the reimbursement payable to the Contractor.
  - (g) The documentary evidence to be furnished to owners eligible for Reimbursable Sales Tax refunds covers sales and/or use taxes paid on building materials used by general contractors and subcontractors in the performance of contracts with churches,

orphanages, hospitals not for profit, educational institutions not operated for profit and other charitable or religious institutions or organizations not operated for profit and incorporated cities, towns and counties in this State. The documentary evidence is to be submitted to the above-named institutions, organizations and governmental units to be included in claims for refunds to be prepared and submitted by them to obtain refunds provided by G.S. 105-164.14 and is to include the purchase of building materials, supplies, fixtures and equipment which become a part of or annexed to buildings or structures being erected, altered or repaired under contracts with such institutions, organizations or governmental units.

- (h) The Contractor may seek reimbursement separately from, but at the same time as, 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 the properties that were taxed.
- 2. If the State refuses to refund any such Sales Tax to the City, or if after a refund is made, the City is told to return a refund to the State, the Contractor shall upon demand repay the City for the amount of the failed refunds.
- 3. The contractor or contractors to whom an award is made on this project will be required to follow the procedure outlined above.
- 4. The contractor is advised that all requests for payment, partial or final, for work completed under this contract must include a sales tax report submitted in accordance with the procedures outlined above.







RULES IMPLEMENTING MEDIATED  
SETTLEMENT CONFERENCES IN  
NORTH CAROLINA PUBLIC CONSTRUCTION PROJECTS

Adopted  
February 26, 2002

Table of Rules

**Rule**

1. Initiating Mediated Settlement Conferences
  - A. Purpose of Mandatory Settlement Conferences.
  - B. Initiating the Dispute Resolution Process.
2. Selection of Mediator
  - A. Selection of Certified Mediator by Agreement of the Parties.
  - B. Nomination and Court Approval of a Non-Certified Mediator.
  - C. Appointment of Mediator by the SCO.
  - D. Mediator Information Directory.
  - E. Disqualification of Mediator.
3. The Mediated Settlement Conference
  - A. Where Conference is to be Held.
  - B. When Conference is to be Held.
  - C. Request to Extend Deadline for Completion.
  - D. Recesses.
  - E. The Mediated Settlement Conference shall not be cause for the Delay of the Construction Project which is the focus of the Dispute.
4. Duties of Parties and Other Participants in Formal Dispute Resolution Process
  - A. Attendance.
  - B. Finalizing Agreement.
  - C. The Mediation Fee shall be paid in accordance with G.S. 143-128(g).
  - D. Failure to Compensate Mediator.
5. Authority and Duties of Mediators
  - A. Authority of Mediator.
  - B. Duties of Mediator.
6. Compensation of the Mediator
  - A. By Agreement.
  - B. By Appointment.
7. Mediator Certification
8. Rule Making
9. Definitions
10. Time Limits

## **RULE 1. INITIATING MEDIATED SETTLEMENT CONFERENCES**

**A. Purpose of Mandatory Settlement Conferences.** Pursuant to G.S. 143-128(g) 143-135.26(11), these Rules are promulgated to implement a system of settlement events which are designated to focus the parties' attention on settlement rather than on claim preparation and to provide a structured opportunity for settlement negotiations to take place. Nothing herein is intended to limit or prevent the parties from engaging in settlement procedures voluntarily at any time prior to or during commencement of the dispute resolution process.

### **B. Initiating the Dispute Resolution Process**

- 1) Any party to a public construction contract governed by Article 8. Ch. 143 of the General Statutes and identified in G.S. 143-128(g) and who is a party to a dispute arising out of the construction process in which the amount in controversy is at least \$15,000 may submit a written request to the public owner for mediation of the dispute.
- 2) Prior to submission of a written request for mediation to the public owner, the parties requesting mediation,
  - a) If a prime contractor, must have first submitted its claim to the Project Designer for review as set forth in Exhibit A. If the dispute is not resolved through the Project Designer's instructions, then the dispute becomes ripe for mediation in the Formal Dispute Resolution Process, and the party may submit his written request for mediation to the public owner.
  - b) If the party requesting mediation is a subcontractor, it must first have submitted its claim for mediation to the prime contractor with whom it has a contract. If the dispute is not resolved through the Prime Contractor's involvement, then the dispute becomes ripe for mediation in the Formal Dispute Resolution Process, and the party may submit its written request for mediation to the public owner.
  - c) If the party requesting mediation is the Project Designer, then it must first submit its claim to the public owner to resolve. If the dispute is not resolved with the public owner's involvement, then the Project Designers' dispute is ripe for mediation in the Formal Dispute Resolution Process, and the Project Designer may submit its written request to the public owner for mediation.

## **RULE 2. SELECTION OF MEDIATOR**

**A. Selection of Certified Mediator by Agreement of the Parties.** The parties may select a mediator certified pursuant to the Rules by agreement within 21 days of requesting mediation. The requesting party shall file with the State Construction Office (hereinafter collectively referred to as the "SCO") or public owner if a non-State project a Notice of Selection of Mediator by Agreement within 10 days of the request; however, any party may file the notice. Such notice shall state the name, address and telephone number of the mediator selected; state the rate of compensation of the mediator; state that the mediator and opposing counsel have agreed upon the selection and rate of compensation; and state that the mediator is certified pursuant to these Rules.

- B. Nomination and Public Owner Approval of a Non-Certified Mediator.** The parties may select a mediator who does not meet the certification requirements of these rules but who, in the opinion of the parties and the SCO or public owner, is otherwise qualified by training or experience to mediate the action.

If the parties select a non-certified mediator, the requesting party shall file with the SCO a Nomination of Non-Certified Mediator within 10 days of the request. Such nomination shall state the name, address and telephone number of the mediator; state the training, experience or other qualifications of the mediator; state the rate of compensation of the mediator; and state that the mediator and opposing counsel have agreed upon the selection and rate of compensation.

The SCO or public owner shall rule on said nomination, shall approve or disapprove of the parties' nomination and shall notify the parties of its decision.

- C. Appointment of Mediator by the SCO.** If the parties cannot agree upon the selection of a mediator, the party or party's attorney shall so notify the SCO or public owner and request, on behalf of the parties, that the SCO or public owner appoint a mediator. The request for appointment must be filed within 10 days after request to mediate and shall state that the parties have had a full and frank discussion concerning the selection of a mediator and have been unable to agree. The request shall state whether any party prefers a certified attorney mediator, and if so, the SCO or public owner shall appoint a certified attorney mediator. If no preference is expressed, the SCO or public owner may appoint a certified attorney mediator or a certified non-attorney mediator.
- D. Mediator Information Directory.** To assist the parties in the selection of a mediator by agreement, the parties are free to utilize the list of certified mediators maintained in any county participating in the Superior Court Mediation Settlement Conference Program.
- E. Disqualification of Mediator.** Any party may request replacement of the mediator by the SCO or public owner for good cause. Nothing in this provision shall preclude mediators from disqualifying themselves.

### **RULE 3. THE MEDIATED SETTLEMENT CONFERENCE**

- A. Where Conference is to be Held.** Unless all parties and the mediator otherwise agree, the mediated settlement conference shall be held in the county where the project is located. The mediator shall be responsible for reserving a place and making arrangements for the conference and for giving timely notice of the time and location of the conference to all attorneys, unrepresented parties and other persons and entities required to attend.
- B. When Conference is to be Held.** The deadline for completion of the mediation shall be not less than 30 days nor more than 60 days after the naming of the mediator.
- C. Request to Extend Deadline for Completion.** A party, or the mediator, may request the SCO or public owner to extend the deadline for completion of the conference. Such request shall state the reasons the extension is sought and

shall be served by the moving party upon the other parties and the mediator. If any party does not consent to the request, said party shall promptly communicate its objection to the SCO or public owner.

The SCO or public owner may grant the request by setting a new deadline for completion of the conference.

D. **Recesses.** The mediator may recess the conference at any time and may set times for reconvening. If the time for reconvening is set before the conference is recessed, no further notification is required for persons present at the conference.

E. **The mediated settlement conference shall not be cause for the delay of the construction project which is the focus of the dispute.**

#### **RULE 4. DUTIES OF PARTIES AND OTHER PARTICIPANTS IN FORMAL DISPUTE RESOLUTION PROCESS**

A. **Attendance.**

- 1) All parties to the dispute originally presented to the Designer or Prime Contractor for initial resolution must attend the mediation. Failure of a party to a construction contract to attend the mediation will result in the public owner's withholding of monthly payment to that party until such party attends the mediation.
- 2) Attendance shall constitute physical attendance, not by telephone or other electronic means. Any attendee on behalf of a party must have authority from that party to bind it to any agreement reached as a result of the mediation.
- 3) Attorneys on behalf of parties may attend the mediation but are not required to do so.
- 4) Sureties or insurance company representatives are not required to attend the mediation unless any monies paid or to be paid as a result of any agreement reached as a result of mediation require their presence or acquiescence. If such agreement or presence is required, then authorized representatives of the surety or insurance company must attend the mediation.

B. **Finalizing Agreement.** If an agreement is reached in the conference, parties to the agreement shall reduce its terms to writing and sign it along with their counsel.

C. **The mediation fee shall be paid in accordance with G.S. 143-128(g).**

D. **Failure to compensate mediator.** Any party's failure to compensate the mediators in accordance with G.S. 143-128(g) shall subject that party to a withholding of said amount of money from the party's monthly payment by the public owner.

Should the public owner fail to compensate the mediator, it shall hereby be subject to a civil cause of action from the mediator for the 1/3 portion of the mediator's total fee as required by G.S. 143-128(g).

#### **RULE 5. AUTHORITY AND DUTIES OF MEDIATORS**

**A. Authority of Mediator.**

- 1) *Control of Conference.* The mediator shall at all times be in control of the conference and the procedures to be followed.
- 2) *Private Consultation.* The mediator may communicate privately with any participant or counsel prior to and during the conference. The fact that private communications have occurred with a participant shall be disclosed to all other participants at the beginning of the conference.
- 3) *Scheduling the Conference.* The mediator shall make a good faith effort to schedule the conference at a time that is convenient with the participants, attorneys and mediator. In the absence of agreement, the mediator shall select the date for the conference.

**B. Duties of Mediator.**

- 1) The mediator shall define and describe the following at the beginning of the conference:
  - a) The process of mediation;
  - b) The difference between mediation and other forms of conflict resolution;
  - c) The costs of the mediated settlement conference;
  - d) That the mediated settlement conference is not a trial, the mediator is not a judge, and the parties retain their legal rights if they do not reach settlement;
  - e) The circumstances under which the mediator may meet and communicate privately with any of the parties or with any other person;
  - f) Whether and under what conditions communications with the mediator will be held in confidence during the conference;
  - g) The inadmissibility of conduct and statements as provided by G.S. 7A-38.1(1);
  - h) The duties and responsibilities of the mediator and the participants; and
  - i) That any agreement reached will be reached by mutual consent.
- 2) *Disclosure.* The mediator has a duty to be impartial and to advise all participants of any circumstance bearing on possible bias, prejudice or partiality.
- 3) *Declaring Impasse.* It is the duty of the mediator timely to determine that an impasse exists and that the conference should end.
- 4) *Reporting Results of Conference.* The mediator shall report to the SCO or public owner within 10 days of the conference whether or not an agreement was reached by the parties. If an agreement was reached, the report shall state the nature of said agreement. The mediator's report shall inform the SCO or public owner of the absence of any party known to the mediator to have been absent from the mediated settlement conference without permission. The SCO or public owner may require the mediator to provide statistical data for evaluation of the mediated settlement conference program.
- 5) *Scheduling and Holding the Conference.* It is the duty of the mediator to schedule the conference and conduct it prior to the deadline of completion set by the rules. Deadlines for completion of the conference shall be strictly observed by the mediator unless said time limit is changed by a written order of the SCO or public owner.

**RULE 6. COMPENSATION OF THE MEDIATOR**

- A. **By Agreement.** When the mediator is stipulated by the parties, compensation shall be as agreed upon between the parties and the mediator provided that the provision of G.S. 143-128(g) are observed.
- B. **By Appointment.** When the mediator is appointed by the SCO or public owner, the parties shall compensate the mediator for mediation services at the rate in accordance with the rate charged for Superior Court mediation. The parties shall also pay to the mediator a one-time per case administrative rate in accordance with the rate charged for Superior Court mediation, which is due upon appointment.

## **RULE 7. MEDIATOR CERTIFICATION.**

All mediators certified in the Formal Dispute Resolution Program shall be properly certified in accordance with the rules certifying mediators in Superior Court in North Carolina. \* When selecting mediators, the parties may designate a preference for mediators with a background in construction law or public construction contracting. Such requirements, while preferred, are not mandatory under these rules.

All mediators chosen must either demonstrate they are certified in accordance with the Rules Implementing Scheduled Mediated Settlement Conference in Superior Court or must gain the consent of the SCO or public owner to mediate any dispute in accordance with these rules.

\* Except when otherwise allowed by the SCO or public owner upon the request of the parties to the mediation.

## **RULE 8. RULE MAKING**

These Rules are subject to amendment by rule making by the State Building Commission.

These Rules are mandated for State projects when the contracting state entity has not otherwise adopted its own dispute resolution provision. These rules are optional for all other projects subject to Article 8, Ch. 143 of the General Statutes.

## **RULE 9. DEFINITIONS**

When the phrase "SCO or public owner" is used in these rules, "SCO" shall apply to state projects, "public owner" shall apply to non-state public projects.

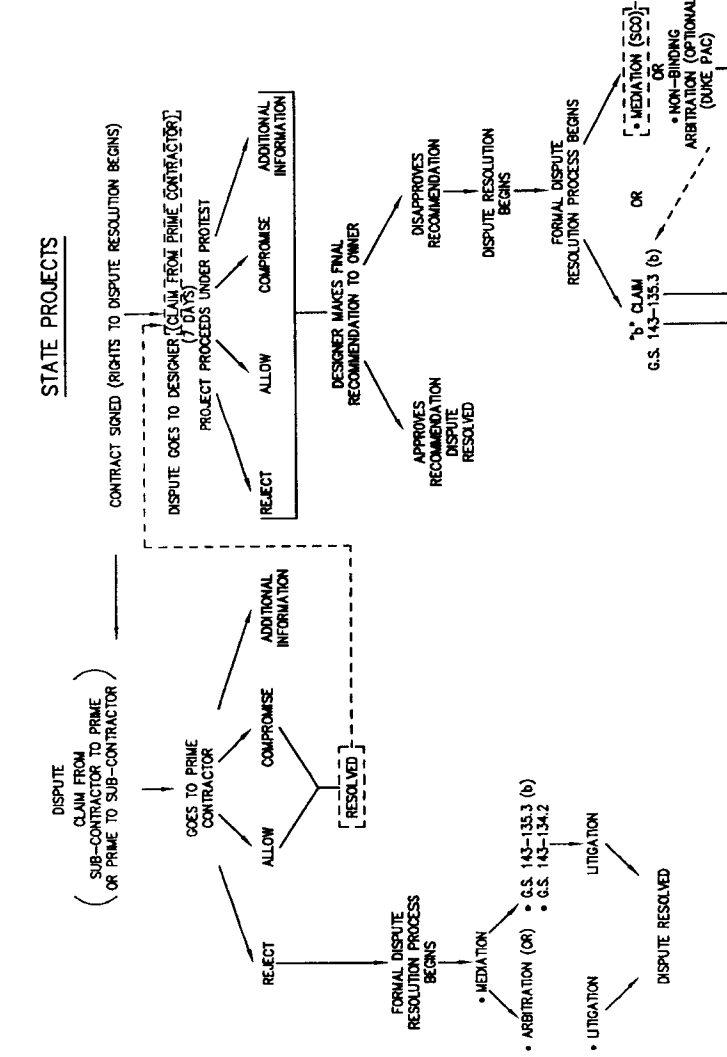
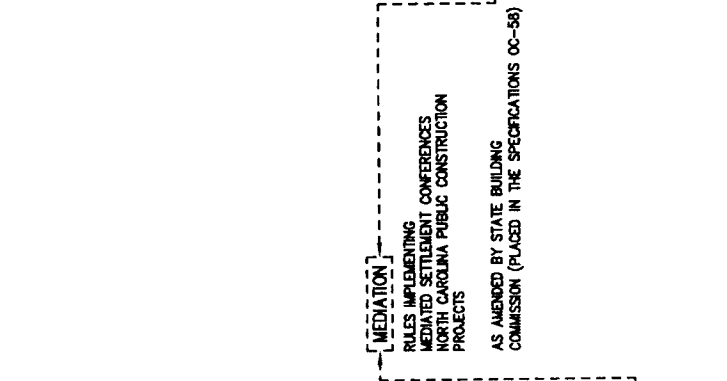
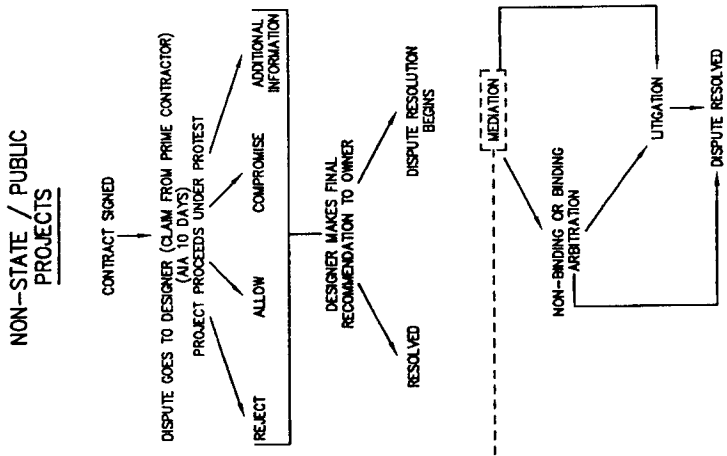
## **RULE 10. TIME LIMITS**

On state contracts, any time limit provided for by these Rules may be waived or extended by the SCO for good cause shown.

On non-state contracts, any time limit provided for by these Rules may be waived or extended by the mediator it appoints for good cause shown. If the mediator has not yet been appointed, the designer of record shall decide all waivers or extensions of time for good cause shown.



# DISPUTE RESOLUTION



# Exhibit A

# DISPUTE RESOLUTION

## STATE PROJECTS

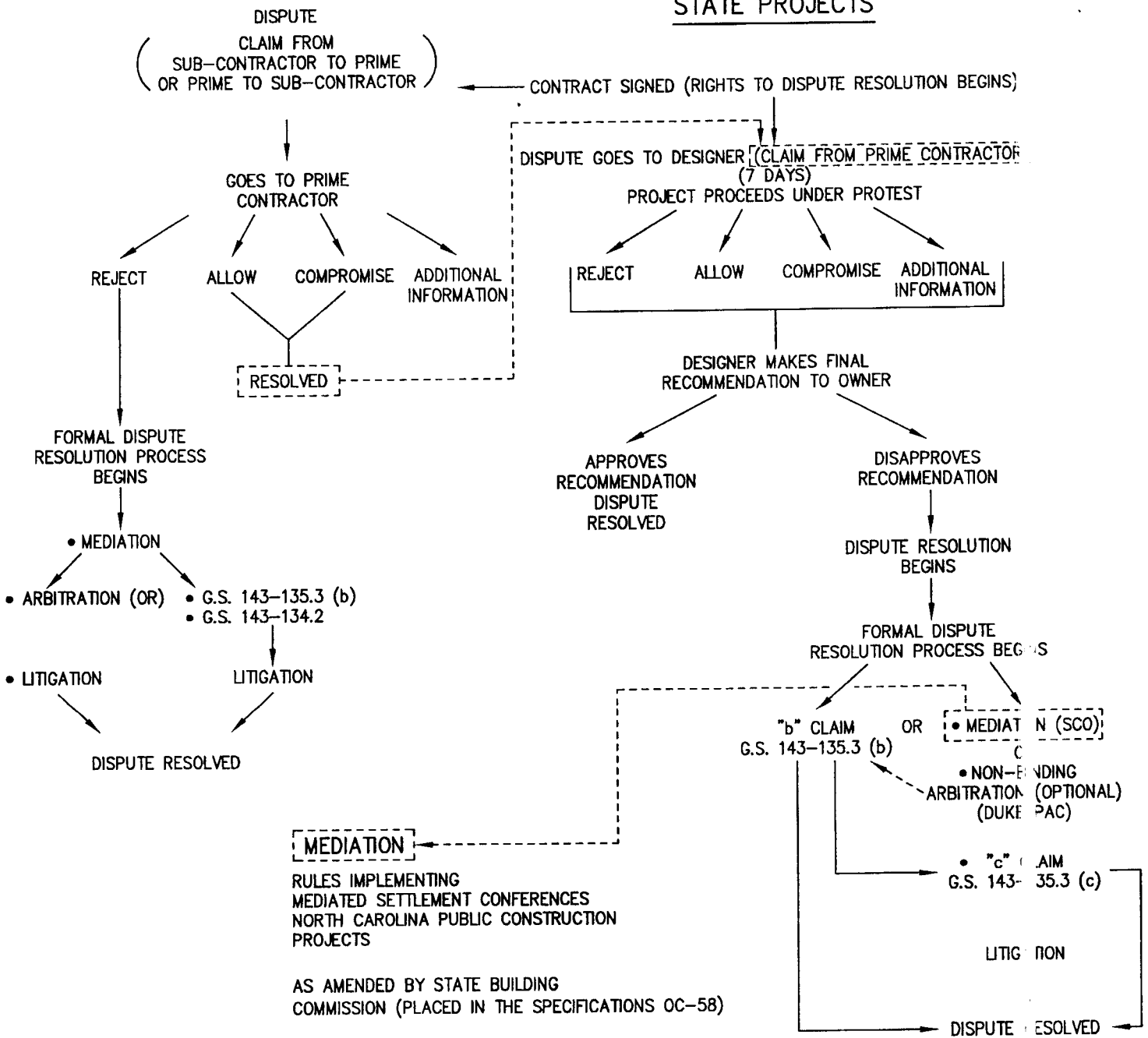
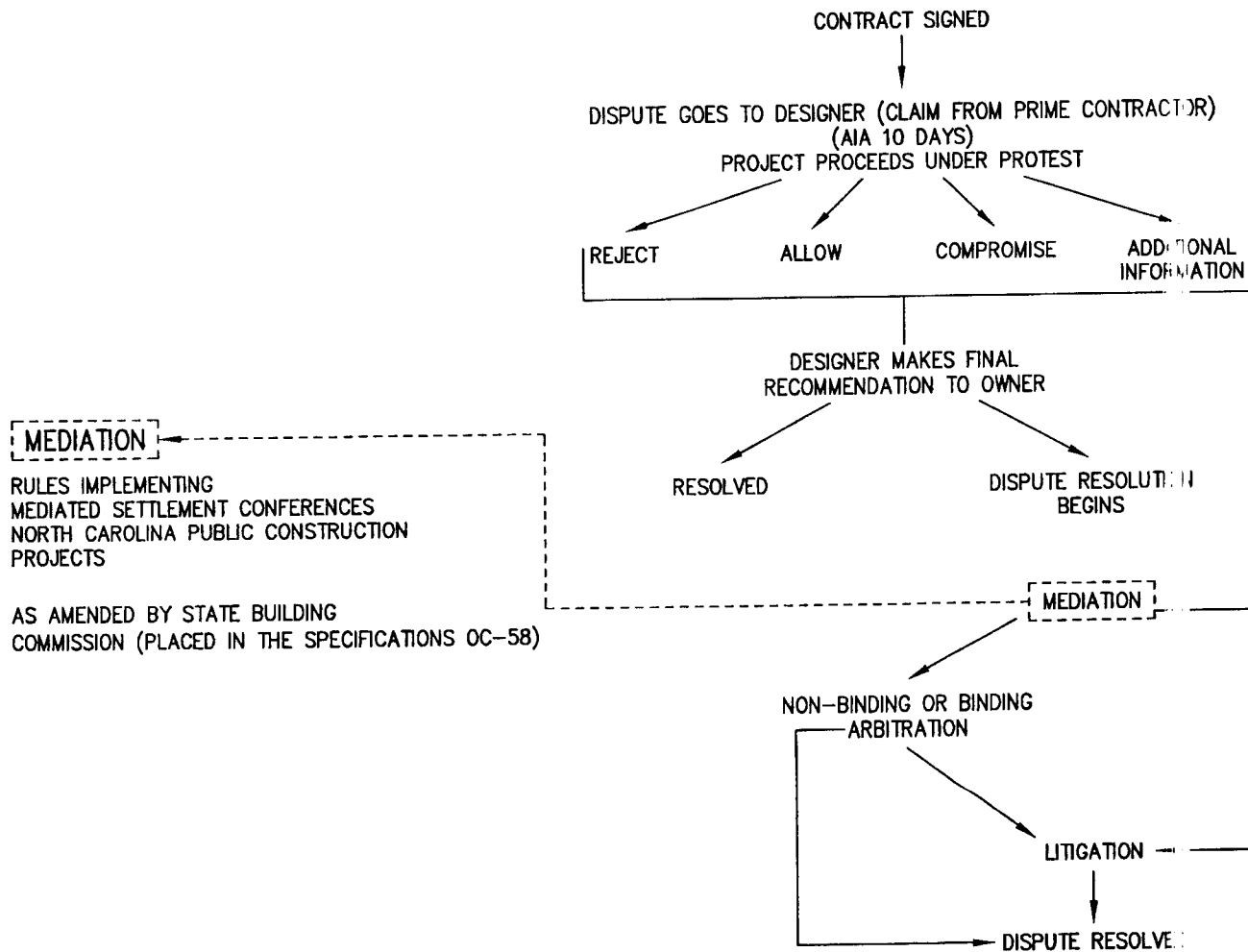


Exhibit A

# DISPUTE RESOLUTION

## NON-STATE / PUBLIC PROJECTS



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**WORK CHANGE DIRECTIVE NO.: [Number of Work Change Directive]**

Owner: **City of Raleigh**

Owner's Project No.:

Engineer:

Engineer's Project No.:

Contractor:

Contractor's Project No.:

Project:

Contract Name:

Date Issued:

Effective Date of Work Change Directive:

Contractor is directed to proceed promptly with the following change(s):

Description:

**[Description of the change to the Work]**

Attachments:

**[List documents related to the change to the Work]**

Purpose for the Work Change Directive:

**[Describe the purpose for the change to the Work]**

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

**Notes to User—Check one or both of the following**

Non-agreement on pricing of proposed change.  Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: \$ \_\_\_\_\_ **[increase] [decrease] [not yet estimated].**

Contract Time: \_\_\_\_\_ days **[increase] [decrease] [not yet estimated].**

Basis of estimated change in Contract Price:

Lump Sum  Unit Price  Cost of the Work  Other

Recommended by Engineer

Authorized by Owner

By:

\_\_\_\_\_

\_\_\_\_\_

Title:

\_\_\_\_\_

\_\_\_\_\_

Date:

\_\_\_\_\_

\_\_\_\_\_

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**CHANGE ORDER NO.: [Number of Change Order]**

Owner: **City of Raleigh**  
 Engineer:  
 Contractor:  
 Project:  
 Contract Name:  
 Date Issued:

Owner's Project No.:  
 Engineer's Project No.:  
 Contractor's Project No.:

Effective Date of Change Order:

The Contract is modified as follows upon execution of this Change Order:

Description:

**[Description of the change]**

Attachments:

**[List documents related to the change]**

Change in Contract Price	Change in Contract Times
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
<b>[Increase] [Decrease]</b> from previously approved Change Orders No. 1 to No. <b>[Number of previous Change Order]</b> : \$ _____	<b>[Increase] [Decrease]</b> from previously approved Change Orders No.1 to No. <b>[Number of previous Change Order]</b> : Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
<b>[Increase] [Decrease]</b> this Change Order: \$ _____	<b>[Increase] [Decrease]</b> this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)

Accepted by Contractor

By: \_\_\_\_\_

\_\_\_\_\_

Title: \_\_\_\_\_

\_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_

Authorized by Owner

Approved by Funding Agency (if applicable)

By: \_\_\_\_\_

\_\_\_\_\_

Title: \_\_\_\_\_

\_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_

**Attachment 1 - Final Change Order:**

The Owner and Contractor intend that this Final Change Order incorporate and resolve all prior, pending, and unresolved change order requests, claims, and/or disputes which have been submitted or which could have been submitted prior to the date of execution of this Final Change Order. This Final Change Order represents full and final settlement of all disputes or claims between the Parties to the Contract, and by executing this Final Change Order and in consideration of the modifications agreed to herein, Contractor expressly releases and waives all further claims for equitable adjustment; compensation in the form of money or time (days) for additional work, services, labor, or materials; damages for delay including but not limited to claims for additional overhead, lost productivity, ripple effect, cumulative impact, or acceleration; and any direct, indirect, or impacts costs including but not limited to any costs, losses, damages, charges, fees, expenses, interest, or attorneys' fees arising from or in connection with the Contract or this Final Change Order.



**FIELD ORDER NO.: [Number of Field Order]**

Owner: **City of Raleigh**

Owner's Project No.:

Engineer:

Engineer's Project No.:

Contractor:

Contractor's Project No.:

Project:

Contract Name:

Date Issued:

Effective Date of Field Order:

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

**Reference:**

Specification Section(s):

Drawing(s) / Details (s):

**Description:**

**[Description of the change to the Work]**

**Attachments:**

**[List documents supporting change]**

**Issued by Engineer**

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

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SECTION 01 11 00  
SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work described in this Project Manual includes the provision of labor, materials, equipment, and services required to complete the 2017 Aerial Sewer Replacement Project for the City of Raleigh, North Carolina.
- B. The City of Raleigh Public Utilities Handbook, as it relates to this project, shall be used in conjunction with these specifications. All aspects of the project construction shall conform to the Handbook unless specifically addressed herein. It is the Contractor's responsibility to obtain this document from the City's Public Utilities Department. It can be obtained by phone at 919-996-3474 or on the internet at <https://www.raleighnc.gov/services/content/Departments/Articles/PublicUtilities.html>.
- C. In the event of a discrepancy between these specifications and the Handbook, the Contractor shall use the more stringent of the two documents. Notify the Owner immediately of the discrepancy.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements

1.03 CONTRACT DESCRIPTION

- A. The description of work, which follows, is not all inclusive in listing the work. The description is abbreviated to provide a summary of the scope of the project to aid in the understanding and coordination. The Contractor shall refer to the applicable sections of these specifications for detailed description of the work involved and also refer to the contract drawings for the division of work indicated thereon.
  - 1. 2017 Aerial Sewer Replacement Project  
Replacement of approximately 550 feet of 12-inch aerial sewer mains and steel support piers, replacement of approximately 800 feet of 12-inch aerial sewer mains on existing support piers, manhole rehabilitation, installation of three steel access platforms around existing elevated manholes, all in the State Street Area; removal of approximately 500 feet of 6-inch sewer mains and manholes, and installation of 8-inch replacement sewer mains and manholes in the Banbury Road Area; and removal of approximately 150 feet of 6-inch sewer mains including aerial and supports, and installation of 6-inch replacement sewer mains including aerial and supports in the Woodrow Drive Area.

1.04 WORK SEQUENCE

- A. The work at the Banbury Street area will be conducted in the summer months between May 27 and September 4 while the St. Michaels Episcopal Church's school is on break if the contract period allows this. If the contract periods prohibit work to begin in this

period, the contractor shall coordinate with the church on a daily basis to minimize impacts to all the church's weekly activities. The contractor shall meet with the church prior to construction to discuss a coordination and scheduling plan. The laydown area (parking spaces at the north west corner of the temporary construction easement (TCE) may be used to park workers trucks/vehicles and maybe some materials storage. The TCE is primarily for access and any larger staging areas for materials or equipment should be stored offsite. The contractor shall coordinate use of the TCE driveway area to avoid the Day School drop off and pick up schedules. The remainder of the TCE area, parking lot and drive area, shall be restored by 6 pm on Fridays for all weekend activities. The contractor shall also coordinate for Memorial Services if the church requests a period of work shutdown in respect for the families.

- B. Construction activities that interfere with normal operation of existing facilities shall be specifically noted on construction schedule.
- C. Contractor shall not allow bypassing of sewage into surface water (e.g. stream, creek, river, ditch, etc.). Contractor is responsible for all bypass pumping required to construct the project as shown. For each of these activities provide a detailed construction sequence showing the bypass pumping arrangement.
- D. Indicate switchovers and cut-ins between new Work and existing facility on the construction schedule. Submit proposed date for switchover in writing to Engineer and Owner a minimum of seven (7) days and again 24-hours in advance of actual field work. Owner shall have the right to delay Work due to operational requirements, without additional cost to Owner.
- E. Perform switchovers and cut-ins during low flow periods at the facility. This shall normally require night / weekend operations by Contractor at no additional compensation.
- F. The sequence of construction shall be in accordance with instructions included on the Drawings.

#### 1.05 OWNER OCCUPANCY

- A. Owner will occupy site during entire period of construction.
- B. Contractors shall cooperate with Owner to minimize conflict, and to facilitate Owner's operations.

#### 1.06 VIDEO AND PHOTOGRAPHIC INSPECTIONS

- A. Conduct video and photographic inspection of the pre-construction conditions and post-construction conditions for the entire project area, including off site material staging areas and other associated locations.
- B. Post-construction videos and photographs documenting areas/phases that have achieved milestones, substantial completion, and final completion.
- C. Submittal shall be in accordance with Section 01 22 00, Submittal Procedures.

#### 1.07 CONTRACTOR USE OF SITE

- A. Work may be located within Right-of-Ways of the City, Town, NC Department of Transportation or railroads. Requirements of the owners of the right-of-ways must be complied with and specifically as required in the permits included in the project manual.

- B. Only Owner's right to perform construction and maintenance operations with its own forces and to employ separate contractors on portions of the Project limits contractor's use of site during the construction period. Work at the Project site by Owner will be coordinated with the Contractor.
- C. Contractor shall provide his own staging area as necessary for his Work. Contractor is required to modify the appropriate permits or obtain new permit for additional area at the Contractor's expense.
- D. Contractor's use of the site during the construction period may be limited by Owner's necessity to operate the existing facilities.
- E. The Contractor may request additional work area on City of Raleigh property by written request to the Owner at least 30 days prior to use of the additional area and only after receiving approval from the NCDENR NCDEQ Division of Land Resources for an Erosion and Sedimentation Control Plan. The Contractor shall be responsible for all costs associated with the Erosion and Sedimentation Control Plan approval and any fees or notices of violations associate with the additional area."

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 22 00  
UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Delineation of measurement and payment criteria applicable to Work performed under Contract by the unit price payment method.

1.02 FIELD MEASUREMENT

- A. Take measurements and compute quantities for submittal of the monthly pay request unless specified otherwise in the measurement paragraphs as indicated in this Section.

1.03 CHANGE IN QUANTITIES

- A. Increase in the quantity of a bid item above what is indicated in the Bid Form shall only be made by a Change Order as required by the Contract Documents.
- B. A final adjusting Change Order shall be made for adjustment of the actual quantities installed prior to submittal of the final pay request.

1.04 GENERAL

- A. Items with a "(X)" in the title of the following bid items represents the size or depth as indicated on the Bid Form. Items with "(Mat'l)" in the title represents the material as indicated on the Bid Form.
- B. Method of measurement for the individual Bid Items shall be as specified below.
- C. Payment for each item shall be in accordance with the Contract Unit Price times the number of units installed in accordance with the Contract Documents.
- D. Work for each bid item shall include, but not be limited to, the work listed below, and the labor, materials, equipment, and services required and reasonably implied by the Contract Documents for a complete installation.
- E. Traffic Control will not be measured but should be included in the individual unit price items, as appropriate. This includes traffic control equipment, flagman, signage, moving control devices, and establishing detours with the City and NCDOT.
- F. Payment: The first Application for Payment will be approved based on the utilities installed during the agreed upon payment period without testing. Subsequent Application for Payments shall not be approved by the Engineer unless utilities installed during the previous payment period have passed the specified tests and clean up and seeding is complete.

1.05 PAY ITEMS

- 1. Bid Item 1: Mobilization (max 3% of Total Bid Price)
  - a. Measurement shall not be made for this item.
  - b. Work: To include administrative cost including, but not limited to, mobilization and demobilization, bonds, insurance, pre-construction, video inspections, shop drawing review and submittal, record drawing documentation/surveys, construction closeout documentation, and construction trailers. This item shall also include mobilization of construction equipment onto each of the three project

sites prior to commencing construction and demobilization of equipment after Final Completion. General office administration for the Project construction and contract administrative costs shall be included in the individual unit price items.

- c. Bid Price for Mobilization shall not exceed 3 percent of the total bid. Half of the mobilization may be requested on the first pay request and the remainder on the second.
2. Bid Item 2: Bypass Pumping
    - a. Measurement: Measure by lump sum for all bypass pumping required to divert sewer necessary for installation of the proposed utility lines manhole lining as shown on the Drawings at each of the three project sites. Payment shall include all labor, material, equipment, piping, and accessories necessary to bypass the encountered flow.
    - b. Work: Delivery and setup of equipment and piping, fuel, oil, maintenance, monitoring, diversion blocking/isolation, scour protection, pumping, disassembling and removal of all equipment and piping, and cleanup.
  3. Bid Item 3: 12-inch DIP, RJ, Aerial Pipe Replacement
    - a. Measurement: By the price per linear foot of aerial sewer main installed. Measure pipe from center to center of manholes. No deduction will be made for space occupied by manholes.
    - b. Work: The unit price provided shall be the only compensation for the complete installation and includes furnishing and installing all pipe, fittings and appurtenances, and all other incidental work necessary to provide a complete and ready-to-use system, except for those pay items segregated on the Bid Form. The work shall include cleaning of the existing pipe before removal, properly disposal off site of collected material from the existing sewer pipe, removal of the existing aerial piping, construction staking, flushing, and testing and repair to damaged new and existing utilities.
  4. Bid Item 4: Removal of Existing Pipe Support Steel Piers
    - a. Measurement: By number of pipe support steel piers removed.
    - b. Work: Excavation; steel cutting; proper disposal of removed items; backfilling; and for all labor, materials and accessories required for complete removal of each steel pipe support pier, which consists of the two piles, pile cap and pipe strap.
  5. Bid Item 5: HP 12x53 Steel Pile
    - a. Measurement: Measure by the linear feet of steel piles installed and accepted, from tip to cutoff, plus required overlength.
    - b. Work: Includes all labor, materials, tools, equipment, a incidentals, driving, cutting off, capping, disposing of cutoffs, steel piles, test piles, testing, reporting and all else required for installing the steel piles.
  6. Bid Item 6: Pile Supported Steel Cap and Pipe Cradle
    - a. Measurement: Measure by the number of support caps installed and accepted.
    - b. Work: Furnishing, installing, and all labor, materials and accessories required for complete installation, including steel cutting, welding, structural steel I-Beam and other shapes of the sizes indicated, pipe support cradle, steel shim plates,



neoprene pads, straps, stainless steel bolts, and all else required to weld the pile cap to the piers.

7. Bid Item 7: Aerial Crossing Concrete Structures
  - a. Measurement: Measure by the number of piers installed and accepted.
  - b. Work: Furnishing, installing, and for all labor, materials and accessories required for complete installation.
8. Bid Item 8: Testing Lead Based Paint
  - a. Measurement: By the number of tests conducted.
  - b. Work: The work shall include all labor, equipment, laboratory sampling containers, and all else required for securing paint chip samples from the existing pipe support steel piers (two test per pier), and manhole support steel piers (four tests per manhole support), shipping samples to a certified laboratory, analyzed using approved EPA approved methods, and providing results to the Owner.
9. Bid Item 9: Pipe and Manhole Support Steel Piers Blast Cleaning and Painting (No Lead Based Paint Removal)
  - a. Measurement: Price lump sum for all blast cleaning and painting.
  - b. Work: Includes blast cleaning of all new steel piers and pier caps, and the existing steel piers and pier caps that are to remain and determined by sampling not to be coated with lead-based paint. Also includes painting the new and existing steel piers and pier caps including primer and top-coats, as specified.
10. Bid Item 10: Add-on for Blast Cleaning Pipe and Manhole Support Steel Piers having Lead-Based Paint
  - a. Measurement: Add-on price, lump sum, for blast cleaning existing steel piers and pier caps if sample results determined the steel was coated with lead-based paint.
  - b. Work: Providing the services of a North Carolina licensed lead abatement company to remove lead-based paint from all existing steel piers and pier caps by way of blasting cleaning, including collection, containerization, labeling, transporting and properly disposing off site of the removed lead-based paint.
11. Bid Items 11 – 18: X" (Mat'l) Sanitary Sewer, by depth shown on Bid Form (X' - X')
  - a. Measurement: By the price per linear foot of sewer main installed. Measure pipe from center to center of manholes. No deduction will be made for space occupied by manholes. Measure depth of pipe vertically from pipe invert to original grade.
  - b. Work: The unit price provided shall be the only compensation for the complete installation and includes furnishing and installing all pipe and appurtenances and all other incidental work necessary to provide a complete and ready-to-use system, except for those pay items segregated on the Bid Form.
    - 1) Clearing and grubbing where necessary.
    - 2) Traffic control.
    - 3) Construction staking.
    - 4) Temporary removal and restoration/relocation or temporary support of, but not limited to, existing mail boxes, signs, fences, shrubs, plants, guard rails, power and telephone poles.

- 5) Excavating, shoring and bracing where required, dewatering as required, installing, backfilling (including Class I material as specified for the pipe bedding, haunching, and initial backfill).
  - 6) Installation of warning / identification tape over utilities.
  - 7) Installation of tracer wire on non-metallic utilities.
  - 8) Temporary support and protection of existing underground facilities.
  - 9) Pipe, concrete blocking, connection to existing piping, and fittings 3-inch and smaller.
  - 10) Flushing and testing.
  - 11) Repair to damaged new and existing utilities.
  - 12) Cutting and removal of existing paved surfaces. Patching/repair of existing paved surfaces shall be paid as indicated in the paragraph, "Asphalt and Concrete Pavement Patching."
12. Bid Item 19:        Reconnect 4" Sanitary Sewer Service Lateral
- a. Measurement: Measure by the number installed.
  - b. Work: Excavation, backfilling, and compacting, 4-inch service pipe and fittings from main to location of existing cleanout or the location as indicated on the Drawings. New tap to sewer main, service saddle, and straps.
13. Bid Items 20 - 22: 4' ID Manhole, Depth (X) – (X) Feet
- a. Measurement: By the number of manholes installed at various depths. Measure depths from manhole cover to lowest pipe invert.
  - b. Work: Excavating, backfilling, stone sub base, concrete sections as required for the depth, top adjusting rings, steps, pipe boots, and ring and cover (watertight and vented as indicated), piping for inside/outside drops, pipe supports, testing, and cleanup.
14. Bid Item 23:        Connect to Existing Manhole
- a. Measurement: Measure by each connection as identified on the Bid Form. Payment shall include all labor, material, equipment, and accessories necessary to connect the proposed utility pipe to the existing structure and create a water tight seal.
  - b. Work: Excavation, backfilling, coring, fittings, pipe boots/connections, seals, grout, and cleanup.
15. Bid Item 24:        4' Dia. Manhole Rehabilitation
- a. Measurement: By the total vertical feet from the manholes indicated to have a cementitious liner measured vertically from the invert to the top of manhole ring.
  - b. Work: By-pass pumping of sewage, high pressure cleaning of interior, removal of and disposal of loose or unsound material, repair and sealing of invert and benches, removal of manhole steps, repair of visible leaks, application of lining system.
16. Bid Item 25:        Replace Exist. Manhole Ring & Cover
- a. Measurement: By the number furnished and installed.

- b. Removal of existing frame and cover, furnishing new swing hinge "Revolution," or equal, frame and cover, and installing new frame and cover including finish work.
17. Bid Item 26: Rebuild Manhole Bench and Channel
- a. Measurement: Measure by each bench and channel that is rebuilt. Payment shall include all labor, material, equipment, and accessories necessary to rebuild the concrete manhole bench and channel.
  - b. Work: Removing the existing concrete bench and channel, cleaning, and reforming and rebuilding each.
18. Bid Item 27: Access Platform for Existing Aerial Manholes
- a. Measurement: By the number furnished and installed.
  - b. Work: This item shall include all materials, equipment and labor to furnish and install the steel access platforms around existing manholes on existing aerial concrete pile caps, including field measurements prior to ordering, field adjustments, anchor bolts, and all else required.
19. Bid Item 28: Steel Encasement Pipe, Aerial Installation, 14" x 0.375"
- a. Measurement: Measure by the linear foot along the horizontal centerline of the steel encasement pipes installed to the nearest 0.1 foot.
  - b. Work: This item shall include all materials, equipment, and labor to install the steel encasement pipe above ground on concrete support piers, excavation, and installation into soil banks on each end, restrained joint ductile iron carrier pipe, carrier pipe supports, sealing the ends of the encasement pipe, backfilling, and all else required.
20. Bid Item 29: Rock Excavation by Mechanical Methods
- a. Measurement: By the price per cubic yard as follows:
    - 1) Pipe: Measure along the centerline of the trench, times the depth from the top of rock profile to the specified depth below the pipe, times the pipe bell OD plus four (4) feet.
    - 2) Structure: Measure two (2) feet beyond the outside wall of the structure (excluding extended base) and to a depth of one foot greater than the bottom of the structure.
    - 3) Tunneling and Boring Launch/Receive Pits: Maximum pit dimensions of 40' x 20' or as noted on the plans.
    - 4) General: Take measurements in the presence of the Engineer. Maintain daily log sheets of measured quantities. Log sheets must be signed by the Engineer and submitted with payment request. Payment shall not be made for quantities that have not been field verified by the Engineer.
  - b. Work: Mechanical removal of rock shall be as described above for excavation, with the exception of blasting.
21. Bid Item 30: Removal of Existing 6-inch DI Sewer Pipe
- a. Measurement: Measure by linear foot of pipe removed.
  - b. Work: Excavation; shoring and bracing; removal of existing gravity sewer pipe; proper disposal off site of removed pipe and other items; backfilling; cleanup;

seeding, mulching, and for all labor, materials and accessories required for complete removal.

22. Bid Item 31: Removal of Existing Manholes
- a. Measurement: By number of manholes removed.
  - b. Work: Excavation; shoring and bracing; demolition and removal of existing concrete or masonry manholes; removal of existing frames and covers; proper disposal of removed items; backfilling; cleanup; seeding, mulching, and for all labor, materials and accessories required for complete removal.
23. Bid Item 32: Abandonment of Existing 6-inch DI Sewer Pipe in Place
- a. Measurement: Measure by linear foot of pipe abandoned.
  - b. Work: Emptying the pipeline contents and plugging the ends with premixed, fast setting, waterproof cement.
24. Bid Item 33: Demolition of Existing Aerial Crossing Structures
- a. Measurement: By number of aerials removed.
  - b. Work: Excavation; shoring and bracing; demolition and removal of existing concrete or masonry structures; demolition and removal of existing aerial piping; proper disposal of removed items; backfilling; cleanup; seeding, mulching, and for all labor, materials and accessories required for complete removal.
25. Bid Item 34: Asphalt Roadway Patching
- a. Measurement: Measure by the square yard along centerline of roadway cut times the pipe bell OD plus four (4) feet. Payment shall not be made for pavement repair required due to excessive open cut caused by Contractor.
  - b. Work: Backfilling, compacting, stone sub-base, asphalt at the depths as specified.
26. Bid Item 35: Concrete Curb and Gutter Replacement
- a. Measurement: Measure by linear foot of concrete curb replaced.
  - b. Work: This item shall include all materials, testing, equipment, and labor in order to remove and replace curb and gutter to existing conditions.
27. Bid Item 36: Stone Construction Entrance
- a. Measurement: By number furnished and installed.
  - b. Work: Excavation, washed stone, maintenance, during construction, and final removal and cleanup.
28. Bid Item 37: Tree Removal and Disposal
- a. Measurement: Measure by the number of approved trees removed, as indicated on the construction plans. No payment shall be made for trees removed without approval of the Engineer.
  - b. Work: This item shall include all materials, equipment and labor to remove and dispose of those trees indicated on the construction plans that are directly in conflict with proposed location of new sewer main.
29. Bid Item 38: Tree Protection Fencing
- a. Measurement: By the price per linear foot along the base of the tree protection fencing furnished and installed.

- b. Work: Posts, fabric, signs, maintenance during construction, removal and cleanup.
30. Bid Item 39: Temporary Stream Crossing
- a. Measurement: Measure by the square yard installed.
  - b. Work: This item shall include all materials, equipment and labor necessary to install pipe culverts, No. 5 or 57 washed stone, Class B erosion stone, geotextile fabric, rip rap stone, and any other materials necessary for complete installation. Shall also include final removal and cleanup.
31. Bid Item 40: Silt Fence
- a. Measurement: by the price per linear foot along the base of the silt fence installed.
  - b. Work: Posts, wire mesh, fabric, base trench, stone, and maintenance during construction, removal and clean up.
32. Bid Item 41: Silt Fence Outlet
- a. Measurement: Measure by the number of silt fence outlets installed and accepted.
  - b. Work: This item shall include all materials, testing, equipment and labor required to install silt fence wattle outlet, including but not limited to wattle, wooden stakes, and wooden posts.
33. Bid Item 42: Erosion Control Matting
- a. Measurement: Measure by the square yard installed.
  - b. Payment for the erosion control matting shall be in accordance with the Contract Documents for the unit price per square yard of liner installed. Payment shall be for the labor, material, equipment, and accessories required for a complete installation including, but not limited to, fine grading of slopes or ditch, matting material, matting anchors, inspection and maintenance during construction, final removal and cleanup.
34. Bid Item 43: Sandbag Protection
- a. Measurement: Measure by the number of locations protection devices are installed and accepted.
  - b. Work: This item shall include all materials, testing, equipment and labor necessary to install gravel bag barriers, and any other materials necessary for complete installation. Shall also include inspection and maintenance during construction, and final removal and cleanup.
35. Bid Item 44: Inlet Protection
- a. Measurement: Measure by the number of inlet protection devices installed and accepted.
  - b. Work: This item shall include all materials, testing, equipment and labor necessary to install concrete block, wire screen, gravel filter, and all other materials necessary for complete installation. Shall also include inspection and maintenance during construction, and final removal and cleanup.
36. Bid Item 45: Wattle Barrier
- a. Measurement: By the linear feet installed.
  - b. Wattle barrier installed including trench excavation, furnishing and installing the 18-inch diameter by 10-foot-long excelsior wattles, securing in place with 2-foot

wooden stakes and wire staples, maintenance during construction, and final removal and clean up.

37. Bid Item 46: Ditch with Rip-Rap Liner
- a. Measurement: by the price per square yard installed.
  - b. Work: Payment shall be for the labor, material and accessories required for a complete installation including, but not limited to, fine grading of ditch, filter fabric under stone, rip rap, hauling and placement and maintenance during construction.
38. Bid Item 47: Temporary Gravel Access Road
- a. Measurement: Measure by the square yard along centerline times the specified width.
  - b. Work: Excavation, 2" – 3" stone to a depth of 6 inches, maintenance, during construction, and final removal and cleanup.
39. Bid Item 48: X" RCP Storm Drain Pipe
- a. Measurement: By the price per linear foot of storm drain pipe installed; measure horizontally.
  - b. Work: Including excavation, furnishing and installing the pipe, joining to existing pipe, backfilling, compaction and all else required.
40. Bid Item 49: Clean Up and Seeding
- a. Measurement shall not be made for this item.
  - b. Work: Shall include the full width of the disturbed area for the cleanup and seeding along pipeline construction. Work shall include, but not be limited to, removal and proper disposal of debris and excess material, grading disturbed areas to original surface profile prior to trench excavation, cleaning of paved surfaces, proper seeding of disturbed areas including mulching, obtaining approval of cleanup from owner of right-of-way, and soil amendments (fertilizer/lime).
  - c. Total Contract Price of cleanup and seeding must be equal to a minimum of fifteen (15) percent of the total cost of pipeline work.
41. Bid Item 50: Allowance for 3<sup>rd</sup> Party Vibration, Monitoring and Soil Compaction Testing
- a. Measurement shall not be made for this item.
  - b. An allowance has been established for testing (i.e., soil compaction testing and vibration monitoring above normal monitoring by Contractor) as required in these contract documents. Allowance has also been established to defer selection of actual services to a later date when additional information is available for evaluation. This allowance shall only be utilized upon request by the Owner for these testing/monitoring services.
  - c. Prior to testing, Contractor shall submit the contract between the testing firm and Contractor to the Owner for approval. Where services are requested by Owner, Contractor shall submit invoices to show actual cost of services for use in fulfillment of allowance.
  - d. Payment for allowance shall be for actual invoices for third party services plus up to 5 percent of cost of the services as compensation for coordination of the work.

42. Bid Item 51: Contingency Allowance

- a. Measurement shall not be made for this item.
- b. To be used only at the direction of the Owner and Engineer.
- c. At the completion of the project, any remaining portion of this contingency shall be deducted from the Total of all Unit Price Bid Items.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 31 19  
PROJECT MEETINGS

PART 1 GENERAL

1.01 MEETINGS

- A. Pre-construction conference shall be held prior to the beginning of the Work.
- B. Construction progress meetings shall be held monthly.
- C. Project close-out conference shall be held during the final phases of the Work.
- D. Engineer may schedule additional meetings.
- E. Meetings scheduled by the Engineer shall be held at the City of Raleigh Public Utilities Department or at the project site as set forth in the Pre-construction meeting.
- F. Contractor's project superintendent shall attend meetings.
- G. Notify suppliers and subcontractors to attend meetings as appropriate or as required by Engineer.
- H. Contractor shall schedule pre-installation conferences and material testing meetings as required in the individual specification sections.
- I. Notify Engineer of project meetings scheduled by the Contractor.
- J. Engineer will schedule and administer meetings throughout the progress of the Work, except for meetings held by the Contractor for normal coordination of the Work.
- K. Meeting agenda shall include, but not be limited to, the following: Project Administration, Submittals, Construction Schedules and Methods, Safety and Health Regulations, Project Coordination, Payment Application, RFI's, Field Orders, Change Orders, and Site Inspections.
- L. Engineer will prepare agenda with copies to participants, preside at meetings, prepare minutes and distribute to participants for meetings scheduled by the Engineer.
- M. Engineer will prepare sign-in sheet and obtain signatures, e-mail addresses, and phone numbers from each attendee for distribution with the meeting minutes.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 33 00  
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This Section includes, but is not limited to, requirements for the following:
1. Submittal procedures.
  2. Construction progress schedule.
  3. Schedule of values.
  4. Video and photographic inspection.
  5. Project record documents.
  6. Certificates of compliance.
  7. Catalog data.
  8. Shop drawings.
  9. Manufacturer's installation procedures.
  10. Samples.
  11. Testing and startup reports.
  12. Operation and maintenance instructions.
  13. Warranties.
  14. Spare parts and maintenance materials.
  15. Soil compaction testing and blast related testing results.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
1. Section 01 35 13 Specific Project Requirements

1.03 SUBMITTAL PROCEDURES

- A. Provide a PDF electronic copy of each submittal to the Owner's project manager. The electronic copy shall not exceed a file size of 5 MB unless otherwise approved by the Owner in advanced.
- B. Number transmittals sequentially beginning with 1. Resubmitted items should retain the original number but with an added suffix letter starting with "A".
- C. Each submittal shall include a transmittal form.
- D. Submittal cover sheet shall include the following information:
1. Contractor's name:
  2. Owner's name: Raleigh Water
  3. Project name:
  4. Engineer's Job No.:
  5. Submittal reference number no.
  6. Specification section number.
  7. Drawing and detail number, when appropriate.
  8. Equipment or Item Description.
  9. Supplier.
  10. Manufacturer.
  11. Contractor Approval Stamp.
  12. Exceptions taken to Project Documents.

- E. Apply Contractor's stamp to each submittal, signed or initialed and dated, certifying that Contractor has reviewed submittal for conformance with requirements of the Contract Documents, and has coordinated submittal with related work.
- F. Schedule submittals to expedite the project and deliver to coordinate submission of related items. Allow a minimum of fifteen (15) working days for Owner/Engineer's review.
- G. Clearly identify variations from Contract Documents and Product limitations, as they relate to the satisfactory performance of the Project.
- H. Provide space for Contractor and Engineer review stamps.
- I. Revise and resubmit submittals electronically as required; identify changes made since previous submittal.
- J. Distribute PDF electronic copies of reviewed submittals to concerned parties. Instruct parties to promptly report inability to comply with provisions.
- K. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Engineer.
- L. Engineer's review of submittals shall not relieve Contractor of responsibility for complete compliance with Contract Documents.

#### 1.04 ADMINISTRATIVE SUBMITTALS

- A. Construction Progress Schedule
  1. Submit an electronic copy of the initial progress schedule 15 days after date of Owner-Contractor Agreement.
  2. Progress schedule shall be, as a minimum, a horizontal bar chart with a separate line for each major section of Work. Identify the first work day of each week.
  3. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
  4. Indicate the expected anticipated monthly partial payment requests amounts for the duration of the project.
  5. Submit revised schedule with each Application for Payment, as required for updating, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.
  6. Indicate submittal dates required for critical shop drawings, product data, samples, and product delivery dates
  7. Indicate specific work sequences and requirements as indicated in Section 01 11 00, Summary of Work.
- B. Schedule of Values (lump sum contracts only)
  1. Submit an electronic copy the schedule of values at least three (3) weeks prior to the first partial payment request. Schedule shall divide the lump sum contract items into major work tasks. Use the table of contents as a guide for itemizing the schedule. Schedule will be used only as a basis for review of the Contractor's request for payment.
  2. Engineer may request additional delineation of work tasks and supporting data of the values, as he deems appropriate. Revise schedule and resubmit.
  3. Revise schedule to list approved Change Orders, with each request for payment.

- C. Video and Photographic Inspection
  - 1. Submit two (2) copies of all video and photographic inspection. Pre-construction inspections shall be submitted prior to beginning work and post-construction inspections shall be submitted upon completion of milestones, substantial completion, and final completion as applicable.
- D. Project Record Documents
  - 1. Maintain on site, one set of the following record documents; record actual revisions to the Work:
    - a. Contract Drawings.
    - b. Project Manual.
    - c. Addenda.
    - d. Change Orders and other Modifications to the Contract.
    - e. Reviewed submittals.
  - 2. Store Record Documents separate from documents used for construction.
  - 3. Record information concurrent with construction progress.
  - 4. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
    - a. Manufacturer's name and product model and number.
    - b. Product substitutions or alternates utilized.
    - c. Changes made by Addenda and Modifications.
  - 5. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
    - a. Measure elevations of structures in relation to bench mark datum.
    - b. Measure and reference horizontal and vertical locations of underground utilities and appurtenances to existing permanent surface improvements that are indicated on the Drawings.
      - 1) Provide top, invert, diameter and depth information on manholes.
    - c. Indicate on construction Drawings the pipe size, pipe material (including pipe class and coatings) and pipe length.
    - d. Field changes from construction Drawings.
    - e. Details not on original Contract Drawings.
    - f. Data on all utilities in the trench zone.
      - 1) Document infrastructure abandonment items.
      - 2) Include rock profile
  - 6. Submit complete set of documents to City with final Application for Payment.
    - a. Partial set(s) documenting completed and in services phases shall be submitted with the first application of partial payment following start-up.

#### 1.05 TECHNICAL SUBMITTALS

- A. General
  - 1. Submit the following as required by the individual sections of the technical specifications.
- B. Certificates of Compliance
  - 1. Certificates shall certify that the Products delivered to the project are in conformance with the specifications.
  - 2. Certificates may be recent or previous test results on Product, but must be acceptable to Engineer.
  - 3. Certification shall not relieve the Contractor of responsibility for complying with requirements of the specifications.

- C. Catalog Data
  - 1. When shop drawings are not required, the catalog data shall include the following as a minimum:
    - a. Parts schedule that identifies the materials to be used in each of the various parts.
    - b. Sufficient detail to serve as a guide for assembly and disassembly of the product and to serve as guide for ordering parts.
  - 2. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Work in the Shop Drawing submittal.
- D. Shop Drawing
  - 1. Shop drawings shall consist of drawings, diagrams, illustrations, schedules, performance charts, brochures and other data, prepared specifically for a portion of the Work.
  - 2. Shop drawings shall indicate the type, size, quantity, arrangement, location, mode of operation, component materials, utility connections, wiring and control diagrams, anchorage's, supports, factory applied coatings, and other information necessary to ensure satisfactory fabrication, installation and operation of the completed Work.
  - 3. Shop drawings shall establish the actual detail of manufactured or fabricated items, indicate proper relation to adjoining work, amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure, and incorporate minor changes to design and construction to suit actual requirements.
- E. Manufacturer's Installation Procedures
  - 1. Installation procedures should indicate manufacturer's recommendations for proper installation of Product.
- F. Test and Start-Up Reports
  - 1. Submit an electronic copy of report to the Engineer within seven (7) days of performing the test.
  - 2. Report shall include the following as a minimum:
    - a. Owners name: City of Raleigh
    - b. Project name:
    - c. Engineer's job number:
    - d. Firm performing work.
    - e. Individual performing work.
    - f. Specification section no.:
    - g. Product tested or started.
    - h. Date and time of work.
    - i. Type of test or start-up.
    - j. Specific location in the Project: (i.e. Structure name and location within the structure by a rough sketch.)
    - k. Results.
    - l. Opinion of firm doing the work as to the test or start-up being in compliance with the Contract Documents.
  - 3. When requested by Engineer, the testing or start-up firm shall provide additional interpretation of results.
- G. Samples
  - 1. Submit samples as required by the individual specification sections. Samples shall be physical examples to illustrate the materials and workmanship. Submit in

sufficient size and quantity to clearly illustrate the functional characteristics of the Product, with integrally related parts and attachment devices, and the full range of color to be provided.

H. Operation and Maintenance Instructions

1. Submit an electronic copy of the operation and maintenance instruction for review within 45 days after review of the shop drawings. Once they have been approved, submit one PDF copy and two (2) hard copies of the final O&M manuals by following the instruction below.
2. Submit instructions in a navy blue vinyl, loose leaf binder containing the name of the equipment covered on the front and the spine of the binder. Provide tab dividers appropriately labeled.
3. As a minimum, the submittal shall contain complete operation and maintenance instructions, drawings, and complete parts list.
4. In addition, for equipment requiring periodic lubrication, provide two (2) lubrication charts; one shall be included in the binder, and the other shall be provided in weatherproof 10 mil. laminated plastic and shall be permanently affixed to the equipment. Charts shall contain pertinent information concerning the lubricating requirements including manufacturer's name, name of equipment, recommended service interval, and recommended lubricant, location of each of the points of lubrication.

I. Warranties

1. Provide duplicate notarized copies.
2. Assemble documents from Subcontractors, suppliers, and manufacturers.
3. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.
4. Submit prior to final Application for Payment.
5. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.
6. The warranty period for all new equipment shall commence the date of substantial completion, as specified by the City, and shall extend for a period of twelve (12) months.

J. Spare Parts and Maintenance Materials

1. Provide recommended manufacturer's list of spare parts, maintenance, and extra material as specified in individual specification sections.
2. Submit to Engineer.

K. Soil Compaction, Concrete Testing, Hazardous Materials, and Blast Testing Results

1. Provide electronic copies of field test reports and laboratory test reports for all soil compaction testing/analysis, concrete testing, and blast testing/readings.
2. Submit within 3 days of receiving test reports from geotechnical firm and/or laboratory with a cover letter summarizing the results and whether they are acceptable under the conditions of the Contract Documents.
3. If hazardous materials or soil contamination was encountered, include test reports.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION



SECTION 01 35 13  
SPECIFIC PROJECT REQUIREMENTS

This section forms a part of the Contract Documents and modifies the technical specifications as necessary for the project. Documents with changes are as noted below.

- A. Division 1
  - 1. Section 01 50 00, Temporary Facilities
    - a. Section 1.03, Temporary Utilities: Delete Paragraphs A, B, C and D in their entirety. Temporary electrical, lighting, telephone and water services are not required for this project.
  - 2. Section 01 51 40, Temporary Bypass Pumping
    - a. Subparagraph 1.05, Definitions: Add the following to Paragraph D “For the State Street Area, provide a standby pump for the by-pass pumping operations around Existing Manholes 4 to 1. The standby pump shall be located within 30 minutes of the project site. The standby pump shall have the capacity of the largest pump. The standby pump shall be readily capable to be connected to the bypass pipe. Subparagraph 1.08, Performance Requirements, Paragraph C: Add the following: “3. For the State Street Area, provide a standby pump for the by-pass pumping operations around Existing Manholes 4 to 3, Manholes 3 to 2, and Manholes 2 to 1.”
    - c. Subparagraph 1.09, Special Precautions: Add the following: “D. The State Street Work Area is subject to flooding. The Contractor shall situate the Bypass Pumps so that flooding would not effect the pumps and cause a failure in the bypass operations.”
- B. Division 9
  - 1. Section 09 91 00, Painting
    - a. Subsection 2.02, Painting Schedule, Paragraph C, Above Ground Piping: Add the following: “6. Above ground Ductile Iron Pipe (DIP) shall not be painted.”
    - b. Delete Paragraph 2.02.D Vault Piping
    - c. Delete Paragraph 2.02.E - Plastic Pipes
    - d. Add Paragraph 2.02.D - Structural Steel Piers Painting:
      - D. Structural Steel Piers Painting:
        - 1. New and Existing
        - 2. Surface Preparation: SSPC SP10 / NACE No. 2, Near White Metal Finish
        - 3. Primer Coat: Modified Aromatic Polyurethane Primer applied to 3.5 dry mils thickness (Tnemec Omnithane Series 1, or equal).
        - 4. Topcoats: Two coats of a Aliphatic Acrylic Polyurethane of different colors applied at a rate of 5.0 mils dry thickness each for a total of 10.0 dry mils thickness total (Tnemec Endura-Shield Series 73, or equal). The final coat shall be beige.
- C. Division 31
  - 1. Section 31 05 00, Earthwork
    - a. Subsection 1.02, Related Sections: Delete Paragraphs 6 and 7.
    - b. Subsection 1.04, Definitions: Delete Paragraph K in its entirety.

- c. Subsection 3.03, Protection of Underground Facilities: Paragraph B; Delete “boring” in the first sentence and replace with “pile driving and/or pier excavation.”
  - d. Subsection 3.04, Water Control: Paragraph B; Delete “tunnels” from the first sentence.
  - e. Subsection 3.07, Site Grading: Paragraph H.3.c, Change 90 to 95. Paragraph H.3.d, Change 85 to 90. Add Paragraph H.3.e as follows: “e. Undeveloped Areas 85.”
2. Section 31 23 33, Trenching for Utilities
- a. Subsection 1.02, Related Sections: Paragraph A, Delete Items 4, 6 and 7 in their entirety.
  - b. Subsection 1.05-A-1: Add the following Item “c. Tracer wire.”
  - c. Subsection 2.01-A: Insert “#57,” before “#67”.
  - d. Subsection 2.04: Delete Subsection 2.04 in its entirety.
  - e. Subsection 2.06: Delete Subsection 2.06 in its entirety.
  - f. Subsection 3.01-E: Insert “a North Carolina registered” before “Structural Engineer”.
  - g. Subsection 3.09: Delete Subsection 3.09 in its entirety.
  - h. Subsection 3.10-E: Delete Article E in its entirety.
- D. Division 32
1. Section 32 10 00, Pavement and Appurtenances
- a. Delete Paragraph 1.02.A.6. The project and specifications do not include Section 33 39 00, Reuse Water System.
2. Section 32 92 00, Lawns and Grasses
- a. Delete Paragraph 1.02.A.5. The project and specifications do not include Section 33 14 13, Water Distribution System.
  - b. Delete Paragraph 1.02.A.7. The project and specifications do not include Section 33 39 00, Reuse Water System.
- E. Division 33
1. Section 33 01 30.11, Sewer Line Cleaning and TV Inspection
- a. Subsection 1.02, Scope of Work: Delete Paragraph A in its entirety and replace it with the following: “Clean the sewer mains, remove all collected debris and properly dispose off site.” TV inspection of the sewer mains is not required.
  - b. Subsection 3.01, Cleaning Operations – General: Delete Paragraph H in its entirety.
  - c. Subsection 3.08, TV Inspection: Delete this section in its entirety. Visually inspecting the sewer mains by way of TV cameras is not required for this project. The intent is to merely clean the sewer mains that are to be replaced so as to protect the environment and personnel during the removal process.
2. Section 33 31 11, Sanitary Sewer System
- a. Subsection 1.04, Submittals: To Paragraph A.1, Add the following: “d. Encasement Pipe.”
  - b. Subsection 1.04, Submittals: To Paragraph A.2, Add the following: “e. Encasement Pipe, 1) Pipe support; 2) Casing seal.”
  - c. Part 2, Products: Delete Subsection 2.03, Polyvinyl Chloride (PVC) Pressure Pipe, in its entirety and replace with the following:

2.03 ENCASEMENT PIPE

- A. Encasement Pipe: Encasement pipe shall be high strength spiral welded steel meeting ASTM A-252, Grade 2 steel, with minimum yield strength of 35,000 psi. Pipe length, size and minimum wall thickness shall be as indicated on the Drawings.
  - B. Pipe Support: Provide pipe supports designed and manufactured for the support of the carrier pipe size and material to be used for the Project within the encasement size indicated on the Drawings. Supports shall be designed to carry the pipe at the support spacing specified and meet the following minimum requirements:
    - 1. Band Width: 8 inches for pipes 14 inches and under and 12 inches for pipes 16 inches and over.
    - 2. Band and Riser Material: 14 gauge steel for band and riser except if the riser is over 6 inches high the steel shall be 10 gauge for riser. Riser shall be of the channel shape. Band with risers shall have a fusion bonded PVC coating of a minimum of 10-mil thickness. Band shall be bolted together with stainless steel bolts, nuts, and washers.
    - 3. Runner: Runner shall be a minimum of 1 inch wide and not more than 1 inch shorter than the bandwidth. Provide 2 top and 2 bottom runners for pipe sizes through 12 inches and 2 top and 4 bottom runners for pipes over 12 inches.
    - 4. Pipe position within casing: Centered and Restrained.
  - C. Casing End Seal: Provide mortared casing seal on each end of the casing.
- d. Part 2, Products, Section 2.01.G – Restrained Joints: Add the following:
- 9. Rigid Restrained Joints and Mechanical Joint Pipe: The rigid restrained joint and pipe shall consist of a Thickness Class 52 mechanical joint pipe, a A588 alloy steel ring, and a factory-welded alloy steel ring on the plain end (spigot) of the pipe. The pipe shall have a standard laying length of 20 feet and have a working pressure of 250 psi. The joint shall have a standard MJ gland and gasket with double-nut coupling nuts. The restraint gland shall be ductile iron and assembled on the pipe behind the welded-on alloy steel retaining ring. The coupling nuts, studs, tee-headed bolts and nuts, and retaining ring shall be all alloy steel. The restrained joint shall create a rigid pipeline with the capability of spanning 40-foot-long span support spacing. The rigid restrained joints shall be MECH-LOK as manufactured by US Pipe or approved equal. The interior walls of the ductile iron pipe shall be coated with Protecto 401 Ceramic Epoxy liner or equal as called for in Section 2.02 Ductile Iron Pipe Liner.

- e. Part 2, Products: Delete Subsection 2.05, Centrifugally Cast Fiberglass Reinforced Polymer Mortar (CCFRPM) Pipe, in its entirety.
- f. Part 2, Products: Delete Subsection 2.06, Filament-Wound Fiberglass Reinforced Polymer Mortar Pipe, in its entirety.
- g. Part 2, Products: Delete Subsection 2.09, Polymer Concrete Manhole, in its entirety.
- h. Part 2, Products: Delete Subsection 2.13, Valves, in its entirety.
- i. Part 2, Products: Delete Subsection 2.14, Air Relief Valves, in its entirety.
- j. Part 3, Execution: Delete Subsections 3.06, PVC Pressure Pipe, in its entirety and replace with the following:

#### 3.06 CARRIER PIPE

- A. Install carrier pipe in the encasement pipe using manufactured pipe supports. Supports shall prevent movement of the carrier pipe within the encasement. Space supports as specified.
  - B. Provide seals at each end of encasement pipe.
- k. Part 3, Execution: Delete Subsections 3.07, Fiberglass Reinforced Pipe – Centrifugally Cast and Filament Wound, in its entirety.
  - l. Part 3, Execution: Delete Subsections 3.08, Reinforced Concrete HDPE Lined Sewer Pipe, in its entirety.
  - m. Part 3, Execution: Delete Subsections 3.010, Air Relief Valves, in its entirety.

END OF DOCUMENT

SECTION 01 45 00  
QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance and control of installation.
- B. Inspection and testing laboratory services.
- C. References.
- D. Field samples.
- E. Manufacturers' field services and reports.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Manufacturer shall have the minimum number of years of proven successful experience required in each section in the design, manufacture, and servicing of Products specified.
- B. In lieu of the required experience, manufacturer may provide a cash deposit or bond equal to the cost of the Product, but pro-rated to the number of years of actual experience.
- C. Products from a manufacturer who does not meet the experience requirements must meet technical requirements.
- D. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- E. Comply fully with manufacturers' instructions, including each step in sequence.
- F. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- G. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- H. Perform work by persons qualified to produce workmanship of specified quality.
- I. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- J. The Contractor shall be responsible for providing equipment and products that comply with these requirements.

1.04 INSPECTION AND TESTING LABORATORY SERVICES

- A. Provide the services of an independent firm to perform soil and material inspections, testing, vibration monitoring, and other services specified in the individual specification sections of this Contract Document.

- B. Testing laboratory shall be authorized to operate in North Carolina.
- C. Testing laboratory shall have a full-time registered Engineer on staff to review services.
- D. Testing equipment shall be calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards (NBS) standards or accepted values of natural physical constants.
- E. Prior to start of Work, submit testing laboratory name, address, and telephone number, names of full-time registered engineer, field inspector, and responsible project manager. Laboratory subject to the approval of the Engineer.
- F. The same independent firm shall perform retesting. Contractor shall pay for retesting required by the failure of the initial test to meet the requirements of the specifications.

#### 1.05 LABORATORY RESPONSIBILITIES

- A. Testing Laboratory shall have the following responsibilities for the Project:
  1. Attend pre-construction conferences and progress meetings as required by the Engineer.
  2. Collect and test samples of mixes.
  3. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
  4. Perform inspection, sampling, monitoring, and testing in accordance with Contract Documents and specified standards.
  5. Ascertain compliance of soil compaction and material mixes with requirements of Contract Documents.
  6. Promptly notify Engineer and Contractor of observed irregularities or nonconformance of Work or Products.
  7. Perform additional inspections and tests required by Engineer when specified tests have failed.

#### 1.06 LIMITS ON TESTING LABORATORY AUTHORITY

- A. The authority of the Testing Laboratory is limited as follows:
  1. May not alter requirements of Contract Documents.
  2. May not approve or accept any portion of the Work.
  3. May not assume duties of Contractor.
  4. Has no authority to stop the Work.

#### 1.07 LABORATORY REPORTS

- A. After each inspection and test, the independent testing firm shall submit report(s) as specified in Section 01 33 00, Submittal Procedures.

#### 1.08 CONTRACTOR RESPONSIBILITIES

- A. Deliver to laboratory at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
- B. Cooperate with laboratory personnel, and provide access to the Work and to manufacturer's facilities as specified.
- C. Provide incidental labor and facilities to provide access to Work to be tested, to obtain and handle samples at the site and at source of products to be tested, to facilitate tests and inspections, storage, and curing of test samples.

- D. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring inspection and testing services.

1.09 FIELD SAMPLES

- A. Install field samples at site as required by individual specification sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Remove field samples and clean area prior to final inspection unless specified otherwise in the individual specification sections.

1.10 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. Require suppliers and manufacturers to provide a qualified technician for required services as outlined by the individual equipment and material specification sections.
- B. Submit qualifications of technician to Engineer 30 days in advance of required work. Technician subject to approval of Engineer.
- C. Technicians shall report observations, site decisions, and instructions given to Contractor, installers, and Owner's staff that are supplemental or contrary to manufacturers' written instructions directly to the Engineer.
- D. Submit test and start-up report as specified in Section 01 33 00, Submittal Procedures.
- E. During performance of any work on-site the technician shall observe all safety requirements as specified by the Contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 50 00  
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary Utilities: Electricity, lighting, telephone service, water, and sanitary facilities.
- B. Work on public right-of-way.
- C. Traffic control.
- D. Temporary Controls: Barriers, enclosures and fencing, water control, dust control, erosion and sediment control, and protection of the work.
- E. Construction Facilities: Access roads, parking, progress cleaning, and project signage.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements

1.03 TEMPORARY UTILITIES

- A. Electricity
  - 1. Provide and pay for required power service for construction from Utility source.
- B. Lighting
  - 1. Provide and maintain lighting for construction operations.
  - 2. Provide and maintain lighting to exterior staging and storage areas after dark for security purposes.
- C. Telephone Service
  - 1. Provide, maintain and pay for telephone service to field office as required by Contractor.
- D. Water
  - 1. Provide, maintain, and pay for suitable quality water service required for construction operations.
  - 2. Where practical, Owner will provide access to water for use during construction through a metered connection. Contractor shall be billed monthly at Owner's published water rates. Contractor shall follow procedure for obtaining metered connection as outlined in the City of Raleigh Public Utilities Handbook.
  - 3. Contractor shall be required to extend water lines or provide hauling as required for Contractor's use from existing hydrants, as designated by the Owner.
- E. Sanitary Facilities
  - 1. Provide and maintain required facilities and enclosures, as necessary to comply with the laws and ordinances of the authority having jurisdiction and the State of North Carolina.
  - 2. General Contractor shall provide the above sanitary facilities for all contractors, sub-contractors, Owner and Engineer at the Project Site.

3. Existing facilities shall not be used.

#### 1.04 WORK ON PUBLIC RIGHTS-OF-WAY

- A. Work on this Project may cross rights-of-way under jurisdiction of the N.C. Department of Transportation (NC DOT):
  - Work in Wake County:
  - Division 5, District 1
  - District Engineer
  - 4009 District Drive, Raleigh, NC 27607 (919) 733-3213
- B. Work shall comply with requirements of the Encroachment Agreement(s) as attached to Project Manual.
- C. Contractor shall post Bonds with NCDOT as required by Encroachment Agreement(s) and provide a copy of the bonds to the Engineer.
- D. Prior to start of Work, notify the Office of the N.C. Department of Transportation as indicated in the encroachment agreement(s). Also notify the Owner.
- E. Work shall conform to the requirements and be subject to the approval of the above agency(ies).
- F. Contractor shall be responsible to the Owner for the cost of all DOT inspection that is billed to the Owner by the NCDOT as indicated in the Special Provisions of the Encroachment Agreement(s). Such cost shall be deducted from the Contractor's pay request.
- G. Submit letter to the above District Engineer(s) when work is complete, as required by the Encroachment Agreement(s).
- H. Submit letter of approval for completed Work from the above agency(ies) with Final Payment Request.
- I. Clean rights-of-way as work progresses and daily.
- J. Power broom existing pavement as work progresses.
- K. Work shall be in accordance with the latest edition of the N.C. Division of Highways, "Policies and Procedures for Accommodating Utilities on Highway Right-of -Way", "Standard Specifications for Roads and Structures", and "Roadway Standard Drawings."
- L. Consult with the above agency(ies) in establishing public thoroughfares to be used for haul routes and site access.
- M. Confine construction traffic to designated haul routes.
- N. Provide traffic control along haul routes to regulate traffic, to minimize interference with public.
- O. Maintain access to fire hydrants, free of obstructions.
- P. Maintain pedestrian access at all times.

#### 1.05 TRAFFIC CONTROL

- A. On public and private road rights-of-way, provide traffic control devices when construction encroaches within the right-of-way. Devices shall include, but not limited to, cones, drums, flares, warning signs, temporary pavement marking, warning lights, and flagman.

- B. Traffic control devices shall provide the following:
  - 1. Protection of motorists, pedestrians, and workers from accident hazards.
  - 2. Advance public information of proposed work sites.
  - 3. Establishment of an orderly and safe flow of traffic and to minimize traffic congestion.
  - 4. Parking notifications and/or provisions for alternate public parking as shown on Drawings.
  - 5. Pedestrian detours meeting ADA requirements.
  - 6. Provision of access for emergency vehicles.
- C. Traffic control devices shall be used in accordance with the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD) and the North Carolina's Supplement to the manual.
- D. Provide personnel trained in traffic control.

## 1.06 TEMPORARY CONTROLS

- A. General
  - 1. Temporary controls shall be the responsibility of each Contractor for their respective work unless noted otherwise.
- B. Barriers
  - 1. Provide barriers to prevent unauthorized entry to construction areas for the safety of the public, the protection of the work and workers, and to protect existing facilities and adjacent properties from damage from construction operations.
  - 2. Provide protection for plant life designated to remain. Replace damaged plant life.
  - 3. Protect vehicular traffic, stored materials, site, and structures from damage.
- C. Water Control
  - 1. Grade site to drain. Provide, operate, and maintain pumping equipment to maintain excavations free of water.
  - 2. Protect site from running water.
- D. Dust Control
  - 1. Execute Work by methods designed to minimize raising dust from construction operations.
  - 2. Provide positive means to prevent airborne dust from dispersing into atmosphere.
- E. Erosion and Sediment Control
  - 1. Provide Erosion and Sediment Control as indicated on the Drawings and specified in Section 31 25 00, Erosion Control and Section 31 11 00, Clearing and Grubbing.
- F. Noise Control:
  - 1. Equipment being used for construction shall have standard equipment manufacturer's mufflers and noise-reducing equipment in use and in proper operating condition.
- G. Protection of Installed Work
  - 1. Protect installed Work and provide special protection where specified in individual specification Sections.
  - 2. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.

3. Prohibit traffic in landscaped or non-traffic load bearing areas.

#### 1.07 CONSTRUCTION FACILITIES

##### A. General

1. Construction facilities shall be the responsibility of each Contractor for their respective work unless noted otherwise.

##### B. Access Roads/Drives

1. Contractor shall construct and maintain temporary drives as necessary to access public thoroughfares and existing drives to serve the construction area.
2. Provide means of removing mud from vehicle wheels before entering streets.
3. Access roads shall be restored to a condition that equals or exceeds the condition that exists prior to construction activity.

##### C. Parking

1. When site space is not adequate arrange for temporary off site surface parking areas to accommodate construction personnel.
2. Do not allow vehicle parking in existing right-of-way or to block existing drives.
3. Do not allow vehicle parking on private property without prior approval.

##### D. Progress Cleaning

1. Maintain areas to be free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
2. Remove waste materials, debris, and rubbish from site periodically and dispose off site.

#### 1.08 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- ##### A. Remove temporary above grade or buried utilities, equipment, facilities, and materials, prior to Final Inspection.

- ##### B. Clean and repair damage caused by installation or use of temporary work.

- ##### C. Restore existing facilities used during construction to original or better condition. Restore permanent facilities used during construction to specified condition.

#### PART 2 PRODUCTS (NOT USED)

#### PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 51 40  
TEMPORARY BYPASS PUMPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnishing, installing, and testing temporary sewage bypass pumping systems that divert wastewater around a work area.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements

1.03 REFERENCES

- A. Publications are referred to in the text by basic designation only.
  - 1. American Society for Testing and Materials (ASTM)
    - a. D1248 Polyethylene Plastics Extrusion Materials for Wire and Cable
    - b. D2657 Heat Fusion Joining of Polyolefin Pipe and Fittings
    - c. D3261 Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

1.04 GENERAL

- A. Contractor shall maintain sewer service at all times.
- B. If the Owner allows outages without a bypass pumping system in place, that criteria will be identified in Section 01 35 13 – Specific Project Requirements or on the Drawings.
- C. Provide all materials, labor, equipment, power, maintenance, associated items and superintendence to implement temporary pumping systems for diverting flow as required to maintain continuous operation of existing facilities prior to completion. Provide all additional temporary pumping systems needed to meet Contractor's means and methods at no additional cost to Owner.
- D. Bypass pumping of existing sewer lines is required when blasting in proximity of existing sewer lines in accordance with Paragraph 3.06 of Section 31 23 33 – Trenching for Utilities.

1.05 DEFINITIONS

- A. Bypass Pumping System - The bypass pumping system shall consist of all equipment, pipe, valves, plugs, power supplies and other appurtenances required to divert sewer flow from sewer or sewer pumping stations. The bypass pumping system shall be comprised of pumping setups in addition to all bypass pipe

necessary to complete the work.

- B. Bypass Pipe - The bypass pipe shall consist of the pipe, valves and other appurtenances including, but not limited to, air relief valves and dewatering connections. The bypass pipe includes both the suction and discharge pipe for each bypass setup.
- C. Primary Pump Setup - The primary pump setup shall be capable of pumping the peak flow, be connected to the bypass pipe, have an isolation valve, have a check valve, and be complete with power supplies.
- D. Backup Pump Setup - The backup pump setup is located at each Primary Pump Setup. The backup pump setup shall be capable of pumping the peak flow, be operational, be connected to the bypass pipe, have an isolation valve, have a check valve, and be complete with powersupplies.
- E. Discharge Connection - The discharge connection is where the pumped flow exits the bypass pipe and is introduced into a gravity sewer or force main.
- F. Peak Flow or Peak Wet Weather Flow - The peak flow that may occur in a sewer inclusive of wet weather flow produced by groundwater infiltration, precipitation and snow melt. This value shall also include peak infiltration and inflow.
- G. Operational Test - The period of specified duration that the installed system is tested to verify operational integrity of a system prior to placing the system in service. Operational testing requires that representatives of the equipment manufacturer be on site for timely identification and resolution of system issues.
- H. Low Flow Period - The time of day when the wastewater system flow rate reaches the diurnal minimum. It typically occurs between the hours of \*\* 12 AM and 6 AM \*\*.

#### 1.06 SUBMITTALS

- A. Submittals are to be in accordance with Section 01 33 00 – Submittal Procedures.
- B. Submit a bypass pumping plan. No construction shall begin until all provisions and requirements have been reviewed by the Engineer. The submittal shall include, but not be limited to, the following:
  - 1. A written description of the bypass pumping plan for each location where bypass pumping may be used.
  - 2. Schedule separated by site.
  - 3. Address access and security of the pump system(s).
  - 4. Quantity, capacity and location of all pumping equipment.
  - 5. Pump performance curves and head capacity curves demonstrating the capability to meet all required flows.
  - 6. The size, type, and routing of all suction and discharge pipe and the means of connecting the system.
  - 7. Calculations of static lift, frictional losses and flow velocity.
  - 8. Sewer plugging plan, including type, location, and manufacturer of plugs with emergency release procedures.
  - 9. Thrust and restraint block sizes and locations, if necessary.
  - 10. Any temporary pipe supports, location, and anchoring requirements.

11. Description of controls, monitoring, and emergency power source.
  12. Method of noise control for each pump and/or generator for overnight operation.
  13. Provide evidence that the bypass pipe material and thickness can withstand all normal operating and surge pressures with a safety factor of 2.0.
  14. Denote any conditions that will cause pumps to lose suction lift (prime) and describe procedures to rectify.
  15. Show that the emergency switchover from primary to backup pumping will be automatic should primary pumps fail.
  16. Show emergency plan to be used if stream flooding occurs at work site. Provide evidence that Contractor is insured in the event of flooding resulting in the damage or loss of bypass pump and equipment.
  17. Show suction and discharge piping is protected from possible damage from varying stream flows and construction activities.
  18. If identical bypass pumping setups are to be used as construction proceeds along the alignment (i.e., regularly moving the same bypass pump setup along the alignment to divert wastewater around the work), indicate that the setup is "typical in nature" in the plan.
- C. The plan must be signed and sealed by a North Carolina registered Professional Engineer.
- D. Engineer's and/or Owner's review will be limited to verification of compliance with performance requirements only.

#### 1.07 TEMPORARY PUMPING COORDINATION MEETING

- A. After shop drawing approval, schedule a coordination meeting with the Owner, Engineer, Contractor, and Subcontractor or temporary pump supplier, if applicable.
- B. The meeting shall occur at least 1 week prior to installing temporary bypass pumps.
- C. No temporary pumping shall take place until satisfactory completion of the associated coordination meeting.
- D. Demonstrate all temporary pumping systems to Owner and/or Engineer for conformance with the Contract Documents prior to use.

#### 1.08 PERFORMANCE REQUIREMENTS

- A. Design the installation and operation of temporary pumping systems in accordance with Laws and Regulations, including local noise and light ordinances.
- B. The bypass system must be designed by the Contractor and provide for uninterrupted service to the existing sewer system.
- C. For all bypass pump setups, multiple pumps are necessary as follows.
  1. For each Primary Pump Setup a Backup Pump Setup sized to meet the peak flow shall be installed at each bypass pump location, ready for use in the event of a primary pump failure.
  2. The Backup Pump Setup shall be provided with separate suction pipe and connected to the discharge header with controls that allow the pump to be

automatically placed in service.

D. The following table identifies bypass pump requirements.

Location	Manhole Diameter (FT)	Sewer Diameter (IN)	Peak Wet Weather Flow (GPM)	Speed (Constant or Variable)
State Street MH #1	4	12	1,000	Variable
State Street MH #2	4	12	1,000	Variable
State Street MH #3	4	12	1,000	Variable
State Street MH #4	4	12	1,000	Variable
Banbury MH #1	4	6	100	Constant
Banbury MH #2	4	6	100	Constant
Banbury MH #3	4	6	100	Constant
Banbury MH #4	4	6	100	Constant
Woodrow MH #1	4	6	500	Constant
Woodrow MH #1	4	6	500	Constant

- E. Peak wet weather flows are estimated. In some instances, the Owner may have additional data that defines diurnal variations and this information can be made available to the Contractor, if requested. The Contractor shall verify peak wet weather flow prior to bypass pumping plan submittal.
- F. The temporary Bypass Pumping System shall be monitored continuously (24 hours per day, 7 days per week) during operation by an on-site representative of the Contractor trained and certified by the pump supplier.
- G. Install, test and maintain telemetry to monitor operation of the pumps and manhole water levels. The telemetry system shall first notify the Contractor's local representative designated to monitor the pumps, then other individuals so designated by the Contractor and finally up to two individuals so designated by the Owner. The telemetry system does not replace the requirement for continuous on-site monitoring.
- H. Primary pumps shall be equipped with noise reduction features that limit the noise output to 70 dbA at 30 feet from the equipment. Backup pumps do not have to be critically silenced.
- I. Provide pressure and vacuum gauges on the suction and discharge headers.

#### 1.09 SPECIAL PRECAUTIONS

- A. Contractor is responsible for fines levied on Owner by State, Federal, and/or other agencies due to spills caused by failure of temporary pumping systems.
- B. Provide barriers in all locations where temporary pumps, pipe and other accessories are located in roadways, driveways and other vehicle-accessed areas.
- C. When overnight pumping is necessary, provide security fencing to prevent tampering when not located within a secured area or continuously monitored by



Contractor personnel posted at the pump location.

## PART 2 - PRODUCTS

### 2.01 PUMPS

- A. The pumps and drives shall be rated for continuous duty and shall be capable of pumping the required flow ranges without surging, cavitation or vibration. Pumps shall not overload drivers at any point on the pump operating curve.
- B. Pumps shall be suitable for use with raw, unscreened sewage and have a minimum solids passing capability of 3-inches.
- C. Pumps shall be self-contained units designed for temporary use.
- D. Pumps shall have fully automatic self-priming units that do not require the use of foot-valves, vacuum pumps or diaphragm pumps in the priming system. Alternatively, pumps can be submersible type.
- E. All pumps must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of flows.
- F. Provide the necessary start/stop/variable speed and level controls for each pump.
- G. The primary pumps shall be diesel powered.
  - 1. Contractor shall be responsible for providing and storing a sufficient quantity of diesel fuel on site to continually operate the primary pumps for at least **\*\*3\*\*** consecutive days.
  - 2. Contractor shall check the pump fuel levels and shall refill the tanks to full capacity on a daily basis.
- H. Each pump and driver shall be rated for continuous duty operation over the specified range of conditions without cavitating, overheating, excessive vibration and noise. In addition, each pump and driver shall be rated to operate intermittently at shut off head against a closed discharge valve for periods of not less than 5 minutes without excessive cavitation, overheating, or vibration.
- I. Contractor will not be permitted to stop or impede the main flows under any circumstances except as otherwise defined under the Sequence of Construction.

### 2.02 PIPE

- A. In order to prevent accidental spillage, all bypass pipe must be rigid or semi-rigid pipe with positive, leak proof connections. All pipe materials and joints for temporary pipe systems must be:
  - 1. High Density Black Polyethylene Pipe - ANSI/ASTM D1248, butt heat fusion type joint fittings shall conform to ASTM D2657 and D3261.
  - 2. Quick-disconnect galvanized steel pipe, 8-inch diameter maximum.
- B. Layflat flexible hose is not permitted, except for pumping wastewater from a single

lateral when necessary.

- C. If the Contractor elects to route pipe through box culverts or large diameter storm drains to traverse under roads, HDPE pipe is required regardless of bypass pipe diameter.
- D. Pipe shall be rated for at least twice the operating pressure.

## 2.03 TEMPORARY PLUGS

- A. Provide temporary plugs, as required, for successful operation of the temporary pumping systems.
- B. Plugs shall be designed for the specific purpose of providing temporary plugging of active pipes.
- C. All plugs shall be firmly attached to a stationary object at ground level by a cable in order to prevent loss of plugs in pipelines.
- D. Sewer plugs shall be capable of accommodating the maximum allowable surcharge heads within the sewer system that may be experienced during construction.
- E. The plugs shall be readily removed from the system during emergency shutdowns.
- F. Sewer plugs shall be pneumatic.

## 2.04 PIPE SUPPORTS

- A. Pipe supports shall be provided for all pipe that is elevated above the ground.

## 2.05 TELEMETRY SYSTEM

- A. The telemetry system shall consist of high water float(s) and automatic dialer with a battery backup.
- B. The dialer system shall be provided with either cellular or satellite phone.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. Install, operate and maintain temporary pumping systems and appurtenances, including but not limited to, associated pipe, valves, instrumentation, controls and accessories, in accordance with the manufacturer's instructions.
- B. Provide all oil, fuel, grease, lubricants, tools and spare parts required for operation and maintenance of the temporary pumping systems for the duration of use.
- C. Adequate hoisting equipment for each pump and accessory shall be maintained on site.
- D. The Bypass Pumping System shall remain operable until all components of new work requiring the temporary pumping system have been completed and tested to

the satisfaction of the Owner/Engineer.

1. When the bypass pumping system is for Work on a mechanical system (i.e. a pump station, bar screen, motorized diversion structure, etc.), the bypass pumping system shall remain in place and ready for automatic operation for at least **\*\*7\*\*** calendar days once the mechanical systems are placed back into reliable service.
- E. Some pipe types require deflection testing 30 days after completion of backfill (reference Section 33 31 11, Sanitary Sewer System). Temporary bypass pumping may be discontinued after successful completion of all testing except for the 30-day deflection test. Bypass pumping will be required during the 30-day deflection testing to eliminate flow on the new line during the testing. Bypass pumps for temporarily bypassing the flow of a new line for performing the deflection test may be sized for peak anticipated flow during the test period. Backup pumps are not required for this testing operation.
- F. If temporary bypass pumping is required due to blasting in the proximity of an existing sewer line, then bypass pumping may be discontinued after meeting the requirements set forth in Section 31 23 33, Trenching for Utilities.
- G. If temporary bypass pumping was required due to crossing under or within close proximity to an existing sewer then bypassing may be discontinued after backfilling has been completed.
- H. The design of the bypass pumping system must allow for prompt dewatering of the system during periods of non-use or if leakage occurs. The sewer system may be returned to gravity flow during periods when bypass pumping is not necessary for the installation of work.
- I. The Contractor will not be permitted to stop or impede the sewer flow under any circumstances without having the primary pumps operational.
- J. Contractor shall provide or fabricate a fall protection covering for openings at suction or discharge piping connections (i.e., open manhole risers, etc.). Covering shall remain in place at all times unless installing or removing temporary bypass system.

### 3.02 SITING OF FACILITIES

- A. In all instances, traffic flow must be maintained to all businesses unless indicated otherwise on the Contract Drawings.
- B. Ramps may be installed to permit access to private driveways. Ramp slopes shall be appropriate for property owners' vehicles.
- C. The pipeline must be located off streets and sidewalks (when not closed to vehicle or pedestrian traffic).

### 3.03 PREPARATION

- A. Precautions
  1. The Contractor is responsible for locating any existing utilities in the area

selected for installation of the bypass pumps and pipelines. The Contractor shall minimize the disturbance to existing utilities and shall obtain approval from the Owner for any relocation of the bypass pipeline. All costs associated with the relocation of utilities and obtaining approvals shall be paid by the Contractor.

2. During all bypass pumping operations, the Contractor shall protect the bypass pumping facilities and existing collection system from damage inflicted by equipment. The Contractor shall be responsible for all intentional or accidental physical damage to the bypass pumping system caused by human or mechanical failure or interference.
3. During installation of the bypass pumping pipes, the Contractor shall make every effort to minimize the disruption of private property and the inconvenience for neighborhood residents.
4. The Contractor shall protect all mature vegetation and structures or other obstacles in the path of the bypass pipe from damage through use of shields and buffering devices. All private property that must be relocated to construct the work must be stored at a location acceptable to the property owner.
5. In instances where fences must be disturbed for the construction of the bypass pipe, the property owner shall be consulted to determine if the installation of temporary fencing shall be required.
6. The Contractor shall maintain sewer flow around the work area in a manner that will not cause surcharge or damage to tributary sewers and that will protect public and private property from damage.

#### 3.04 INSTALLATION AND REMOVAL

- A. The temporary bypass pumping system shall be tested before placing the system in operation. Testing periods shall begin between the hours of 8:30 a.m. and 3:00 p.m., Monday through Thursday. Testing of bypass pumping system shall NOT be allowed Friday through Sunday, on the Owner's scheduled Holidays, or on the day immediately prior to an Owner's scheduled Holiday. In addition, testing of bypass pumping system shall only be performed during the Owner's normally scheduled work days. Testing shall include leakage testing, pressure testing, and operational testing.
  1. Leakage and pressure test: Contractor shall perform leakage and pressure testing using clean water (potable or stream). Perform testing at the peak wet weather design flow condition when sufficient clean water is available. When sufficient clean water is not readily available to cause the setup to operate at the peak wet weather flow condition, perform testing using the maximum available clean water. Visually inspect the bypass pump setup and entire bypass pipe for leaks.
  2. Operation test: Contractor shall operate the temporary bypass pumping system for a continuous 2 hours to demonstrate reliable operation of the entire system, including but not limited to pumps and controls, to the satisfaction of the Owner, before removing existing sanitary sewer from service. Ensure consecutive pump operation occurs by activating each float/pressure sensor in the sequence intended.
- B. When plugging is no longer needed for performance of the work, the plugs are to be removed in a manner that permits the wastewater flow to slowly return to

normal without surge, exceeding downstream pipe or pumping station capacity, or causing other major disturbances downstream.

- C. If the Contractor elects to route pipe through box culverts or large diameter storm drains to traverse under roads, to the maximum extent practical, the pipe shall be out of the stream flow path and to the side of the culvert where visible at all times.
- D. The Contractor shall remove manhole and/or box sections or make connections to the existing sewer and construct temporary bypass pumping structures only at the access locations indicated on the Contract Drawings and as may be required to provide adequate suction or discharge pipe.
- E. When bypass pump operations affect areas outside of the alignment including private property, upon completion of the bypass pumping operations, the Contractor shall remove all pipe, restore all property to pre-construction condition or better, and shall restore all pavement and sidewalks. The Contractor is responsible for obtaining any approvals for placement of the bypass pipe within public rights-of-ways.
- F. Upon system removal, all wastewater must be discharged into the wastewater collection system and temporary bypass pipes flushed with clean water.

### 3.05 QUALITY CONTROL AND MAINTENANCE

- A. Inspection during bypass pumping operations: Contractor shall inspect the Bypass Pumping System every two (2) hours to ensure that the system is working correctly.
- B. Logging of Inspections: Contractor shall maintain a written log of all inspections on a two (2) hour basis during all temporary bypass pumping operations.
- C. Maintenance service: Contractor shall ensure that the temporary pumping system is properly maintained and that a responsible and competent mechanic/operator shall be on call at all times.

END OF SECTION

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SECTION 01 60 00  
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements

1.03 PRODUCTS

- A. Products: Means New material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying, and erection of the Work. Products may also include existing materials or components specified in the Contract Documents for reuse.

1.04 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Ship fabricated assemblies in largest sections permitted by carrier regulations and properly marked for ease of field erection.
- C. Promptly inspect shipments to assure that Products comply with specified requirements, quantities are correct, and Products are undamaged.
- D. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.05 STORAGE AND PROTECTION

- A. Keep on site storage of material to a minimum. Owner shall approve of any onsite storage in advance.
- B. Store and protect Products in accordance with manufacturer's instructions in unopened original packages, with seals and labels intact and legible. Store sensitive Products in weather-tight, light blocking, or climate-controlled enclosures, as required.
- C. For exterior storage of fabricated Products, place on sloped supports, above ground.
- D. Provide off site storage and protection when site does not permit on site storage.
- E. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

- F. Store loose granular Products on solid flat surfaces in a well drained area. Prevent mixing with foreign matter.
- G. Arrange storage of Products to permit access for inspection. Periodically inspect to assure Products are maintained under specified conditions.

#### 1.06 DAMAGED PRODUCTS

- A. Remove damaged Products from Project site.

#### 1.07 PRODUCT OPTIONS

- A. Products Specified by Reference Standards: Product meeting standard and specific requirements of these specifications.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming Three Manufacturers with an "or equal." Provision for Substitutions: Submit a request for substitution for manufacturer not named during the shop drawing submittal.

#### 1.08 SUBSTITUTIONS

- A. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
- B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- C. Request constitutes a representation that Contractor:
  - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
  - 2. Shall provide same warranty for Substitution as for specified product.
  - 3. Shall coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
  - 5. Shall reimburse Owner for review or redesign services associated with reapproval by authorities.
- D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- E. Substitution Submittal Procedure:
  - 1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
  - 2. Submit shop drawings, product data, and certified test results attesting to proposed product equivalence.
  - 3. Engineer will notify Contractor, in writing, of decision to accept or reject request.



PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 70 00  
EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination.
- B. Cutting and patching.
- C. General installation provisions.
- D. Cleaning and protection.
- E. Final inspection and tests.
- F. Close out procedures.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements

1.03 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specifications sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

1.04 CUTTING AND PATCHING

- A. General
  - 1. Do not cut, or alter the work of other contractors without written approval of the Engineer.
  - 2. Work removed shall be replaced or repaired by the Contractor who removed or damaged the work, and a craftsman, skilled in the trade that the particular replacement requires, shall do the work. (i.e.: A mason, not an electrician, shall replace masonry removed by the Electrical Contractor.)
  - 3. Conduct removal operations in a manner that will eliminate hazards to persons and property and prevent the release of dust and rubbish into the air. Existing work, which is to remain and is damaged by Contractor's operations shall be replaced with new materials at no additional cost to the Owner.
  - 4. For replacement of work removed, comply with specifications for type of work to be done.
- B. Inspection
  - 1. Inspect existing conditions of work including elements subject to movement or damage during cutting and patching, and excavating and backfilling.
  - 2. After uncovering work, inspect conditions affecting installation of new products.

- C. Preparation prior to cutting
  - 1. Provide shoring, bracing, and support as required to maintain structural integrity of project and in compliance with OSHA requirements.
  - 2. Provide protection for other portions of project.
  - 3. Provide protection from elements.
- D. Performance
  - 1. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances, finishes.
  - 2. Execute cutting and demolition by methods to prevent damage to other work and provide proper surfaces to receive installation of repairs and new work.
  - 3. Execute excavating and backfilling as specified in Section 31 23 33, Trenching for Utilities.
  - 4. Restore work, which has been cut or removed; install new products to provide completed work in accordance with requirements of contract documents.
  - 5. Refinish entire surfaces as necessary to provide an even finish.
    - a. Continuous Surfaces: To nearest intersections.
    - b. Assembly: Entire Refinishing.

#### 1.05 GENERAL INSTALLATION PROVISIONS

- A. Require Installer of each major component to inspect conditions under which Work is to be performed. Clean substrate surfaces prior to applying next material or substance. Do not proceed until unsatisfactory conditions have been corrected.
- B. Comply with manufacturer's recommendations to the extent that they are more explicit or stringent than requirements contained in Contract Documents.
- C. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- D. Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Engineer for final decision.
- E. Check dimensions before starting each installation.
- F. Install each component during optimum weather conditions and at the appropriate point in the project in order to ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- G. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- H. Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Engineer for final decision.

#### 1.06 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration.
- B. Clean and maintain completed construction as frequently as necessary through the construction period. Adjust and lubricate components as required to ensure proper operation.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, or dangerous exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
  - 1. Excessive static or dynamic loading.
  - 2. Excessive internal or external pressures.
  - 3. Excessively high or low temperatures.
  - 4. Thermal shock.
  - 5. Air contamination or pollution.
  - 6. Water or ice.
  - 7. Abrasion.
  - 8. Heavy traffic.
  - 9. Misalignment.
  - 10. Improper shipping or handling.
  - 11. Theft.
  - 12. Vandalism.
  - 13. Direct sunlight
- D. Clean Project prior to final inspection. Project clean up shall include, but not be limited to, the following:
  - 1. Clean surfaces exposed to view as recommended by manufacturer.
  - 2. Remove temporary labels.
  - 3. Clean debris from drainage systems.
  - 4. Sweep paved areas.
  - 5. Rake clean landscaped surfaces.
  - 6. Remove waste, and surplus materials.
  - 7. Remove temporary construction facilities.

#### 1.07 FINAL INSPECTION AND TESTS

- A. Complete punch list items within 30 days of receipt from Engineer. Owner may have work not completed within 30 days performed by others with the cost deducted from Contractor's final payment. Additional engineering and inspection services required as a result of Contractor not completing punch list within 30 days shall be at Contractor's expense.

#### 1.08 CLOSE OUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and is complete in accordance with Contract Documents and ready for Engineer's inspection.
- B. Provide submittals to Engineer that are required by governing or other authorities.
- C. Submit set of Record Documents indicating changes during construction as required in Section 01 33 00, Submittal Procedures.

- D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and final amount due.
- E. Submit the following with final Application for Payment:
  - 1. Contractor's Affidavit of Release of Liens to Owner
  - 2. Consent of Surety for Final Payment
  - 3. Affidavit of Payment of Debts and Claims
  - 4. Final Certified Payroll Information
  - 5. Affidavits of Release of Liens from Subcontractors and Suppliers to Contractor.
  - 6. As-built Drawings
  - 7. Certified statement that all final punchlist items have been completed with punchlist attached.
  - 8. Written releases of liability and claims from property owners, for which the Contractor negotiated temporary easements/right-of-entry with for laydown, staging and/or access.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 02 83 13  
LEAD IN CONSTRUCTION

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Action Level

Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8 hour period.

1.1.2 Area Sampling

Sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations but is not collected in the breathing zone of personnel (approximately 1.5 to 1.8 meters 5 to 6 feet above the floor).

1.1.3 Competent Person (CP)

As used in this section, refers to a person employed by the Contractor who is trained in the recognition and control of lead hazards in accordance with current federal, State, and local regulations and has the authority to take prompt corrective actions to control the lead hazard. A Certified Industrial Hygienist (CIH) certified by the American Board of Industrial Hygiene or a Certified Safety Professional (CSP) certified by the Board of Certified Safety Professionals is the best choice.

1.1.4 Contaminated Room

Refers to a room for removal of contaminated personal protective equipment (PPE).

1.1.5 Decontamination Shower Facility

That facility that encompasses a clean clothing storage room, and a contaminated clothing storage and disposal rooms, with a shower facility in between.

1.1.6 High Efficiency Particulate Arrestor (HEPA) Filter Equipment

HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead-contaminated particulate. A high efficiency particulate filter demonstrates at least 99.97 percent efficiency against 0.3 micron or larger size particles.

1.1.7 Lead

Metallic lead, inorganic lead compounds, and organic lead soaps. Excludes other forms of organic lead compounds.

1.1.8 Lead Control Area

A system of control methods to prevent the spread of lead dust, paint chips or debris to adjacent areas that may include temporary containment, floor or ground cover protection, physical boundaries, and warning signs to prevent unauthorized entry of personnel. HEPA

filtered local exhaust equipment may be used as engineering controls to further reduce personnel exposures or building/outdoor environmental contamination.

#### 1.1.9 Lead Permissible Exposure Limit (PEL)

Fifty micrograms per cubic meter of air as an 8 hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more than eight hours in a work day, the PEL shall be determined by the following formula:

$$\text{PEL (micrograms/cubic meter of air)} = 400/\text{No. hrs worked per day}$$

#### 1.1.10 Material Containing Lead/Paint with Lead (MCL/PWL)

Any material, including paint, which contains lead as determined by the testing laboratory using a valid test method. The requirements of this section does not apply if no detectable levels of lead are found using a quantitative method for analyzing paint or MCL using laboratory instruments with specified limits of detection (usually 0.01 percent). An X-Ray Fluorescence (XRF) instrument is not considered a valid test method.

#### 1.1.11 Personal Sampling

Sampling of airborne lead concentrations within the breathing zone of an employee to determine the 8 hour time weighted average concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employees' work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulders, with a radius of 150 to 225 mm 6 to 9 inches and centered at the nose or mouth of an employee.

#### 1.1.12 Physical Boundary

Area physically roped or partitioned off around lead control area to limit unauthorized entry of personnel.

### 1.2 DESCRIPTION

#### 1.2.1 Description of Work

The Contractor shall take paint chip samples of the paint on the existing steel piers as called for on the Contract Drawings, shall submit them to analyzed by a certified laboratory to determine the presence or not of lead based paint, and shall then submit the test results to the Owner. If the test results are negative for the presence of lead-based paint, then no further lead associated work shall be required.

Construction activities impacting PWL or material containing lead which are covered by this specification include the removal of material containing lead in various conditions, located on the pipe support steel piers between existing manholes 2, 3 and 4 in the State Street Work Area and as indicated on the drawings.

#### 1.2.2 Coordination with Other Work

The contractor shall coordinate with work being performed in adjacent areas. Coordination procedures shall be explained in the Plan and shall describe how the Contractor will prevent lead exposure to other contractors performing work unrelated to lead activities.



### 1.3 SUBMITTALS

Submit the following in accordance with Section, Submittals:

#### 1.3.1 Preconstruction Submittals

- a. Paint Chip Sampling Test Results
- b. Occupational and Environmental Assessment Data Report (if objective data is used to justify excluding the initial occupational exposure assessment)
- c. Lead Compliance Plan Including CP Approval (signature, date, and certification number)
- d. Competent Person Qualifications
- e. Training Certification of Workers and Supervisors
- f. Lead Waste Management Plan
- g. Written Evidence That TSD is Approved for Lead Disposal
- h. Certification of Medical Examinations

#### 1.3.2 Test Reports

- a. Sampling Results

#### 1.3.3 Certificates

- a. Testing Laboratory Qualifications
- b. Clearance Certification

#### 1.3.4 Closeout Submittals

- a. Completed and signed hazardous waste manifest from treatment or disposal facility
- b. Waste turn-in documents or weight tickets for non-hazardous wastes that are disposed of at sanitary or construction and demolition landfills

### 1.4 QUALITY ASSURANCE

#### 1.4.1 Qualifications

##### 1.4.1.1 Competent Person (CP)

Submit name, address, and telephone number of the CP selected to perform responsibilities specified in paragraph COMPETENT PERSON (CP) RESPONSIBILITIES. Provide documented construction project-related experience with implementation of OSHA's Lead in Construction standard (29 CFR 1926.62) which shows ability to assess occupational and environmental exposure to lead, experience

with the use of respirators, personal protective equipment and other exposure reduction methods to protect employee health. Submit proper documentation that the CP is trained, licensed, and certified in accordance with federal, State and local laws. The competent person shall be a licensed lead-based paint abatement Supervisor/Project Designer in the State of North Carolina.

#### 1.4.1.2 Training Certification

Submit a certificate for each worker and supervisor, signed and dated by the accredited training provider, stating that the employee has received the required lead training specified in 29 CFR 1926.62(l) and is certified to perform or supervise deleading, lead removal or demolition activities in the state of North Carolina.

#### 1.4.1.3 Testing Laboratory

Submit the name, address, and telephone number of the testing laboratory selected to perform the air analysis, testing, and reporting of airborne concentrations of lead. Use a laboratory participating in the EPA National Lead Laboratory Accreditation Program (NLLAP) by being accredited by either the American Association for Laboratory Accreditation (A2LA) or the American Industrial Hygiene Association (AIHA) and that is successfully participating in the Environmental Lead Proficiency Analytical Testing (ELPAT) program to perform sample analysis. Laboratories selected to perform blood lead analysis shall be OSHA approved.

### 1.4.2 Requirements

#### 1.4.2.1 Paint Chip Sampling and Testing

- a. Paint samples shall be collected by the Paint Chip Sampling method and submitted to the testing laboratory for analysis.
- b. The paint samples shall be analyzed by using a Flame Atomic Absorption (FLAA) Spectrometer by EPA SW-846 3050B/7000B.

#### 1.4.2.2 Competent Person (CP) Responsibilities

- a. Verify training meets all federal, State, and local requirements.
- b. Review and approve Lead Compliance Plan for conformance to the applicable referenced standards.
- c. Continuously inspect PWL or MCL work for conformance with the approved plan.
- d. Perform (or oversee performance of) air sampling. Recommend upgrades or downgrades (whichever is appropriate based on exposure) on the use of PPE (respirators included) and engineering controls.
- e. Ensure work is performed in strict accordance with specifications at all times.
- f. Control work to prevent hazardous exposure to human beings and to the environment at all times.

- g. Supervise final cleaning of the lead control area, take clearance wipe samples if necessary; review clearance sample results and make recommendations for further cleaning.
- h. Certify the conditions of the work as called for elsewhere in this specification.

#### 1.4.2.3 Lead Compliance Plan

Submit a detailed job-specific plan of the work procedures to be used in the disturbance of PWL or MCL. The plan shall include a sketch showing the location, size, and details of lead control areas, critical barriers, physical boundaries, location and details of decontamination facilities, viewing ports, and mechanical ventilation system. Include a description of equipment and materials, work practices, controls and job responsibilities for each activity from which lead is emitted. Include in the plan, eating, drinking, smoking, hygiene facilities and sanitary procedures, interface of trades, sequencing of lead related work, collected waste water and dust containing lead and debris, air sampling, respirators, personal protective equipment, and a detailed description of the method of containment of the operation to ensure that lead is not released outside of the lead control area. Include site preparation, cleanup and clearance procedures. Include occupational and environmental sampling, training and strategy, sampling and analysis strategy and methodology, frequency of sampling, duration of sampling, and qualifications of sampling personnel in the air sampling portion of the plan. Include a description of arrangements made among contractors on multicontractor worksites to inform affected employees and to clarify responsibilities to control exposures.

The plan must be developed by a certified Lead Supervisor or Lead Project Designer in the State of North Carolina.

#### 1.4.2.4 Occupational and Environmental Assessment Data Report

If initial monitoring is necessary, submit occupational and environmental sampling results to the Owner and Engineer within three working days of collection, signed by the testing laboratory employee performing the analysis, the employee that performed the sampling, and the CP.

In order to reduce the full implementation of 29 CFR 1926.62, the Contractor shall provide documentation. Submit a report that supports the determination to reduce full implementation of the requirements of 29 CFR 1926.62 and supporting the Lead Compliance Plan.

- a. The initial monitoring shall represent each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures per 29 CFR 1926.62. The data shall represent the worker's regular daily exposure to lead for stated work.
- b. Submit worker exposure data gathered during the task based trigger operations of 29 CFR 1926.62 with a complete process description. This includes manual demolition, manual scraping, manual sanding, heat gun, power tool cleaning, rivet busting, cleanup of dry expendable abrasives, abrasive blast enclosure removal, abrasive blasting, welding, cutting and torch burning where lead containing coatings are present.

- c. The initial assessment shall determine the requirement for further monitoring and the need to fully implement the control and protective requirements including the lead compliance plan per 29 CFR 1926.62.

#### 1.4.2.5 Medical Examinations

Initial medical surveillance as required by 29 CFR 1926.62 shall be made available to all employees exposed to lead at any time (1 day) above the action level. Full medical surveillance shall be made available to all employees on an annual basis who are or may be exposed to lead in excess of the action level for more than 30 days a year or as required by 29 CFR 1926.62. Adequate records shall show that employees meet the medical surveillance requirements of 29 CFR 1926.33, 29 CFR 1926.62 and 29 CFR 1926.103. Provide medical surveillance to all personnel exposed to lead as indicated in 29 CFR 1926.62. Maintain complete and accurate medical records of employees for the duration of employment plus 30 years.

#### 1.4.2.6 Training

Train each employee performing work that disturbs lead, who performs MCL/PWL disposal, and air sampling operations prior to the time of initial job assignment and annually thereafter, in accordance with 29 CFR 1926.21, 29 CFR 1926.62, and State (10A NCAC 41C .0800) and local regulations where appropriate.

#### 1.4.2.7 Respiratory Protection Program

- a. Provide each employee required to wear a respirator a respirator fit test at the time of initial fitting and at least annually thereafter as required by 29 CFR 1926.62.
- b. Establish and implement a respiratory protection program as required by AIHA Z88.6, 29 CFR 1926.103, 29 CFR 1926.62, and 29 CFR 1926.55.

#### 1.4.2.8 Hazard Communication Program

Establish and implement a Hazard Communication Program as required by 29 CFR 1926.59.

#### 1.4.2.9 Lead Waste Management

The Lead Waste Management Plan shall comply with applicable requirements of federal, State, and local hazardous waste regulations and address:

- a. Identification and classification of wastes associated with the work.
- b. Estimated quantities of wastes to be generated and disposed of.
- c. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and operator and a 24-hour point of contact. Furnish two copies of USEPA and State (in accordance with 15A NCAC 13B 0.0100) and local hazardous waste permits, manifests and USEPA Identification numbers.

- d. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.
- e. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
- f. Spill prevention, containment, and cleanup contingency measures including a health and safety plan to be implemented in accordance with 29 CFR 1926.65.
- g. Work plan and schedule for waste containment, removal and disposal. Proper containment of the waste includes using acceptable waste containers (e.g., 55-gallon drums) as well as proper marking/labeling of the containers. Wastes shall be cleaned up and containerized daily.
- h. Include any process that may alter or treat waste rendering a hazardous waste non hazardous.

#### 1.4.2.10 Environmental, Safety and Health Compliance

In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, State, and local authorities regarding lead. Comply with the applicable requirements of the current issue of 29 CFR 1926.62. Submit matters regarding interpretation of standards for resolution before starting work.

Where specification requirements and the referenced documents vary, the most stringent requirement shall apply. The following State laws, ordinances, criteria, rules and regulations regarding removing, handling, storing, transporting, and disposing of lead-contaminated materials apply:

- a. 10A NCAC 41C .0800
- b. 15A NCAC 13B .0100
- c. Licensing and certification in the state of North Carolina is required.

#### 1.4.3 Pre-Construction Conference

Along with the CP, meet with the Owner's Representative to discuss in detail the Lead Waste Management Plan and the Lead Compliance Plan, including procedures and precautions for the work.

### 1.5 EQUIPMENT

#### 1.5.1 Respirators

Furnish appropriate respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing lead dust, fume and mist. Respirators shall comply with the requirements of 29 CFR 1926.62.

### 1.5.2 Special Protective Clothing

Furnish personnel who will be exposed to lead-contaminated dust with proper disposable or uncontaminated, reusable protective whole body clothing, head covering, gloves, eye, and foot coverings as required by 29 CFR 1926.62. Furnish proper disposable plastic or rubber gloves to protect hands.

Reduce the level of protection only after obtaining approval from the CP.

### 1.5.3 Rental Equipment Notification

If rental equipment is to be used during PWL or MCL handling and disposal, notify the rental agency in writing concerning the intended use of the equipment.

### 1.5.4 Vacuum Filters

UL 586 labeled HEPA filters.

## 1.6 PROJECT/SITE CONDITIONS

### 1.6.1 Protection of Existing Work to Remain

Perform work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition or better as determined by the Owner's Representative.

## PART 2 PRODUCTS

Not used.

## PART 3 EXECUTION

### 3.1 PREPARATION

#### 3.1.1 Protection

##### 3.1.1.1 Notification

- a. Notify the Owner's Representative 20 days prior to the start of any lead work.

##### 3.1.1.2 Lead Control Area

- a. Physical Boundary - Provide physical boundaries around the lead control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that lead will not escape outside of the lead control area.
- b. Warning Signs - Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.62.

### 3.1.1.3 Decontamination Shower Facility

Provide clean and contaminated change rooms and shower facilities in accordance with this specification and 29 CFR 1926.62.

### 3.1.1.4 Eye Wash Station

Where eyes may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes shall be provided within the work area.

### 3.1.1.5 Personnel Protection

Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking or application of cosmetics is not permitted in the lead control area. No one will be permitted in the lead control area unless they have been appropriately trained and provided with protective equipment.

## 3.2 ERECTION

### 3.2.1 Lead Control Area Requirements

Establish a lead control area by completely establishing barriers and physical boundaries around the area or structure where PWL or MCL removal operations will be performed.

Locate ports to provide a view of the required work from the exterior of the enclosed contaminated area. Glaze ports with laminated safety glass.

## 3.3 APPLICATION

### 3.3.1 Lead Work

Perform lead work in accordance with approved Lead Compliance Plan. Use procedures and equipment required to limit occupational exposure and environmental contamination with lead when the work is performed in accordance with 29 CFR 1926.62 or 40 CFR 745, and as specified herein. Dispose of all PWL or MCL and associated waste in compliance with federal, State, and local requirements.

### 3.3.2 Paint with Lead or Material Containing Lead Removal

Manual or power sanding or grinding of lead surfaces or materials is not permitted unless tools are equipped with HEPA attachments or wet methods. The dry sanding or grinding of surfaces that contain lead is prohibited. Provide methodology for removing lead in the Lead Compliance Plan. Select lead removal processes to minimize contamination of work areas outside the control area with lead-contaminated dust or other lead-contaminated debris or waste and to ensure that unprotected personnel are not exposed to hazardous concentrations of lead. Describe this removal process in the Lead Compliance Plan.

#### 3.3.2.1 Paint with Lead or Material Containing Lead - Outdoor Removal

Perform outdoor removal as indicated in federal, State, and local regulations and in the Lead Compliance Plan. The worksite preparation (barriers or containments) shall be job dependent and presented in the Lead Compliance Plan.

### 3.3.3 Personnel Exiting Procedures

Whenever personnel exit the lead-controlled area, they shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn in the control area:

- a. Vacuum all clothing before entering the contaminated change room.
- b. Remove protective clothing in the contaminated change room, and place them in an approved impermeable disposal bag.
- c. Shower.
- d. Wash hands and face at the site, don appropriate disposable or uncontaminated reusable clothing, move to an appropriate shower facility, shower.
- e. Change to clean clothes prior to leaving the clean clothes storage area.

### 3.4 FIELD QUALITY CONTROL

#### 3.4.1 Tests

##### 3.4.1.1 Air Sampling

Conduct sampling for lead in accordance with 29 CFR 1926.62 and as specified herein. Air sampling shall be directed or performed by the CP.

- a. The CP shall be on the job site directing the air sampling and inspecting the PWL or MCL removal work to ensure that the requirements of the contract have been satisfied during the entire PWL or MCL operation.
- b. Collect personal air samples on employees who are anticipated to have the greatest risk of exposure as determined by the CP. In addition, collect air samples on at least twenty-five percent of the work crew or a minimum of two employees, whichever is greater, during each work shift.
- c. Submit results of air samples, signed by the CP, within 72 hours after the air samples are taken.
- d. Conduct area air sampling daily, on each shift in which lead-based paint removal operations are performed, in areas immediately adjacent to the lead control area. Sufficient area monitoring shall be conducted to ensure unprotected personnel are not exposed at or above 30 micrograms per cubic meter of air. If 30 micrograms per cubic meter of air is reached or exceeded, stop work, correct the condition(s) causing the increased levels. Notify the Owner's Representative immediately. Determine if condition(s) require any further change in work methods. Removal work shall resume only after the CP and the Owner's Representative give approval.

##### 3.4.1.2 Testing of Material Containing Lead Residue

Test residue in accordance with 40 CFR 261 for hazardous waste.



## 3.5 CLEANING AND DISPOSAL

### 3.5.1 Cleanup

Maintain surfaces of the lead control area free of accumulations of dust and debris. The CP shall certify in writing that the area has been cleaned of lead contamination before clearance testing.

#### 3.5.1.1 Clearance Certification

The CP shall certify in writing that air samples collected outside the lead control area during paint removal operations are less than 30 micrograms per cubic meter of air; the respiratory protection used for the employees was adequate; the work procedures were performed in accordance with 29 CFR 1926.62; and that there were no visible accumulations of material and dust containing lead left in the work site. Do not remove the lead control area or roped off boundary and warning signs prior to the Owner's acknowledgement of receipt of the CP certification.

### 3.5.2 Disposal

- a. All material, whether hazardous or non-hazardous shall be disposed in accordance with all laws and provisions and all federal, State or local regulations. Ensure all waste is properly characterized. The result of each waste characterization (TCLP for RCRA materials) will dictate disposal requirements.
- b. Contractor is responsible for segregation of waste. Collect lead-contaminated waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing that may produce airborne concentrations of lead particles. Label the containers in accordance with 29 CFR 1926.62 and 40 CFR 261.
- c. Dispose of lead-contaminated material classified as hazardous waste at a State approved hazardous waste treatment, storage, or disposal facility off Government property.
- d. Store waste materials in U.S. Department of Transportation (49 CFR 178) approved 208 liter 55 gallon drums. Properly label each drum to identify the type of waste (49 CFR 172) and the date the drum was filled. For hazardous waste, the collection drum requires marking/labeling in accordance with 40 CFR 262 during the accumulation/collection timeframe. The Owner's or an authorized representative will assign an area for interim storage of waste-containing drums. Do not store hazardous waste drums in interim storage longer than 90 calendar days from the date affixed to each drum.
- e. Handle, store, transport, and dispose lead or lead-contaminated waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265. Comply with land disposal restriction notification requirements as required by 40 CFR 268.

#### 3.5.2.1 Disposal Documentation

Submit written evidence to demonstrate the hazardous waste treatment, storage, or disposal facility (TSD) is approved for lead disposal by the EPA, State or local regulatory agencies. Submit one copy of the completed hazardous waste manifest, signed and dated by the initial transporter in accordance with 40 CFR 262. Contractor shall provide a

certificate that the waste was accepted by the disposal facility. Provide turn-in documents or weight tickets for non-hazardous waste disposal.

#### 3.5.2.2 Payment for Hazardous Waste

Payment for disposal of hazardous and non-hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility certifying the amount of lead-containing materials or non-hazardous waste delivered is returned and a copy is furnished to the Owner.

END OF SECTION

SECTION 03 30 00  
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SCOPE

- A. Provide labor, materials, and equipment required for placement of cast-in-place concrete.
- B. Work included under this section includes, but is not limited to, the following:
  - 1. Concrete materials
  - 2. Concrete
  - 3. Reinforcement
  - 4. Form work
  - 5. Grout
  - 6. Mixing, placing and curing
  - 7. Concrete finishing

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements
  - 2. Section 33 14 13 Water Distribution System
  - 3. Section 33 31 11 Sanitary Sewer System
  - 4. Section 33 39 00 Reuse Water System

1.03 REFERENCED STANDARDS

- A. The latest revision, at the time of bidding, of the publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
  - 1. American Concrete Institute (ACI)
    - a. 301 Specifications for Structural Concrete for Buildings
    - b. 304 Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
    - c. 305 Guide to Hot Weather Concreting/Standard Specification for Hot Weather Concreting
    - d. 306 Guide to Cold Weather Concreting/Standard Specification for Cold Weather Concreting
    - e. 315 Details and Detailing of Concrete Reinforcement
    - f. 318 Building Code Requirements for Structural Concrete
    - g. 347 Recommended Practice for Concrete Formwork
  - 2. American Society of Testing Materials (ASTM)
    - a. A36 Carbon Structural Steel
    - b. A307 Carbon Steel Bolts Studs and Threaded Rod 60,000 PSI Tensile Strength.
    - c. A615 Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.
    - d. A1064 Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
    - e. C33 Concrete Aggregates.

- f. C39 Test for Compressive Strength of Cylindrical Concrete Test Specimens.
  - g. C94 Ready Mixed Concrete
  - h. C143 Test for Slump of Portland Cement Concrete.
  - i. C171 Sheet Materials for Curing Concrete.
  - j. C192 Making and Curing Concrete Test Specimen.
  - k. C231 Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
  - l. C260 Air Entraining Admixtures for Concrete.
  - m. C309 Liquid Membrane-Forming Compounds for Curing.
  - n. C618 Coal Fly Ash and Raw or Calcined Natural Poxxolan for Use in Concrete.
  - o. C330 Lightweight Aggregate for Structural Concrete.
  - p. C494 Chemical Admixtures for Concrete.
  - q. C1315 Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
  - r. C920 Elastomeric Joint Sealants.
  - s. D1751 Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- 3. N.C. Department of Transportation - Standard Specifications for Roads and Structures (NC DOT).
  - 4. Concrete Reinforcing Steel Institute (CRSI)

#### 1.04 QUALITY ASSURANCE

- A. Concrete work shall conform to the requirements of ACI 318, ACI 301 and CRSI "Manual of Standard Practice" as a minimum.
- B. Methods and materials of work shall conform to the requirements of the standards and codes and recommended practices as referred to within this section.

#### 1.05 SUBMITTALS

- A. Submit the following in accordance with Section, Submittal Procedures:
  - 1. Test Reports:
    - a. Laboratory Mix Design: Mix design shall be in accordance with ACI 318, Chapter 19, "Concrete Design and Durability Requirements". Design mixes shall be accompanied by test results from an independent commercial testing laboratory, attesting that the proportions selected will produce specified concrete.
    - b. Concrete Tests: Reports for 7-day and 28-day concrete compressive strengths.
  - 2. Catalog Data: Manufacturer standard drawings or catalog cuts for the following. Clearly indicate equipment to be furnished for the Project including options to be provided for the following:
    - a. Water stops.
    - b. Forming accessories
    - c. Admixtures
    - d. Patching compounds
    - e. Joint systems
    - f. Curing compounds
    - g. Dry-shake finish materials.

3. Shop Drawings: Project specific shop drawings for the following:
  - a. Reinforcing Steel: Shop drawings shall comply with ACI SP-66 "ACI Detailing Manual". Shop drawings shall be drawn to a scale of 1/4" = 1' - 0" or larger. Where necessary for clear delineation, complicated wall steel shall be shown on inside and outside elevations. Bars shall be clearly shown, accurately located, and dimension on the plans, elevations, and sections.
4. Delivery Tickets: Submit copy of delivery tickets to the Engineer for each batch of ready mixed concrete in accordance with ASTM C94. Indicate total water content.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Reinforcement Steel: Store reinforcement in a manner that will avoid excessive rusting or coating by grease, oil, dirt, and other objectionable materials. Store in separate piles so as to avoid confusion or loss of identification after bundles are broken.
- B. Protect cement from contamination or damage during handling. Do not use cement which has been damaged, is partially set, lumpy or caked. If the damaged cement is in bags, the entire contents of the bag shall be rejected. Do not use cement salvaged from used bags or reclaimed from cleaning bags.

### PART 2 MATERIALS

#### 2.01 CEMENT

- A. Portland cement shall comply with ASTM C150, Type I unless otherwise specified.
  1. Different brands of cement, different types of cement, or the same brand of cement from different mills shall not be mixed, nor shall they be used alternately, except when authorized by the Engineer.
  2. Measure cement by the bag as packaged by the manufacturer, or by weight; one bag of cement shall be considered to contain 94 pounds net. A barrel is equivalent to 4 bags or 376 pounds net.
  3. When bulk cement is used, the weighing and handling shall be inspected by the Engineer prior to use.
  4. Pozzolans or fly ash conforming to ASTM C618 may be blended with the cement. The maximum pozzolan or fly ash content shall not exceed 25 percent by weight of the total cement material.
- B. A concrete mix design utilizing expansive or shrinkage compensating concrete may be proposed for use in large concrete structures.

#### 2.02 ADMIXTURES

- A. Air-entraining admixtures shall conform to ASTM C260. Testing in accordance with ASTM C233 will be waived provided the admixture has been tested and accepted by the Bureau of Public Roads, U.S. Department of Transportation, or provided a statement is submitted by the manufacturer that the admixture to be furnished for the project has been tested and conforms to ASTM C260.
- B. Water-reducing admixture shall conform to ASTM C494, Type A or Type D and shall be chloride free.
- C. Non-corrosive accelerator admixture shall conform to ASTM C494, Type C or E, and have long term test data proving its non-corrosive effect on metal deck and

reinforcing steel. Admixture shall be "Accelguard" by the Euclid Chemical Company, "Darex Set Accelerator" by W. R. Grace and Company, or equal.

- D. Shrinkage reducing admixture shall be "Eclipse Shrinkage Reducing Admixture" by Grace Construction Products or equal.

## 2.03 AGGREGATES

- A. Fine aggregate for use in classes of concrete (except lightweight concrete) and Portland cement mortars, except mortars for masonry work, shall conform with ASTM C33 and as specified in accordance with NCDOT Section 1014, "Aggregate for Portland Cement Concrete", Para. 1014-1, "Fine Aggregate", and graded as specified in Table 1005-2 of Section 1005. Fine aggregate for lightweight concrete shall be as specified above or lightweight sand as necessary to meet the required density and compressive strength.
- B. Coarse aggregate for normal concrete, except as specified otherwise herein, shall be in accordance with ASTM C33 and graded as specified in NCDOT Table 1005-1 of Section 1005. Coarse aggregate for lightweight concrete shall be as specified in ASTM C330 as required to meet the density and compressive strength requirements.

## 2.04 HIGH EARLY STRENGTH CONCRETE

- A. High early cement (Type III), the non-corrosive accelerator added to the normal cement (Type I) or high strength concrete shall be used only where specified or in an emergency when approved by Engineer. In such cases, the requirements for proportioning and mixing shall be as specified herein.

## 2.05 REINFORCEMENT

- A. Metal reinforcement shall be Grade 60 and conform to ASTM A615. Bars shall be deformed except 1/4 inch round bars which may be plain. Bars shall be formed to the dimensions indicated and approved on the shop drawings. Fabrication and details on reinforcement shall conform to the requirements of the ACI 318, Chapter 25, "Reinforcement Details". Heating for bending shall be employed only when approved by Engineer.
- B. Welded wire fabric shall conform to A1064. Where the size and weight of welded wire fabric is not indicated or specified, it shall be 6 x 6 inch mesh of 0.192 inch nominal-diameter wire and shall weigh approximately 42 pounds per 100 square feet.
- C. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications.
  - 1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
  - 2. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI, Class 1) or stainless steel (CRSI, Class 2).

## 2.06 FORMS

- A. Forms except as otherwise specified shall be of plywood, steel or other approved material. Plywood shall be concrete form plywood, not less than 5/8 inch thick. Surfaces of steel forms shall be free from irregularities, dents, and sags.

## 2.07 MISCELLANEOUS PRODUCTS

- A. Bonding and patching compounds: Compounds for bonding, patching, and structural repairs, shall be "Euco Weld" by Euclid Chemical Company, "Colma Dur Mortar", "Sikadur Hi-Mod" by Sika Chemical Corporation, or equal.
- B. Non-shrink Grout: Factory premixed non-shrink, non-metallic grout with minimum compressive strength of 5,000 PSI at 24 hours and 9,000 PSI at 28 days. Grout shall be "Euco NS" by The Euclid Chemical Company, "Masterflow 713" by Master Builders, SonogROUT 10K by Sonneborn Company, or equal.
- C. Waterstops: Vinyl meeting U.S. Corps of Engineers' Specification CRD-C572-71, 6-inch minimum width and 3/8 inch thickness, of the rib-center bulb or dumbbell type.
- D. Expansion Joint Filler: Bituminous impregnated, preformed type conforming to ASTM D1751.
- E. Concrete curing paper: Conform to ASTM C171, Type 1, Waterproof Paper, shall be used. Polyethylene or similar plastic sheets shall not be used for concrete curing. Orange Label Sisalkraft by Fortifiber Building Systems Group, Blue Shield Grade 3560 by Holland Manufacturing, or equal.
- F. Joint sealer: Shall conform to ASTM C920, Type M, Grade P, Class 25, Use T. Joint sealer for water containment structures shall be Polysulfide Type. Provide concrete primer as recommended by sealant manufacturer and compatible with the substrate.
- G. Anchor bolts: Shall conform to ASTM A307, Section 1c, Grade A.
- H. Plain washers for anchor bolts: Shall conform to "Plain Washers," ANSI B18.22.1, Type A. Furnish one washer with each anchor bolt, unless otherwise noted on the Drawings.
- I. Membrane forming curing compound: Liquid membrane forming curing compounds shall be wax free resin-type capable of retaining 95 percent of the moisture for the specified curing period and shall conform to ASTM C309, Type I-D, and shall contain a red fugitive dye. Curing compound applied to surfaces to be left permanently exposed to view shall not cause permanent discoloration or otherwise adversely affect the appearance of surface.
- J. Curing compound: Shall be "DIAMOND CLEAR" or "EVERCLEAR" by Euclid Chemical Company, "MasterKure CC 250" by Master Builders, or equal. Compound shall conform to ASTM C1315, Type 1, Class A, 25% solids content minimum.
- K. Abrasive aggregate for non-slip finish: Crushed ceramically bonded aluminum oxide grits as abrasive aggregate for non-slip finish. Material shall be factory-graded, packaged, rust-proof and non-glazing, and unaffected by freezing moisture and cleaning materials and equal to "MasterTop 120SR" by Master Builders, "Korumdon" by Concrete Service Materials Company, "Non-Slip Aggregate" by Euclid Chemical Company.
- L. Liquid chemical floor hardener: Colorless, aqueous solution containing a blend of magnesium fluosilicate and zinc fluosilicate combined with a wetting agent, containing not less than 2 pounds of fluosilicate per gallon. Material shall be "Hornolith" by A. C. Horn Co., "Saniseal 50" by Master Builders Co., or "Lapidolith" by Sonneborn Building Products, Inc or equal.
- M. Stone under slab: Clean NC DOT size No.67 coarse aggregate.

- N. Vapor barrier under slabs: "Moistop," by the Fortifiber Corporation or equal.
- O. Structural steel shapes and plates to be embedded in or anchored to the concrete shall conform to ASTM A36.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. Provide a minimum of 4 inches of stone under concrete slabs on grade unless noted otherwise on Drawings.
- B. Provide a vapor barrier under interior concrete slabs on grade unless noted otherwise on drawings.
- C. Provide a two coat treatment of a liquid chemical floor hardener to interior concrete floor surfaces to be left permanently exposed to view.
- D. Provide a "dry shake" application of abrasive aggregate for non-slip finish on exterior concrete platforms, steps and landings, and interior and exterior concrete ramps. shall receive a Ceramically bonded aluminum oxide grits as abrasive aggregate for non-slip finish.
- E. Provide joint sealing compound at locations indicated on the Drawings and at joints in interior and exterior floor slabs to be left permanently exposed to view. Color of joint sealing compound for exposed joints shall match concrete color.
- F. Install waterstops in accordance with manufacturer's instruction and securely anchor to reinforcing bars or forms to prevent displacement during placing of concrete.
- G. Provide joint sealer locations indicated on the Drawings and between points of contact between slabs and vertical surfaces. Provide joint filler between horizontal concrete surfaces at expansion and isolation joints, unless otherwise noted on the Drawings.

### 3.02 CONCRETE MIX

- A. General: Provide normal weight, air-entrained concrete except where specified or indicated on the Drawings to be lightweight concrete. Interior slabs, subject to abrasion, shall have a maximum air content of 3 percent. Concrete shall contain the specified water-reducing admixture. Thin slabs (less than 8 inches thick) placed below 50 degrees F shall contain a non-corrosive accelerator. Each mix shall be proportioned as specified by weight and use the aggregate and cement proposed for the project. Mix designs shall be in accordance with ACI specifications.
- B. Design of Concrete: Provide concrete mix designs and engage an independent testing laboratory, approved by the Engineer, to prepare the mix designs for the classes of concrete specified in the "Properties and Location of Concrete" table which follows. Materials and proportioning shall be in accordance with the ACI Specifications, unless otherwise specified.
  - 1. Submit mix designs, test data, laboratory strength tests and certificates of analysis for cement and aggregates prior to the placement of concrete.
  - 2. Proportion concrete mixes to be placed by pumping for the type of equipment to be used so as to have a continuous flow of concrete through the pumping system.

#### Properties and Location of Concrete



Concrete Class (Location)	(#) Min 28-day Compressive Strength (6"x 12" Cylinders)	Maximum Allowable Course Aggregate Size & Type	Slump	Total Air Content By Volume	(*) Max W/C Ratio
Liquid Retaining Structures	4,500 psi	1-1/2" Stone	2"-4"	4-1/2% $\pm$ 1/2%	0.35
Exterior Slabs	3,500 psi	3/4" Stone	2"-5"	6% $\pm$ 2%	0.40
Interior Slabs	3,500 psi	3/4" Stone	2"-5"	N/R	0.40
Footings - Building	3,000 psi	1-1/2" Stone	2"-4"	Not Req'd	0.58
All Other Concrete	3,000 psi	3/4" Stone	2"-4"	5% $\pm$ 1/2%	0.46

# Unless higher strength is shown on the Drawings.

\* Including free surface moisture on aggregates and liquid admixtures. W/C ratio is maximum permissible ratio for concrete when strength data from field experience or trial mixtures are not available. Higher ratios may be acceptable provided documentation is submitted in accordance with ACI Specifications. The maximum permissible W/C ratio for liquid retaining structures shall be 0.45.

3. If expansive or shrinkage compensating concrete or shrinkage reducing admixtures are proposed for use in concrete for liquid retaining structures, increased spacing of construction joints may be proposed. Submit request for modification along with recommendation from material supplier for review along with mix design

### 3.03 MEASUREMENT OF MATERIALS, MIXING, AND EQUIPMENT

- A. Concrete shall be machine mixed except in emergencies mixing may be by hand as directed. Except when ready-mixed concrete is used, provide an approved type of batch mixer at the site equipped with an accurate water measuring and control device and capable of producing a homogeneous concrete mixture of uniform color.
  1. Apparatus provided for weighing aggregate and cement shall be designed especially for this purpose. Weigh fine and coarse aggregate and cement separately. Cement in standard packages need not be weighed, but bulk cement or fractional packages shall be weighed. Accuracy of measuring devices shall be such that successive quantities can be measured to within one percent of required amount. Measuring devices shall be subject to verification.
  2. Do not exceed rated capacity of mixer.
  3. Time of mixing after cement and aggregates are in the mixer drum shall not be less than one minute for one cubic yard or less and increased 15 seconds for each additional cubic yard or fraction thereof in capacity. The total required water shall be in the drum before one-fourth of the mixing time has elapsed.
  4. Mixer drum shall rotate at a peripheral speed of about 200 feet per minute throughout the mixing period.
  5. Discharge entire contents of mixer drum before recharging. Provide necessary equipment and establish accurate procedures subject to Engineer's approval for determining the quantity of free moisture in the aggregates.
  6. Moisture determination shall be made at intervals as directed by Engineer.

7. The retempering of concrete which has partially hardened, i.e., mixing with or without additional cement, aggregate, or water, will not be permitted.

### 3.04 READY-MIX CONCRETE

- A. Ready-mixed concrete plant shall be properly equipped for the accurate proportioning and proper mixing and delivery of the concrete, including the proper water measurements and controls, as specified above. Plant shall have sufficient capacity and transportation equipment to deliver the concrete at the required rate. Plant shall be subject to inspection and approval of the Engineer.
- B. Mix and handle ready-mixed concrete in accordance with ASTM C94.

### 3.05 CONVEYING

- A. Convey concrete from mixer to its final position as rapidly as practicable by approved methods which will not cause segregation or loss of ingredients. Deposit concrete as nearly as practicable in its final position to avoid rehandling. Free vertical drop of concrete shall not exceed 3 feet. Chuting will be permitted only where the concrete is deposited into a hopper before it is placed in the forms. Clean conveying equipment before each run. Deposit concrete as soon as practicable after the forms have been coated and the reinforcement placed. Place concrete before the initial set and not later than 30 minutes after mixing or agitating. Concrete which has segregated in conveying shall not be used.

### 3.06 PLACING

- A. Place concrete in accordance with ACI 301, Chapter 8.
- B. Accomplish compaction by use of a mechanical vibrator having a frequency of not less than 8,000 cps. Vibration shall not be used to flow concrete horizontally more than 2 feet.

### 3.07 PLACEMENT IN EXTREME WEATHER

- A. Placing Concrete in Cold Weather: Comply with ACI 306. Do not place concrete when the atmospheric temperature is below 40 degrees F, or when the concrete is likely to be subjected to freezing temperatures within 24 hours after placement. Heat concrete as necessary to maintain a concrete temperature of between 60 and 80 degrees F when placed. Remove frozen material from aggregates before placing in the mixer.
- B. Placing Concrete in Hot Weather: Comply with ACI 305. When the outdoor ambient temperature is over 90 degrees F or as directed by the Engineer, provide methods so the temperature of the concrete as placed shall not exceed 90 degrees F. Shade concrete after placing and start curing as soon as the surface of the fresh concrete is sufficiently hard to permit it without damage. Unless specified otherwise, the control of hot weather concreting and the methods employed to control the temperature of the material both during placing and curing operation shall be in accordance with ACI 305R, Hot Weather Concreting.

### 3.08 CURING AND PROTECTION

- A. General: Protect concrete, including areas to be given a special finish, from damage by the sun, rain, flowing water, frost, and mechanical injury. Do not allow concrete to dry out for a minimum of seven days from the time it is placed. Provide water curing by keeping the surface of the concrete continuously wet by covering with water, with

an approved water saturated covering, or by spraying. Water used for curing shall be fresh water. Where water curing is not used, provide curing by sealing the water in the concrete so that it cannot evaporate. This may be done by leaving the forms in place, covering with a waterproof curing paper laid with airtight joints, use of a curing compound, or by other approved means.

- B. Do not use liquid membrane-forming curing compounds where terrazzo, hard tile or cementitious floor finish materials are to be installed. See finish schedule.
- C. Apply curing compound immediately after final finishing.
- D. Keep wood forms sufficiently damp to prevent drying out of the concrete.
- E. Portions of the time during which either moisture or warmth is lacking shall not be counted effective for curing. When concrete is placed in cold weather, make provisions for maintaining the temperature of the air in contact with the concrete at not less than 50 degrees F for a period of not less than 7 days after placing, or at not less than 70 degrees F for a period of not less than 3 days after placing. Heating of the concrete in place shall be affected by salamanders or steam coils under canvas covers or by other approved means. Temperature within enclosures shall not exceed 100 degrees F, and apply adequate moisture during the heating period to prevent concrete from drying out. Rate of cooling after the protection period shall be approximately 1 degree F per hour for the first 23 hours and 2 degrees F per hour thereafter.

### 3.09 REMOVAL OF FORMS AND PROTECTION

- A. General: Remove forms in a manner which will not damage the concrete. Do not remove forms for the following minimum times:

	Days after Placing
Side forms on beams, girders, columns, and walls (lifts 15 ft and under)	1 (24 hours) provided patching and finishing may be completed in 8 hours and the work immediately recovered with approved curing media.
Columns and walls (lifts over 15 ft)	5
Supporting forms for arches, beams, girders, and slabs	14

- B. Provide sufficient shoring members to support dead load plus construction loads on beams, girders, slabs, and arches until concrete has reached the full specified strength.
- C. Special Requirements for High-Early Strength Concrete: The curing periods, minimum periods during which supporting forms and shores shall be left in place, and minimum periods for maintaining curing temperatures shall be not less than one-quarter of those specified for concrete using Type 1 cement, but in no case less than 24 hours.

### 3.10 CONSTRUCTION JOINTS

- A. General: Provide construction joints where indicated on the Drawings or as otherwise approved.
- B. Prepare construction joint surfaces for placement of concrete by cleaning with compressed air and water. Remove stains and foreign material from the surface and

coat with a bonding compound. Place new concrete after bonding compound has dried.

- C. Where new concrete is to be bonded to existing concrete, clean existing surface and roughened thoroughly, remove loose particles, dampen surface, and apply bonding compound. Place new concrete after bonding compound has dried.
- D. Where construction joints are indicated on the Drawings for slabs on grade, control joint indicated on the Drawings may be used instead. This provision does not apply when the construction joint occurs directly under CMU walls.
  - 1. Control Joints: Saw cut slab after concrete has hardened sufficiently to prevent dislodging of aggregate and while the temperature of the fresh concrete is still rising. Complete cutting of slabs within twenty-four hours of concrete placement. Flush out joints immediately after cutting with air or water under pressure to remove sawing residue.
  - 2. Keep joints clean and protected from debris, grease, and oil. No earlier than thirty days after concrete placement, fill joints with a flexible epoxy joint filler and compatible back up material intended for this purpose. Prepare joint and apply filler in accordance with manufacturer's recommendations.

### 3.11 FINISHING CONCRETE

- A. General: As soon as forms are removed, patch defective areas and fill tie holes with cement mortar of the same composition as that used in the concrete. Cut out defective areas to solid concrete but to a depth of not less than 1 inch. Edges of the cut shall be perpendicular to the surface of the concrete. Area to be patched and at least 6 inches adjacent thereto shall be dampened and apply bonding compound. Place patching mortar after bonding compound has dried. Mix mortar approximately one-half hour before placing and remix occasionally during this period with trowel without the addition of water. Compact mix into place and screed slightly higher than the surrounding surface. Finish patches on exposed surfaces to match the adjoining surfaces after they have set for a period of an hour or more. Cure patches as specified for concrete. Wet tie holes with water and fill solid with mortar. Fill holes extending through the concrete by means of a plunger type gun or other suitable device from the exposed face. Wipe excess mortar off the exposed face with a cloth. Protect finish surfaces from stains and abrasions.
- B. Surface Finishes: Exposed concrete surfaces, except floors, bottom slabs, and walking surfaces, shall receive the following finish.
  - 1. As soon as the pointing and patching has set sufficiently to permit it, thoroughly wet surface with a brush and rub with a No. 16 carborundum stone or other equally good abrasive, bringing the surface to a paste. Continue rubbing sufficiently to remove form marks and projections, producing a smooth dense surface without pits or irregularities.
  - 2. Carefully spread or brush material, which in the above process has been ground to a paste, uniformly over the entire surface and allowed to reset. After the rubbing is complete, thoroughly drench and keep surface wet for a period of 7 days, unless otherwise directed. Obtain final finish by a thorough rubbing with a No. 30 carborundum stone or other equally good abrasive. Continue rubbing until entire surface is a smooth texture and uniform in color.
  - 3. Adjoining or adjacent work which has been disfigured by the above specified work shall be thoroughly cleaned by approved methods so that the complete unit presents the same appearance.

4. In lieu of the procedure described in items 1, 2, and 3 above, grind all fins smooth and use a cementitious type concrete coating, color as selected by the Owner. Apply cementitious type concrete coating in strict accordance with the manufacturer's recommendation. Acceptable manufacturers shall be BASF Master Builders MasterSeal 581 with MasterEmaco A660 admixture, ChemMasters Chemseal with ChemMasters' Cretelox admixture, SikaTop 144, or equal.
- C. Floor and Roof Slab Finishes:
1. Finished floor and roof slab surfaces shall be true plane surfaces, with a tolerance of 1/8 inch in 10 feet unless otherwise indicated. Pitch surfaces to drains. Dusting of finish surfaces with dry materials will not be permitted.
  2. Monolithic Finish: Floor and roof slabs shall be placed, consolidated, struck off and leveled to the required elevation. When the concrete has stiffened sufficiently to bear a man's weight without deep imprint, float surface, at least twice, to a uniform sandy texture. Steel trowel surface to a smooth, even, impervious finish, free from trowel marks.
  3. Surface of slabs, except roof slabs, shall be given a second steel-troweling to a burnished finish.
- D. Sidewalk, platform, and wearing surfaces not otherwise specified shall receive a broom finish. Slab shall receive a float finish, as indicated above, and then lightly brush surface with a hair broom to leave a slightly rough, non-slip surface. Brooming shall be done in one direction and leave a uniform neat pattern.
- E. Concrete bottom slabs in channels, clarifiers, wet wells, and chlorine contact chamber shall receive a steel troweled finish. Surface shall be smooth, true to established planes and conforming to lines and slopes as indicated on the Drawings. Care shall be taken to produce a surface of maximum smoothness, and care shall be taken to protect surface from damage during later work.

### 3.12 FORMS

- A. General: Form concrete unless specified or directed otherwise. Set forms true to line and grade within the allowable tolerances specified for finishes and shall be mortar-tight. Arrange bolts and rods used for internal ties so that when forms are removed, metal will have the minimum specified cover.
- B. Where water-tightness is required, do not use bolts or rods which are withdrawn when the forms are removed. Do not use wire ties where the concrete surface will be exposed to weathering and where discoloration will be objectionable. Provide form work with adequate clean-out openings to permit inspection and easy cleaning after reinforcement has been placed. In columns, walls, and similar members of small dimensions, the height of forms for each vertical lift shall not exceed 6 feet unless suitable openings are provided at not more than 6-foot vertical intervals to permit proper placing of the concrete. Where forms for continuous surfaces are placed in successive units, fit forms over the completed surface so as to obtain accurate alignment of the surface and to prevent leakage of mortar. Install panel forms to provide tight joints between panels. Install forms so they can be removed without damaging the concrete. Chamfer exposed joints, edges, and external corners. Forms for heavy girders and similar members shall be constructed with a camber, as directed. When placing concrete in excavations, forms shall be not less than 3 inches outside the concrete lines indicated.

- C. Coating: Before placing the concrete, coat contact surfaces of forms with a non-staining mineral oil or two coats of nitrocellulose lacquer, except for unexposed surfaces when the temperature is above 40 degrees F sheathing may be wetted thoroughly with clean water. Remove excess oil by wiping with cloths. Clean contact surfaces of forms for reuse.

**3.13 REINFORCING STEEL**

- A. General: Provide reinforcement bars, stirrups, hanger bars, wire fabric, and other reinforcing materials as indicated on the Drawings or required by the specifications together with necessary wire ties, chairs, spacers, supports, and other devices to properly install and secure the reinforcing. Reinforcement shall be free from foreign substances. Reinforcement which has bands not shown on the project drawings or on approved shop drawings or which is reduced in section by rusting shall not be used.
- B. Fabricate bar mats from bars conforming to specifications for reinforcement bars and intersections shall be fastened securely by approved mechanical ties.
- C. Placing: Place reinforcement accurately and thoroughly secure. Support with concrete or metal chairs, spacers, or metal hangers. Metal chairs, clips, or supports, the ends of which will be exposed on the concrete surface, will be permitted only where the surface will not be exposed to weathering and where discoloration will not be objectionable; elsewhere concrete or other approved non-corrodible material or other approved means shall be used for support.
- D. Splicing: Where splices in addition to those shown on the project Drawings are necessary, lap bars as scheduled below.

<b>BAR SIZE</b>	<b>LAP, INCHES</b>	<b>BAR SIZE</b>	<b>LAP, INCHES</b>
#3	16 (18)	#7	33 (42)
#4	19 (24)	#8	39 (51)
#5	23 (30)	#9	69 (90)
#6	23 (36)	#10	88 (114)

Figures in parentheses are for top bars (horizontal reinforcement placed such that more than twelve inches of fresh concrete is cast in the member below the reinforcement). Other figures are for all other bars.

Stagger splices in alternate bars. Splices shall be in accordance with ACI 318 and ACI 301.

- E. Protection of Reinforcement: Reinforcement of footings and other principal structural members in which the concrete is deposited on the ground shall have not less than 3 inches of concrete between the reinforcement and the ground contact surface. If concrete surfaces after removal of the forms are to be exposed to the weather or water or be in contact with the ground, the reinforcement shall be protected with not less than 2 inches of concrete for bars greater than 5/8-inch in diameter and 1-1/2 inches for bars 5/8-inch or less in diameter. Measure protective cover from the outside edge of the steel.
- F. Concrete protective covering for reinforcement of surfaces not exposed directly to the ground, water, or weather shall be not less than 3/4 inch for slabs and walls and not less than 1-1/2 inch for beams, girders, and columns.

- G. Do not use heat to field bend bars.
- H. When required and approved in writing by the Engineer, welding of reinforcing shall conform to "Recommended Practice for Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction (AWS D1.4, "Structural Welding Code – Reinforcing Steel")." No tack welding will be permitted.

### 3.14 SETTING MISCELLANEOUS MATERIALS

- A. Pipe sleeves, wall castings, anchors and bolts, including those for machine and equipment bases, angle frames or edgings, hangers and inserts, pipe supports, conduits and other materials in connection with concrete construction, shall, where practicable, be placed and secure in position when the concrete is placed. Anchor bolts for machines and equipment shall be set according to templates, shall be carefully plumbed, checked for location and elevation with an instrument, and be held in position rigidly to prevent displacement while concrete is being placed.

### 3.15 TESTING

#### A. Field Poured Specimens:

1. Provide one set of specimens for compressive strength tests for each 100 cubic yards, or fraction thereof, of each class of concrete, placed each day. Not less than four specimens shall be made for each test. Specimens shall be made and cured in accordance with ASTM C31. When in the opinion of the Engineer there is a possibility of the air temperature falling below 40 degrees F, additional specimens shall be taken and cured in the field under conditions similar to those of the concrete in the structure. Test specimens in accordance with ASTM C39.
  - a. The standard age of specimens at test shall be 28 days. Of the four specimens made for each test, two shall be tested at 28 days for acceptance and one shall be tested at 7 days for information. The fourth specimen shall be a reserve.
  - b. The strength level of the concrete will be considered satisfactory so long as the averages of all sets of three consecutive strength test results (average of two cylinders tested at 28 days) equals or exceeds the specified strength  $f'_c$  and no individual strength test result falls below the specified strength  $f'_c$  by more than 500 psi. When the test results do not conform to these requirements, the Engineer shall have the right to require changes in the mix design and conditions of temperature and moisture necessary to secure the required strength.
  - c. Tests shall be performed by an independent laboratory as specified in Section 01 45 00, Quality Control.
  - d. Test reports shall be submitted in accordance with Section 01 45 00, Quality Control.

#### B. Drilled Cores

1. Where there is a question as to the quality of the concrete in the structure, the Engineer may require additional testing in accordance with ASTM C42 for that portion of the structure where the questionable concrete has been found. If the results of these additional tests meet the requirements of the specifications, the Owner shall pay for the costs of the tests. If the results of the additional tests fail to meet the requirements of the specifications, the Contractor shall pay for the tests. Concrete failing to meet the specifications shall be removed and replaced at no additional cost to the Owner.

- C. Air Entrainment shall be as specified. Test air content in accordance with AASHTO T152, T121, or T156. Test shall be at the frequency required by the Engineer.
- D. Test slump plus or minus 1 inch as determined by AASHTO T119. Make test from each delivery before placing concrete. Slump tests shall be made in the presence of the Engineer's representative. Concrete not meeting the slump standards specified shall be modified, if possible, to meet the standards or shall be rejected by the Engineer's representative and removed from the project.
- E. Water-bearing structures shall be watertight against water pressure which may come upon them prior to backfill. Repair imperfections. On completion of water-bearing structures, fill with water to the high water line and allow to remain filled for forty-eight (48) hours before testing for water-tightness. Repair leaks to make structures water-tight.

END OF SECTION



SECTION 09 91 00  
PAINTING

PART 1 GENERAL

1.01 SCOPE

- A. Work under this section shall include the painting of all surfaces specified herein and indicated on the Drawings.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements

1.03 DESCRIPTION

- A. Provide the painting required to paint the newly constructed areas under this contract.
- B. Where new pumps are to be installed, paint the entire piping and pumping system at continuous connection. Where new work is installed within existing, paintings should continue as follows:
  - 1. Continuous Surface: To the nearest intersection.
  - 2. Assembly: Entire Assembly

1.04 REFERENCE STANDARDS

- A. The latest revision, at the time of bidding, of the publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
  - 1. National Sanitation Foundation (NSF)
    - a. Std. 61 Drinking Water System Components - Health Effects.

1.05 QUALITY ASSURANCE

- A. Paint supplier shall verify the compatibility of the specified paint systems to the surface to be painted both new and existing. Submit certification that the paint systems to be used are suitable for the surface to be painted. Notify Engineer of suggested changes in the paint system with the paint submittal.
- B. Ensure compatibility of shop applied primers with the paints specified herein. If shop applied primers are incompatible contractor shall remove incompatible primer with SSPC SP-6 commercial blast.
- C. Painting of surface indicates acceptance of surface for paint system being used.
- D. Paints shall be the standard products of the Valspar Corporation, Tnemec Company, Sherwin Williams Company, Glidden, PPG Company, Carboline or equal.

1.06 SUBMITTALS

- A. Submit the following in accordance with Section, Submittals:
  - 1. Affidavit of Compliance: Affidavit shall attest that supplied products conform to the referenced standard and this specification and that all tests set forth in each applicable referenced publication have been performed and that all test requirements have been met. Submit for each of the following materials:

- a. Each type of paint.
- 2. Certification: Provide a letter at the end of the Project certifying the following actual work dates, that the cure time for each coat complied with the manufacturer's requirements, and the manner of application pertaining to the surface preparation, number and type of coats and mil thickness is as specified.
  - a. Start and completion dates for each paint coat for each major work area.
- 3. Catalog Data: Submit manufacturer's standard drawings or catalog cuts for the following. The equipment to be furnished for the Project shall be clearly indicated including all options to be provided.
  - a. Paint Schedule: Submit the manufacturer's data sheet for each type of paint proposed to be used on the Project. Use paint schedule as indicated in these specifications as a format guide. The data sheet shall include, but not be limited to, the following:
    - 1) Paint system.
    - 2) Requirements for the following:
      - i) Handling and storage.
      - ii) Health and safety.
      - iii) Surface preparation.
      - iv) Application.
      - v) Curing time between coats and for immersion as appropriate.
    - 3) Certification by NSF, International in accordance with NSF Std. 61 for interior paint systems.
    - 4) Recommended Dry Film Thickness (DFT).
- 4. Samples: Submit five (5) color cards with paint schedule submittal.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. The Product shall be handled in accordance with Section, Material and Equipment.
- B. Mixing of paints shall be restricted to locations directed.
- C. Take necessary precautions to prevent fire.

### PART 2 PRODUCTS

#### 2.01 PAINTING MATERIALS

- A. Cleaners, thinners, driers, and other additives and surface treatment materials shall be those approved for use by the manufacturer of the paints.
- B. Products used in areas to be in contact with potable water shall be certified in accordance with NSF Std. 61.

#### 2.02 PAINTING SCHEDULE

- A. For convenience only, the paints specified herein, unless listed otherwise, are as manufactured by Tnemec, Carboline, Sherwin-Williams. Equal paints as manufactured by other manufacturers will be acceptable.
- B. Paint on this project shall be of one manufacturer.
- C. Above Ground Piping
  - 1. Galvanized, zinc coated, aluminum and bronze surfaces shall not be painted. On surfaces which have been shop coated, the priming coat may be omitted. Surfaces upon which shop coat has been damaged shall have metal cleaned to

satisfaction of the Engineer and the cleaned surfaces primed with the specified primer. Surfaces so primed shall then be painted as specified.

2. Surface Preparation: SSPC SP-6 Commercial Blast.
  3. 1 coat (3 mils DFT, min.), Tnemec 66-1211 Epoxoline primer, Carboline Carboguard 893 SG, Sherwin-Williams Tile Clad HS, or equal.
  4. 1 coat (3 mils DFT, min.), Tnemec 66 Series Hi-Build Epoxoline, Carboline's Carboguard 893 SG, Sherwin-Williams Tile Clad HS, or equal.
  5. 1 coat (3 mils DFT, min.), Tnemec Series 73 Endura-Shield, Carboline Carbothane 133HB, Sherwin-Williams Acrolon 218 HS, or equal.
- D. Vault Piping:
1. On surfaces which have been shop coated, the priming coat may be omitted. Surfaces upon which shop coat has been damaged shall have metal cleaned to satisfaction of the Engineer and the cleaned surfaces primed with the specified primer. Surfaces so primed shall then be painted as specified.
  2. Surface Preparation: SSPC SP-6, commercial grade.
  3. 1 coat (3 mils DFT, min.), Tnemec 66-1211 Epoxoline primer, Carboline Carboguard 893 SG, Sherwin-Williams Tile Clad HS, or equal.
  4. 2 coats (3 mils DFT, min. each coat), Tnemec 66 Series Hi-Build Epoxoline, Carboline's Carboguard 893 SG, Sherwin-Williams Tile Clad HS, or equal.
- E. Plastic Pipes: (Legends on pipes)
1. Solvent wipe area to be painted.
  2. Sand lightly with 120 grit aluminum oxide sand paper.
  3. Dust area.
  4. 1 coat of polyamide epoxy (3 mils DFT, min.), such as Tnemec Series 135 Chembuild, Carboline Carboguard 893SG, Sherwin-Williams Tile Clad HS, or equal.
  5. Color coding to be selected by the Engineer.

## PART 3 EXECUTION

### 3.01 GENERAL REQUIREMENTS

- A. Surfaces to be painted shall be thoroughly clean and shall be dry when paint is applied. Painting materials shall be thoroughly worked into all joints, crevices, and open spaces.
- B. Colors and shades of colors shall be as directed unless specified otherwise.
- C. Finished surfaces shall be smooth, even and free of defects prior to painting.
- D. Surfaces which are inaccessible for painting after erection shall be treated, primed and painted prior to erection.
- E. Equipment nameplates, tags, signs, and equipment lubrication points shall be masked or otherwise protected from covering with paint.
- F. Properly mask and protect portion of finished work not to be painted.
- G. Damaged painting shall be retouched before applying the succeeding coat.
- H. Existing bare surfaces and surfaces made bare by cleaning methods shall be primed prior to painting.

- I. The number of paint coats specified shall be in addition to spot priming and shop prime coats except as indicated otherwise.
- J. Copper, aluminum, and stainless steel except for pipe identification, shall not be painted.
- K. Paints shall be applied strictly in accordance with the manufacturer's direction and thinners shall be of the type required by the individual paint specifications. No thinners will be stored on site or used unless specifically authorized by the Engineer.

3.02 SURFACE PREPARATION

- A. General: Dirt, rust, loose scale and particles, disintegrated paint, grease, and foreign matter shall be removed by scraping, sand blasting, wire brushing, or other approved methods, from all surfaces which are to receive paint or other finish. Surfaces shall be free from dust and in proper condition to receive paint or other finish, Where necessary, putty shall be applied with a knife. Sand-papering, where necessary, shall be done after the undercoats are dry.
- B. Ferrous Metal
  - 1. New Metal: New metal work shall be cleaned in accordance with the Steel Structure Painting Council Specifications indicated in the painting schedule for the respective service indicated.
  - 2. Existing Metal: Existing metal surfaces to be painted shall be closely examined to determine the exact condition of the existing paint coating. The existing surface shall then be prepared for painting as required by the Engineer and as recommended by the paint manufacturer. As a minimum loose, spoiled and brittle paint shall be removed. Exposed metal shall be hand cleaned. The following table shall be used as a guide for determining the degree of surface preparation.

Surface Condition	Degree of Preservation
75% intact	Hand clean (SSPC-SP-2) and spot primer base areas
Less than 75% intact	Total sandblast (SSPC-SP-6)
Brittle, corroded	Total sandblast (SSPC-SP-6)

- C. Piping and Fittings:
  - 1. Piping to be insulated, except zinc-coated pipe, prior to the application of the insulation, shall be coated with one coat of approved pretreatment coating to a dry film thickness of 0.3 to 0.5 mil, and then given two coats of zinc-chromate primer, each coat applied to a minimum dry film thickness of one mil. Zinc-coated piping under insulation shall not be painted.
  - 2. Pipe hangers, structural supports, pipe and fittings, conduit and conduit fittings, pipe covering, insulation and miscellaneous steel and iron work shall be painted to match the adjacent interior surfaces and exterior work shall be as directed, utilizing the painting schedule as hereinbefore specified.
  - 3. Factory finished surfaces shall be painted as indicated.

3.03 APPLICATION

- A. Workmanship shall be first-class in every respect. Paint shall be applied to dry, except as otherwise specified, on thoroughly clean surfaces only and shall be worked into all joints, crevices, and open spaces thoroughly. Paint shall be applied carefully with good clean brushes. Sufficient time shall be allowed between coats to permit thorough drying, and each coat shall be in proper condition to receive the next

coat before its application. Finish coats shall be smooth and free from runs, sags, blisters, or other defects. Each coat of paint shall be sufficiently heavy to cover completely the previous coat or surface. Exterior paint shall not be applied during foggy or inclement weather.

**3.04 PIPE COLOR CODING AND LEGEND**

- A. Color Coding: Interior exposed piping shall be painted in their entirety in accordance with the color code approved by the Engineer. PVC piping to be painted with 15" long color bands at intervals less than 15' OC and at all junction points and valves.
- B. Legend: Exposed pipes, both interior and exterior, shall be marked with the service of the pipe stenciled on the pipe at intervals not exceeding 15' on center spacing and at each valve, tie or other junction of two or more pipes. Indicate the direction of flow adjacent to the legend. The legend shall be stenciled with contrasting colors of either black or white. Use the following chart for determining the size of the lettering.

<b>Outside Diameter of the Pipe (inches)</b>	<b>Size of Letters (inches)</b>
3/4 to 1-1/4	1/2
1-1/2 to 2	3/4
2-1/2 to 6	1-1/4
8 to 10	2-1/2
Over 10	3-1/2

**3.05 COATING THICKNESS**

- A. General: Thickness of coatings shall be checked by a dry film thickness gauge of the magnetic type operated electrically or by permanent magnet. Gauges shall be calibrated with a standard which is approximately the same thickness as the coating to be measured and, if possible, on metal identical both in composition and surface texture to that underlying coating. The Contractor shall be responsible for providing a gauge for checking the film thickness.
- B. The total dry mil thickness of the coating for exposed metal surfaces subject to submergence in wastewater shall be not less than 9 mils.

**3.06 CLEAN-UP**

- A. On completion of the painting work, clean all paint spots and other paint material from surfaces not intended for painting. Clean all rubbish and accumulated material from the work site. Leave the work in a clean and orderly condition, acceptable to the Engineer. No payment for painting work will be approved until the contractor has requested anticipated and firm thickness has been verified.

END OF SECTION

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SECTION 31 05 00  
EARTHWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Provide labor, equipment, and material to perform site preparation and earthwork as specified herein and indicated on the Drawings. Work shall include, but is not limited to, the following:
1. Survey staking as required for construction.
  2. Topsoil stripping and stockpiling.
  3. Dewatering.
  4. Protection of existing facilities.
  5. Site grading.
  6. Excavation, trenching, and backfilling for structures and foundation including stone base as indicated on the Drawings.
  7. Borrow material including, but not limited to, material, excavating, hauling, placing, and compacting.
  8. Maintenance and stability of site.
  9. Disposal of waste and surplus material.
  10. Soil testing.
- B. Bank Stabilization: Examine the site to determine the extent of excavating, grading, and related items necessary to complete the work.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
1. Section 01 35 13 Specific Project Requirements
  2. Section 31 11 00 Clearing and Grubbing
  3. Section 31 23 33 Trenching for Utilities
  4. Section 31 25 00 Erosion Control
  5. Section 32 92 00 Lawns and Grasses
  6. Section 33 05 07.13 Directional Drilling
  7. Section 33 05 07.23 Bore and Jack of Conduits

1.03 REFERENCES

- A. The latest revision, at the time of bidding, of the publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
1. American Society of Testing Materials (ASTM)
    - a. C33 Concrete Aggregates.
    - b. D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
    - c. D1556 Density of Soil in Place by the Sand-Cone Method.
    - d. D1586 Penetration Test and Spilt-Barrel Sampling of Soils.
    - e. D2167 Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
    - f. D2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.

- g. D2487 Classification of Soils for Engineering Purposes.
- h. D2922 Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

#### 1.04 DEFINITIONS

- A. Backfill: A specified material used in refilling a cut, trench, or other excavation, placed at a specified degree of compaction.
- B. Capillary Water Barrier: A layer of clean, poorly graded crushed rock, stone, or natural sand or gravel having a high porosity, which is placed beneath a building slab with or without a vapor barrier to cut off the capillary flow of water to the area immediately below the slab.
- C. Compaction: Process of mechanically stabilizing a material by increasing its density at a controlled moisture condition. "Degree of compaction" shall be expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D698 (Standard Proctor).
- D. Excavation: The removal of soil or rock to obtain a specified depth or elevation.
- E. Fill: Specified material placed at a specified degree of compaction to obtain an indicated grade or elevation.
- F. Lift: Layer of soil placed on top of a previously prepared or placed soil.
- G. Rock: Solid, homogeneous material which cannot be removed without the systematic drilling and blasting exceeding 1 cubic yard in volume. Material having a standard penetration resistance as determined by ASTM D1586 greater than 150 blows per foot is defined as "rock." Rock is further defined as materials and obstructions encountered that cannot be practically excavated with a large track mounted backhoe, such as a CAT-325 or larger, equipped with new rock teeth. Practical excavation is defined as the ability to remove at least 10 cubic yards during one (1) hour of continuous digging. Removal of "hard material" will not be considered rock excavation because of intermittent drilling and blasting that is performed merely to increase production.
- H. Soil classification shall be in accordance with ASTM D2487.
  - 1. Satisfactory materials: Soils classified as GW, GP, GC, GM, SP, SC, SM, SW, ML, and CL.
  - 2. Unsuitable materials: Soils considered as unsatisfactory shall be materials that do not comply with the requirements of satisfactory above and include, but shall not be limited to, the following:
    - a. Soil containing organic matter, debris, stones larger than 12 inches, or frozen material. Stones greater than 4 inches will not be permitted in the top 12 inches.
    - b. Soils classified as PT, CH, MH, OH, and OL.
  - 3. Cohesionless: Classified as GW, GP, SW, and SP. Soils classified as GM and SM shall be classified as cohesionless only when the fines have a plasticity index of less than 10.
  - 4. Cohesive: Classified as GC, SC, ML, CL, MH, and CH. Soils classified as GM and SM shall be classified as cohesive only when the fines have a plasticity index greater than 10.
- I. Subgrade: Lowest elevation upon which fill or other work will be placed in the absence of unsuitable material.



- J. Topsoil: Natural, friable soil, representative of productive soils in the vicinity of the site. Topsoil shall be free from roots, stones larger than 1 inch, objectionable weed seeds, toxic substances, and materials that hinder grading, planting, and maintenance operations.
- K. Tunnel: Confined excavation below ground generally a horizontal direction for the installation of a structure or pipeline by means of manual excavation or by specific equipment designed to penetrate soil or rock and remove material.

**PART 2 PRODUCTS**

**2.01 MATERIAL**

- A. Capillary water barrier: A clean crushed stone, crushed gravel, or uncrushed gravel conforming to ASTM C33 coarse aggregate grading size 57, 67, or 78M.
- B. Stone Base: A clean crushed stone, crushed gravel, or uncrushed gravel conforming to ASTM C33 coarse aggregate grading size ABC
- C. Structural Fabric: Provide structural fabric specifically designed and manufactured to stabilize soft soils under an aggregate base for roads and parking areas. Fabric shall provide a permeable layer, planar flow, and tensile reinforcement for retaining the soil matrix. Fabric shall be inert to commonly encountered chemicals, hydrocarbons, resistant to mildew, rot, and ultraviolet light exposure, and meet or exceed the following test standards:

Test	ASTM Std.	
Fabric weight	D-3776	6 oz/sy
Grab tensile strength	D-5034	200 lbs
Mullen burst strength	D-3786	320 psi
Puncture strength	D-751	80 lbs

**PART 3 EXECUTION**

**3.01 GENERAL**

- A. Provide erosion control measures as specified in Section 31 25 00, Erosion Control, clearing and grubbing as specified in Section 31 11 00, Clearing and Grubbing and seeding as specified in Section 32 92 00, Lawns and Grasses.
- B. Protect existing structures and features designated to remain.
- C. Dispose of excavated material in such a manner that it will not obstruct the water flow, endanger existing improvements or Work in progress, impair the use or appearance of the existing facilities, or be detrimental to the completed Work.
- D. Weather Limitations: Proceed with fill and backfill operations based on the following weather conditions:
  - 1. Temperature must be above freezing.
  - 2. In windy, hot, or arid conditions with a high rate of evaporation add moisture to the material to maintain the optimum moisture content.
  - 3. Do not proceed in rain or on saturated subgrade.

- E. Repair or undercut and backfill soils that become damaged by construction activity or unsuitable due to being left exposed to the weather at no additional cost.
- F. Do not place material on surfaces that are muddy, frozen, or contain frost.
- G. Excavation carried below the elevation indicated on the Drawings shall be backfilled and compacted in accordance with these specifications.
- H. Remove and properly dispose of unsatisfactory and excess material from the site.

### 3.02 CONSTRUCTION STAKING

- A. Provide construction staking as indicated in paragraph 4.03 of the General Conditions. Engineer will only provide electronic design files for Contractor's surveyor and key reference points and benchmarks as shown on the Drawings.
- B. Contractor shall report to Engineer whenever a reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations. Contractor shall be responsible for the accurate replacement or relocation of such reference points or property monuments by a registered professional surveyor in the State of North Carolina.

### 3.03 PROTECTION OF UNDERGROUND FACILITIES

- A. Approximate locations of existing underground facilities at the site are indicated on the Drawings based on information available to the Engineer. Engineer and Owner do not take responsibility for the accuracy of the information.
- B. Prior to beginning any excavation work or boring, the Contractor shall, through field investigations, determine any conflicts or interferences between existing utilities and new utilities to be constructed under this project. This determination shall be based on the actual locations, elevations, slopes, etc., of existing utilities as determined in the field investigations, and locations, elevation, slope, etc. of new utilities as shown on the Drawings. If an interference exists, the Contractor shall bring it to the attention of the Engineer as soon as possible. If the Engineer agrees that an interference exists that was not apparent from the Contract Documents, or could not have been identified during a site visit during bidding, he shall modify the design as required. Additional costs to the Contractor for this change shall be processed through a Change Order as detailed elsewhere in these Contract Documents. An interference shall be defined for these purposes as a conflict with an existing utility or structure that prevents the proposed utility from being installed where shown or specified after existing utilities and structures are adequately supported by the Contractor. In the event the Contractor fails to complete adequate field evaluations to identify conflicts, or bring a potential conflict or interference to the attention of the Engineer prior to beginning excavation work, any actual conflict or interference which does arise during the Project and could have been avoided with diligent utility location efforts shall be corrected by the Contractor, as directed by the Engineer, at no additional expense to the Owner. Repair damage to existing facilities at no additional cost to the Owner.
- C. A change in conditions may be considered due to the location of the existing facilities as allowed in the General Conditions. This does not include the cost for repair of damaged facilities not properly located in advance of construction.

### 3.04 WATER CONTROL

- A. Inspect the site prior to mobilizing to determine the appropriate equipment for site grading and foundation work.
- B. Perform work to prevent surface water from accumulating in excavations, tunnels and unfinished fill areas. Perform grading and excavation so the work area and affected operations shall be continually and effectively drained.
- C. Install a dewatering system prior to excavating beneath the ground water table. Maintain the water table approximately 2 feet below the bottom of the excavation.
- D. Maintain dewatering until backfilling has proceeded above the natural ground water level and the structural weight is sufficient to prevent "floating" of the structure. Provide a job superintendent experienced in dewatering work.
- E. Water from dewatering operations must be disposed of in accordance with the North Carolina Sedimentation Pollution Control Act.

### 3.05 USE OF EXPLOSIVES

- A. Blasting is allowable for the removal of rock, as defined herein unless specifically prohibited by the Owner, Engineer or a Utility Owner with an existing utility within the proximity of the proposed blast site. The contractor shall review the Drawings for specific areas where blasting is prohibited..
- B. Obtain required permits for blasting (e.g., from City of Raleigh Fire Marshall's Office) prior to blasting, 24 hours minimum.
- C. Store, handle, and use explosives in accordance with all applicable local, state, and federal regulations and in accordance with the provisions of the "Manual of Accident Prevention and Construction" of the Associated General Contractors of America, Inc. Federal regulations include, but are not limited to, Title 27, Chapter 11, Part 555 of the Code of Federal Regulations (CFR) and OSHA Standards – Part 1926, Subpart U.
- D. Provide seismographic monitoring during progress of blasting operations.
- E. Take all necessary precautions to protect life and property, including the use of an approved blasting mat where there exists the danger of throwing rock or overburden. Keep the explosive materials that are on the job site in specially constructed boxes provided with locks. Failure to comply with this specification shall be grounds for suspension of blasting operations until full compliance is made. No blasting shall be allowed unless a galvanometer is employed to check cap circuits. Where blasting takes place within 500 feet of a utility, structure, or property which could be damaged by vibration, concussion or falling rock, keep a blasting log containing the following information for each and every shot. This log shall be kept in an orderly manner and made available to the Engineer and Owner upon request.
  - 1. Date of shot
  - 2. Time of shot
  - 3. Crew supervisor
  - 4. Number and depth of holes
  - 5. Approximate depth of overburden
  - 6. Amount and type of explosive used in each hole
  - 7. Type of caps used (instant or delay)
  - 8. The weather

9. Seismograph instrument and readings
- F. Use explosives in such a way to minimize vibration to existing utilities and structures.
- G. Provide only experienced personnel for blasting in accordance with accepted practices.
- H. Contractor is responsible for safety of life and damage to property resulting from the use of explosives. The Owner and Engineer shall be made aware of all blasting activities prior to their occurrence.
- I. In addition to the above testing/monitoring requirements required, Contractor shall provide the services of a "third party" geotechnical testing firm experienced in monitoring vibrations resulting from blasting operation as specified in Section 01 45 00, Quality Control. The firm selected shall be evaluated by the Engineer and Owner for approval as the official "third party".
- J. Third Party testing/monitoring as related to blasting operations shall include the following:
  1. Pre-Construction Condition Assessment
    - a. Prior to beginning construction, the third-party testing firm shall perform a pre-construction condition assessment to document the conditions of buildings and other sensitive structures within *\*\*Distance for Blast Assessment\*\** feet of the proposed blasting area. The assessment shall be performed on all adjacent properties and any other properties as directed by the Engineer or Owner. The assessment should include video and photographic documentation of all exteriors including building foundations, and installation of crack monitors on cracks that might occur or expand due to construction vibrations. Provide all documentation described above to the Owner and Engineer prior to construction.
  2. Crack Monitoring During Construction:
    - a. During construction, the third-party testing firm shall perform periodic readings of the crack monitors installed prior to construction. Provide readings to the Engineer and Owner within 48 hours of taking the readings. If crack readings monitoring confirm that vibrations are not contributing to crack width, crack monitors may be read once per week. More frequent readings may be required by Owner or Engineer if construction activities could result in greater earthborne vibrations. Testing firm shall notify the Engineer and Owner immediately if monitoring indicates that construction operations have contributed to crack widening. The testing firm shall prepare a detailed plan for repairing the structure and the Contractor shall repair the structure at no cost to the Owner. Contractor shall submit a plan for review that proposes alternate construction methods to address the vibration problems and minimize further damage.
  3. Vibration Monitoring During Construction:
    - a. The third-party testing firm shall monitor vibrations at no less than four locations along the perimeter of the project during all blasting activities. The locations shall be based on the location of construction activities and their relative position to offsite structures. Prior to construction, a plan showing the proposed monitoring locations shall be submitted to the Engineer and Owner for approval. Adjustments may be made to the locations upon approval. The sensitivity range of the seismograph shall be selected such that the recording is initiated below the maximum allowable particle velocity of 1 in/sec and

- extends above the highest expected intensity. Specific activities of the vibration source (i.e., blasting) shall be indexed in time to allow correlation with the arrivals on the vibration.
- b. The maximum allowable particle velocity is 1 in/sec. The contractor shall notify the Engineer and Owner immediately if monitors indicate that the vibrations are above the criteria established. Activities causing the vibrations shall be suspended until a revised construction plan has been developed by the testing firm to alleviate the problem. The problem shall be resolved by the Contractor at no additional cost to the Owner.
  - c. The vibration monitors shall consist of digital seismographs that display the particle velocities and associated frequencies plotted against the criteria established for this project. Each seismograph shall contain geophones with response capability in three mutually perpendicular axes or components; one vertical and two horizontal (radial and transverse). The frequency response of the geophones shall be linear from at least 4 Hz to more than 200 Hz. The sensitivity shall range from less than 0.02 in/sec to more than 5.0 in/sec. The BlastMate III by Instatel is one type of seismograph that is suitable for this project.
  - d. Vibration monitors shall be field calibrated by the testing firm before each recording period. The transducer shall be positioned with the longitudinal axis toward the vibration source. Transducers must be adequately coupled with the ground. Operation and calibration of all equipment shall be per manufacturer's recommendations. Vibration records shall be collected in waveform plot or strip chart plot. The peak vector sum of the particle velocity in longitudinal, transverse, and vertical planes shall be shown along with the respective dominant or principle frequencies. The highest recorded particle velocity (i.e., the vector sum of the three orthogonal directions), when indexed to a particle vibration event, shall be reported as the peak particle velocity. The recorded peak particle velocity shall be compared to criteria appropriate for the subject of concern.
  - e. The Engineer and Owner shall be notified immediately of any complaint received by the Contractor. The Contractor shall immediately review those construction activities inducing the vibration and prepare a report documenting all relevant data such as the time and date of the complaint, a description of the construction activities, data from the monitoring instruments for the subject time/date, complaint information (including photographs, if possible) of the alleged damage. The Contractor shall submit for review a detailed plan for repair and revised construction plan to address the vibration problems to minimize further damage and complaints. The Contractor shall perform necessary repairs at no additional cost to the Owner.
  - f. The testing firm shall provide monthly reports containing the results of the crack monitors and vibration monitors during those activities that generate earthborne vibrations, including but not limited blasting operations. The reports shall document that the firm is provided the work described herein.
- K. Submit monitoring reports in accordance with Section 01 45 00, Quality Control.
  - L. The Owner reserves the right to require the removal of rock by other means if blasting operations result in possible hazardous conditions.

### 3.06 TOPSOIL

- A. Where indicated on the drawings, strip topsoil from areas to be disturbed to a depth of 8 inches or greater and stockpile separate from other excavated material. Locate topsoil so that the material can be used readily for the finished grading. Protect and maintain topsoil until needed. Place topsoil after completion of work in accordance with Section 32 92 00, Lawns and Grasses. If topsoil cannot be stockpiled due to limited construction work area, offsite topsoil may be placed as indicated in the bid.

### 3.07 SITE GRADING

- A. Proof roll exposed soils following topsoil stripping with a partially loaded tandem axle dump truck to identify unsuitable subgrade areas as determined by the Engineer. Unsuitable areas will be repaired in place or undercut to firm soils as directed by the Engineer.
- B. Perform undercutting of unsuitable soils with appropriate equipment defined in soils report or approved by Engineer. Backfill undercut areas immediately.
- C. At the direction of the Engineer provide a structural fabric for stabilization of unsuitable soil areas. Install fabric in accordance with the manufacturer's recommendation and the following minimum requirements.
  - 1. Provide a fabric overlap of 24 inches.
  - 2. Back dump and spread aggregate over fabric at the aggregate specified thickness.
  - 3. Compact aggregate with vibratory roller prior to allowing additional construction traffic.
- D. Site grading shall be unclassified except as specifically indicated otherwise. Perform grading within the limits of the Project. Finished surface shall conform to the grades and cross sections indicated on the Drawings and be uniformly sloped for a positive drainage away from structures.
- E. Excavate rock encountered in cut sections to a depth of 6 inches below finished subgrade and backfill with satisfactory material.
- F. Scarify the existing subgrade surface to a minimum depth of 6 inches and recompact if subgrade density is less than the degree of compaction for the proposed fill material. Plow or bench existing ground surfaces steeper than one to four (vertical to horizontal) in such a manner that the fill material will bond with or be keyed to the existing surface. Use compaction equipment suitable for the soil being compacted. Moisten or aerate material as necessary to obtain the optimum moisture content within plus or minus one percent to obtain specified compaction.
- G. Soils used for fill and backfill shall be satisfactory soils classified SP, SM, or SW as shown in soils report in accordance with ASTM D2487. Dry or wet soil as necessary to maintain optimum moisture.
- H. Place backfill and fill material in accordance with the following:
  - 1. Maximum uniform loose lifts: 8 inches
  - 2. Optimum moisture content: 11 - 14 percent
  - 3. Percent compaction at optimum moisture content:
    - a. From ex. grade to within one (1) foot of struc. subgrade: 95
    - b. Final foot to subgrade under floor slabs and pavements: 98
    - c. Under sidewalks: 90
    - d. Grassy Areas: 85

- I. Approved compacted subgrade that is disturbed by construction or adverse weather shall be scarified and re-compacted as specified previously. Re-compaction over utilities shall be by hand tamping.

### 3.08 FILL AND BACKFILL

- A. Place and compact fill and backfill material adjacent to structures in a manner that prevents wedging and eccentric loading on or against structures. Do not use equipment adjacent to structures that may overload structure. Backfill against structure only after concrete has attained the specified 28-day compressive strength.
- B. Stone Base: Structures shall have a compacted crushed stone subgrade to the depth of 12 inches or as shown on the Drawings.

### 3.09 EXCAVATION FOR STRUCTURES

- A. Provide shoring or side slopes of excavations as necessary to protect workmen, and existing and new structures. Use, install, and remove shoring in accordance with State and Federal OSHA regulations.
- B. Furnish, erect, and maintain required guardrails at exposed boundaries of excavation.
- C. Perform excavation for utilities in accordance with Section 31 23 33, Trenching for Utilities. Install utilities to a minimum distance of five (5) feet beyond the face of the structure.
- D. Make excavation to the dimensions and elevations for the structures as indicated on the Drawings. Extend excavation a sufficient distance from walls and footings to allow for placing and removal of forms.
- E. Remove unsatisfactory material below required grade and replace with select backfill material as directed by Engineer.
- F. Excavation carried below the depths indicated, without specific directions, shall be backfilled and compacted as specified herein to the proper grade. In excavations for footings the concrete shall be extended to the bottom of the over excavation. Work caused by over excavation that has not been approved shall be at the Contractor's expense.
- G. The upper 9-inches of the subgrade after excavating for each structure should be compacted in place to at least 98% standard Proctor maximum dry density. The subgrade should be proof-rolled using a vibratory roller weighing a minimum of 10 tons (static load) until settlement from the last four complete passes does not exceed 1/8 inch. Any soft, unsuitable or unacceptable soils encountered in the subgrade should be replaced with structural fill placed and compacted to 98% of the standard Proctor maximum dry density.

### 3.10 ROCK EXCAVATION

- A. Notify Engineer immediately in the event that rock is encountered when the Contract requires payment by the unit price.

### 3.11 BORROW MATERIAL

- A. Provide borrow material required for fill and backfill to bring the site to the elevations indicated on the Drawings. Borrow material shall be subject to the approval of the Engineer. Notify Engineer as to the site selected for inspection and approval prior to transporting borrow material to the site.

- B. Obtain erosion control permit as necessary for borrow pit grading operations.
- C. Provide soil analysis for each type of material from proposed borrow pit(s) for Engineer's approval prior to placing borrow material. Contractor shall do necessary work to bring the borrow material to within plus or minus 1-1/2 percent of the optimum moisture content. A minimum of one sample per structure shall be obtained for analysis.

### 3.12 MAINTENANCE AND STABILITY

- A. Maintain fills and embankments to the grade and cross section indicated on the Drawings until the final completion and acceptance of the Project. Repair areas that are damaged.

### 3.13 DISPOSAL OF SURPLUS MATERIAL

- A. Dispose of surplus material not required or unsuitable for filling, backfilling, or grading in an approved spoil area in accordance with local ordinances.
- B. Obtain erosion control permit as necessary for disposal site(s).

### 3.14 SOIL TESTING

- A. Provide the services of a soil-testing firm as specified in Section 01 45 00, Quality Control.
- B. The testing laboratory soil specialist, as a minimum, shall be at the project site, upon request of the Owner, to perform the following:
  - 1. Monitor proof rolling of existing soils to determine requirements for undercutting unsuitable soils
  - 2. Monitor grading for the separation and wasting of unacceptable soils.
  - 3. Providing tests in accordance with the following schedule:
    - a. Optimum moisture and laboratory maximum density: Provide one (1) test per type of material to determine optimum moisture and maximum density values in accordance with ASTM D698.
    - b. Moisture content: Provide two (2) tests per day per type of material in accordance with ASTM D2216.
  - 4. Provide in-place field density in accordance with ASTM D1556 or other approved test and the following schedule:
    - a. Provide a minimum of one (1) in-place bearing capacity test for every 1,200 sq ft of subgrade area under structures prior to the start of foundation work.
    - b. While filling activities are in progress for structures and paved areas, provide a minimum of one (1) in-place density test for every 1,200 sq ft of lift with a minimum of one (1) test for every lift.
    - c. Provide a minimum of one (1) in-place bearing capacity test for every 100 feet of foundation trench.

END OF SECTION



SECTION 31 11 00  
CLEARING AND GRUBBING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Perform clearing and grubbing. Work shall include, but not be limited, to the following:
1. Access roads.
  2. Clearing and grubbing.
  3. Removal of surface debris.
  4. Demolition and removal of existing paving and structures.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
1. Section 01 35 13 Specific Project Requirements
  2. Section 31 25 00 Erosion Control
  3. Section 32 92 00 Lawns and Grasses.

1.03 WARRANTY AND FINES

- A. Contractor is liable for damages to public and private property and fines as may be placed on the Project by the governing agencies due to failure to provide erosion control devices in accordance with the approved erosion control plan and as may become necessary due to actual site conditions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PROTECTION

- A. Take reasonable care during construction to avoid damage to vegetation outside of the construction limits. Temporarily tie back ornamental shrubbery and tree branches, where appropriate, to minimize damage. Trees that receive damage to branches shall be trimmed of those branches to improve the appearance of the tree. Treat tree trunk damage by equipment with a tree dressing.
- B. Locate and protect property corners and survey control monuments and stakes prior to start of clearing operations. Disturbed property corners or survey control monuments shall be surveyed and reset by a Professional Land Surveyor licensed in the State of North Carolina. The Contractor shall be responsible for the cost to survey and reset.
- C. Provide temporary gates and fences as necessary to prevent unauthorized vehicular access to the site.
- D. Mark clearing limits (e.g., flag right-of-way, easements, etc.).

- E. Provide tree protection fencing at the outer edge of easements and rights-of-way as indicated on the plans or as directed by the Engineer/Owner. Tree protection fencing along easements and rights-of-way shall be placed around individual vegetation or groupings of vegetation (e.g., large tree, flower bushes, etc.), and along entire easement (both sides) where clearing through woods. Tree protection fencing shall also be provided where vegetation, within easement and rights-of-way, is indicated as not to be disturbed on Drawings. Where silt fence is provided, it may serve as tree protection fencing if indicated as combination fencing on the drawings. The fencing shall be as detailed on the drawings.
- F. Refer to paragraph 5.05 of the General Conditions and as modified by the Supplementary Conditions concerning the protection of Underground Facilities.

### 3.02 ACCESS ROADS AND STAGING AREA

- A. Clear for access roads.
- B. Limit clearing and grubbing for access roads to a maximum width for two-way traffic of 30 feet for 20-foot drive and 5-foot shoulders. Contractor shall flag the clearing limits on access roads for the Engineer and Owner to review in the field prior to clearing.
- C. Access roads shall have the following:
  - 1. Provide "Temporary Construction Entrance" per the standard detail on the Drawings at connection to State Roads or other roads as shown on the drawings.
  - 2. 6 inches of ABC stone unless shown otherwise on the drawings.
  - 3. Provide temporary seeding of shoulders as access drives are installed.
  - 4. Provide storm pipes under drives at points of concentrated water flow.
  - 5. Tire wash rack at locations and as detailed on the drawings.
- D. Clear for a staging area as indicated on the Drawings. Total area to be cleared shall be approved by the Engineer. Area for parking and storage of material shall have 6 inches of ABC stone.
- E. Allow reasonable use of access drive by other Contractors, Owner, Engineer, and others authorized to be on the site by the Owner.
- F. When no longer required, remove stone and restore access drives and staging area to original contours. Scarify and seed access drives and staging areas.

### 3.03 INSTALL EROSION CONTROL DEVICES

- A. Clear areas required to install erosion control devices, which shall be in place and operational prior to other land disturbing activity. Install erosion control devices in accordance with Section 31 25 00, Erosion Control.

### 3.04 STAGING, BORROW, AND DISPOSAL AREAS

- A. Obtain and pay for erosion control permit for staging, borrow, and disposal areas as required by Contractor and not already permitted by Owner.
- B. Install and maintain erosion control devices in accordance with Contractor's approved plan.

### 3.05 CLEARING AND GRUBBING

- A. Clear and grub the total width of permanent easement and right-of-way unless indicated otherwise on the Drawings. Clear and grub within temporary construction

- easement only as necessary for construction. Avoid disturbance to vegetation in temporary construction easements where possible, and as noted on the Drawings.
- B. Clearing shall consist of cutting, grinding and removal of vegetation to the existing ground surface and removal of debris. Debris shall include, but not be limited to, fences, steps, walls, chimneys, footings, foundation slabs, basements, signs, junked vehicles, and other rubble.
  - C. Grubbing shall consist of the removal of roots over 3 inches in diameter, matted roots, stumps, and other vegetable matter to 12 inches below existing grade.
  - D. For areas outside of the right of way and outside of residential yards, grinding of stumps and roots in place is acceptable.
  - E. Fill holes and depressions and bring cleared and grubbed area to a uniform contour to match existing grade. Provide positive drainage.
  - F. Remove and properly dispose of cleared and grubbed material from the site. Make reasonable effort to channel timber resulting from clearing operations into a beneficial use.
  - G. Burning shall not be permitted at the site.
  - H. All material from clearing and grubbing shall be maintained within designated limits of disturbance/construction in accordance with the approved Erosion Control Plan until such material is removed and taken offsite for disposal or another use.

END OF SECTION

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SECTION 31 23 33  
TRENCHING FOR UTILITIES

PART 1 GENERAL

1.01 SCOPE

- A. Provide labor, equipment, and material to perform required excavating, backfilling, and compacting for utilities and related structures as specified herein and indicated on the Drawings. Work shall include, but not be limited to, the following:
1. Survey staking as required for construction.
  2. Protection of existing improvements.
  3. Location of existing utilities.
  4. Use of explosives.
  5. Dewatering.
  6. Excavating, backfilling, and compacting for utilities.
  7. Installation of warning / identification tape and tracer wire.
  8. Borrow material.
  9. Disposal of surplus material.
  10. Demolition and removal of existing structures.
  11. Soil Testing.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
1. Section 01 35 13 Project Specific Requirements
  2. Section 31 11 00 Clearing and Grubbing
  3. Section 31 25 00 Erosion Control
  4. Section 33 14 13 Water Distribution System
  5. Section 33 31 11 Sanitary Sewer System
  6. Section 33 39 00 Reuse Water System
  7. Section 32 92 00 Lawns and Grasses

1.03 REFERENCED STANDARDS

- A. The latest revision, at the time of bidding, of the publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
1. N.C. Department of Transportation - Standard Specifications for Roads and Structures (NCDOT).
  2. American Society of Testing Materials (ASTM)
    - a. D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
    - b. D1556 Density of Soil in Place by the Sand-Cone Method.
    - c. D1586 Penetration Test and Spilt-Barrel Sampling of Soils.
    - d. D4253 Standard Test for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
    - e. D2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.
    - f. D2487 Classification of Soils for Engineering Purposes.

- g. D3839 Standard Guide for Underground Installation of “Fiberglass” (Glass-Fiber Reinforced Thermosetting-Resin) Pipe and Fittings.
- 3. American Water Works Association (AWWA)
  - a. Fiberglass Pipe Design Manual of Water Supply Practices M45
  - b. PVC Pipe Design and Installation Manual for Water Supply Practices M23
  - c. Ductile Iron Pipe and Fittings Manual for Water Supply Practices M41
- 4. Uni-Bell PVC Pipe Association
  - a. UNI-PUB-06 Installation Guide for PVC Solid-Wall Sewer Pipe (4-60 inches)
- 5. Ductile Iron Pipe Research Association (DIPRA)
  - a. Design of Ductile Iron Pipe
  - b. Installation Guide for Ductile Iron Pipe

#### 1.04 DEFINITIONS

- A. Backfill: A specified material used in filling the excavated trench and placed at a specified degree of compaction.
  - 1. Materials: Materials listed herein include processed materials plus the soil classifications listed under the Unified Soil Classification System, (USCS) (Method D2487 and Practice D2488). The soil materials are grouped into five broad categories according to their suitability for this application.
    - a. Class I: Angular, 6 to 40-mm (1/4 to 1-1/2-in), graded stone, including a number of fill materials that have regional significance such as coral, slag, cinders, crushed stone, and crushed shell.
    - b. Class II: Coarse sands and gravels with maximum particle size of 40 mm (1-1/2 in.), including various graded sands and gravels containing small percentages of fines, generally granular and noncohesive, either wet or dry. Soil Types GW, GP, SW, and SP are included in this class.
    - c. Class III: Fine sand and clayey gravels, including fine sands, sand-clay mixtures, and gravel-clay mixtures. Soil Types GM, GC, SM, and SC are included in this class.
    - d. Class IV: Silt, silty clays, and clays, including inorganic clays and silts of medium to high plasticity and liquid limits. Soil Types MH, ML, CH and CL are included in this class. These materials shall not be used for bedding, haunching, or initial backfill.
    - e. Class V: This class includes the organic soils OL, OH, and PT as well as soils containing frozen earth, debris, rock larger than 40 mm (1 1/2 in.) in diameter, and other foreign materials. These materials shall not be used for bedding, haunching, or initial backfill.
  - 2. Backfill Zones: Each backfill zone shall extend the full width of the trench bottom.
    - a. Foundation: Extending down from the bottom of bedding zone as defined below.
    - b. Pipe Embedment
      - 1) Bedding: Extending from 4 inches below the pipe bottom to the pipe bottom for 30-inch diameter and smaller and 6 inches below the pipe bottom for pipes larger than 30 inches in diameter.
      - 2) Haunching: Extending from the bedding (bottom of the pipe) to the pipe spring line.
      - 3) Initial Backfill: Extending from the haunching (pipe spring line) to 1 foot above the top of the pipe.
    - c. Final Backfill: Extending from the initial backfill to the finish ground elevation.

- B. Laying Conditions:
  - 1. Type 1: Flat bottom trench with loose backfill.
  - 2. Type 2: Flat bottom trench with backfill lightly consolidated to centerline of pipe.
  - 3. Type 3: Pipe bedded in 4 inches minimum of loose soil and backfill lightly consolidated to top of pipe.
  - 4. Type 4: Pipe bedded on Class I material to 1/8 pipe diameter (4 inch minimum) Backfill compacted to top of pipe a minimum of 80 percent of standard proctor.
  - 5. Type 5: Pipe bedded in compacted Class I material to pipe centerline with 4-inch minimum under pipe. Backfill to top of pipe with Class I, II, or III and compact to 90 percent of standard proctor.
- C. Compaction: Process of mechanically stabilizing a material by increasing its density at a controlled moisture condition. "Degree of compaction" shall be expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D698 (Standard Proctor).
- D. Excavation: The removal of soil or rock to obtain a specified depth or elevation.
- E. Lift: Layer of soil placed on top of a previously prepared or placed soil.
- F. Rock: Solid, homogeneous material which cannot be removed without the systematic drilling and blasting exceeding 1 cubic yard in volume. Material having a standard penetration rate less than 1-inch of penetration over 50 blows across continuous materials is defined as "rock." Rock is further defined as materials and obstructions encountered that cannot be practically excavated with a large track mounted backhoe, such as a CAT-325 or larger, equipped with a 42-inch rock bucket and new rock teeth. Practical excavation is defined as the ability to remove at least 10 cubic yards during one (1) hour of continuous digging. Removal of "hard material" will not be considered rock excavation because of intermittent drilling and blasting that is performed merely to increase production.
- G. Pipe Springline: A line running horizontally through the center of the pipe.
- H. Topsoil: Natural, friable soil, representative of productive soils in the vicinity of the site. Topsoil shall be free from roots, stones larger than 1 inch, objectionable weed seeds, toxic substances, and materials that hinder grading, planting, and maintenance operations.

#### 1.05 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittal Procedures:
  - 1. Catalog Data: Submit manufacturer's standard drawings or catalog cuts for the following. Clearly indicate equipment to be furnished for the Project including options to be provided.
    - a. Warning / Identification tape.
    - b. Geofabric for trench stone wrap.
  - 2. Test Reports: Submit for the following:
    - a. Moisture-density relations of soils.
    - b. Field moisture content.
    - c. Soil classification.
    - d. In-place field density.
    - e. Geotechnical engineer's daily field reports.
    - f. Third-party test reports for pre-construction condition assessments, crack monitoring and vibration monitoring per Section 31 05 00, Earthwork.

PART 2 PRODUCTS

2.01 STONE

- A. Class I material shall be #67 or #78M stone in accordance with NCDOT specifications Section 1005, General Requirements for Aggregate.

2.02 WARNING AND IDENTIFICATION TAPE

- A. Tape shall be a minimum 3-inch wide polyethylene plastic tape manufactured specifically for identification of buried utilities with means of enabling detection by a metal detector to a minimum depth of 3 feet. Tape shall be color coded and continuously imprinted with warning and identification markings in bold black letters to read "CAUTION - BURIED (utility) LINE BELOW." Color and printing shall be permanent, unaffected by moisture or soil and shall be as follows:

Utility	Color	Marking
Reclaimed Water	Purple	Caution – Buried Reclaimed Water Line Below
Sewer	Green	Caution – Buried Gravity Sewer Main Below Caution – Buried Pressure Sewer Line Below
Water	Blue	Caution – Buried Water Line Below

- B. Tape shall be by Blackburn Manufacturing, Joseph G. Pollard Co., or Reef Industries Inc. or approved equal.
- C. Warning tape shall be installed for pipelines constructed of non-ferrous materials.

2.03 TRACER WIRE AND TEST PORTS

- A. All non-ferrous pressure mains shall be provided tracing wire and test ports in such a manner as to be able to properly trace all mains without loss or deterioration of signal or without the transmitted signal migrating off the trace wire.
- B. Tracer wire shall be #12 gauge solid (bare) copper and continuous to the greatest extent possible. The tracer wire shall be securely bonded together at all wire joints with an approved industrial crimp connector to provide electrical continuity. It shall be accessible at all tracer wire test ports.
- C. Test ports with marker posts shall be located at bends and no farther than 500 feet apart. The test port shall consist of a standard valve box (as specified in Section 33 31 11, Sanitary Sewer System), shall be H-20 traffic load rated flush with grade in non-paved areas and flush with final asphalt or concrete pavement elevation and shall be located over the downstream or outgoing main. The valve box shall be equipped with a lid stamped "TS" and painted green for sewer mains, blue for water mains, and Pantone 522C for reuse mains. At each test port, a loop of wire shall be brought up and looped inside the box. The loop of wire inside the box shall be a minimum of three feet.



## 2.04 TRACER WIRE FOR NONMETALLIC WATER SERVICE PIPE

- A. Where nonmetallic water service pipe is allowed, all new nonmetallic water service pipes shall be provided tracing wire in such a manner as to be able to properly trace all mains and service laterals without loss or deterioration of signal or without the transmitted signal migrating off the trace wire.
- B. Tracing shall be #12 gauge solid (bare) copper and continuous to the greatest extent possible. The tracer wire shall be securely bonded together at all wire joints with an approved industrial crimp connector to provide electrical continuity.
- C. The meter box at or near the right of way and or easement shall serve as the test port with the tracing wire brought up into the meter box with the service lateral and looped in the meter box. The loop wire inside the meter box shall be a minimum of three feet.
- D. For new nonmetallic water service laterals where no tracer is installed on the main, provide an anode (1 pound minimum) for the tracing wire termination at the point of the new tap on the main.
- E. For nonmetallic service lateral installations less than 8 feet deep, the tracing wire shall be attached to the pipe. For nonmetallic service lateral installations deeper than 8 feet, the tracing wire shall be installed at a depth of 7 to 8 feet. For nonmetallic service laterals that are installed in encasement pipe, the tracing wire shall be routed through the encasement pipe.
- F. For nonmetallic service laterals installed by directional drilling, the tracer wire shall be attached to and pulled through with the service pipe.
- G. The wire shall be protected from damage during the execution of the work. No breaks or cuts in the tracer wire shall be permitted. Spliced connections shall only be allowed between the main line tracer wire (if applicable) and the lateral tracer wire. Industrial crimps shall be used to provide electrical continuity and the crimps shall be similar metal to eliminate galvanic corrosion.
- H. Contractor shall perform a continuity test on all tracer wire in the presence of the Owner or Owner's representative. If the tracer wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of wire at his own expense.
- I. Copper clad steel tracer wire (#12) as manufactured by Copperhead Industries, or approved equal, is an approved alternative to #12 bare solid copper tracer wire.

## 2.05 TRACER WIRE FOR GRAVITY SEWERS AND LATERALS AND MANHOLE MARKERS

- A. In accordance with General Statute 87-121(g), gravity sewers and laterals installed after October 1, 2014 shall be electronically locatable.
- B. All new gravity sewer main and sanitary sewer lateral shall be provided tracing wire in such a manner as to be able to properly trace all mains without loss or deterioration of signal or without the transmitted signal migrating off the trace wire.
- C. Tracing wire shall be #12 gauge solid (bare) copper and continuous to the greatest extent possible. Copper clad steel tracer wire (#12) as manufactured by Copperhead Industries, or approved equal, is an approved alternative to #12 bare solid copper tracer wire. The tracer wire shall be securely bonded together at all wire joints with an approved industrial crimp connector to provide electrical continuity. It shall be accessible at all tracer wire test ports.

- D. For gravity mains, test ports shall be provided at frequency of 500 feet or at every manhole, whichever is the shorter of the distance. The test port shall consist of a standard valve box (as specified in Section 33 31 11), shall be H-20 traffic load rated flush with grade in non-paved areas with concrete collar as shown on Detail W-17, and flush with final asphalt or concrete pavement elevation and shall be located over the downstream or outgoing main. The valve box shall be equipped with a lid stamped "TS" and painted green. At each test port, a loop of wire shall be brought up and looped inside the box. The loop of wire inside the box shall be a minimum of three feet. All tracing wire for branch mains and laterals that terminate into the manhole shall be routed around the circumference of the manhole and spliced to the main tracing line.
- E. For sanitary sewer laterals, the cleanout at the right of way and or easement shall serve as the test port with the tracing wire brought up outside the cleanout assembly and wrapped around the assembly stack twice at a depth of approximately 12-inches below grade. Extend a loop of the wire to the top of cleanout.
- F. For new sanitary sewer laterals where no tracer is installed on the main, provide an anode (1 pound minimum) for the tracing wire termination at the point of the new tap on the existing main.
- G. For gravity main and or lateral installations less than 8 feet deep, the tracing wire shall be attached to the pipe. Tracer wire shall be laid flat and securely affixed to the pipe at 10 foot intervals. Where lateral taps are made by service saddles, the tracer wire shall not be allowed to be placed between the saddle and main. For gravity main and or lateral installation deeper than 8 feet, the tracing wire shall be installed at a depth of 7 to 8 feet. The wire shall be protected from damage during the execution of the work. No breaks or cuts in the tracer wire shall be permitted.
- H. Spliced connections shall only be allowed between the main line tracer wire and branch main and lateral tracer wire. Industrial crimps shall be used to provide electrical continuity and the crimps shall be similar metal to eliminate galvanic corrosion.
- I. Contractor shall perform a continuity test on all tracer wire in the presence of the Owner or Owner's representative. If the tracer wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of wire at their own expense.
- J. Where existing branch mains are reconnected to a main line that is replaced or realigned, tracing wire is not required for the section of branch main that is reconnected unless it is replaced from manhole to manhole. All main lines that are replaced or realigned shall be provided tracing wire.
- K. For gravity sewer mains and laterals that are installed in encasement pipe, the tracing wire shall be routed through the encasement pipe.
- L. Manhole markers shall be placed adjacent to manholes at the discretion of Owner or Owner's representative.

## 2.06 TRACER WIRE FOR REUSE MAINS

- A. Tracer wire to be installed on all PVC reuse pipe in such a manner as to be able to properly trace all mains without loss or deterioration of signal or without the transmitted signal migrating off the trace wire.

- B. Tracer wire shall be #12 gauge solid (bare) copper and continuous to the greatest extent possible. Copper clad steel tracer wire (#12) as manufactured by Copperhead Industries, or approved equal, is an approved alternative to #12 bare solid copper tracer wire. The tracer wire shall be securely bonded together at all wire joints with an approved industrial crimp connector to provide electrical continuity. It shall be accessible at all tracer wire test ports.
- C. Test ports with marker posts shall be located at bends and no farther than 300 feet apart. The test port shall consist of a standard valve box with a concrete collar, shall be H-20 traffic load rated flush with grade in non-paved areas with concrete collar as shown on detail W-17, and flush with final asphalt or concrete pavement elevation and shall be located over the downstream or outgoing main. The valve box shall be equipped with a lid stamped "TS" and painted Pantone 522C for reuse mains.
- D. At each test port, a loop of wire shall be brought up and looped inside the box. The loop of wire inside the box shall be a minimum of three feet.
- E. The wire shall be protected from damage during the execution of the work. No breaks or cuts in the tracer wire shall be permitted. Industrial crimps shall be used to provide electrical continuity and the crimps shall be similar metal to eliminate galvanic corrosion.
- F. Contractor shall perform a continuity test on all tracer wire in the presence of the Owner or Owner's representative. If the tracer wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of wire at their own expense.
- G. All main lines that are replaced or realigned shall be provided tracing wire.
- H. For reuse mains that are installed in encasement pipe, the tracing wire shall be routed through the encasement pipe.

## PART 3 EXECUTION

### 3.01 PROJECT SAFETY

- A. Contractor is responsible for Project safety.
- B. Perform work in conformance with applicable State and Federal safety regulations including, but not limited, to the following:
  - 1. North Carolina Safety and Health Standards for the Construction Industry (29CFR 1926 Subpart P and U).
  - 2. NC OSHA Industry Guide No. 14, Excavations.
  - 3. NC OSHA Industry Guide No. 20, Crane Safety.
- C. Provide barriers, warning lights, and other protective devices at excavations as necessary for safety of workers and the public.
- D. Provide sloping of bank, shoring, sheeting, or other means of maintaining the stability of the trench in accordance with the requirements of the Associated Contractor's Manual of Accident Prevention OSHA, Part 1926.P.
- E. In trench depths of 20 feet or greater, provide certification sealed by Structural Engineer certifying that trench box, sheeting and shoring meets OSHA requirements.

### 3.02 PROTECTION OF UNDERGROUND FACILITIES

- A. Refer to paragraph 5.05 of the General Conditions and as modified by the Supplementary Conditions concerning the protection of Underground Facilities.
- B. Prior to beginning any excavation work or boring, the Contractor shall, through field investigations, determine any conflicts or interferences between existing utilities and new utilities to be constructed under this project. This determination shall be based on the actual locations, elevations, slopes, etc., of existing utilities as determined in the field investigations, and locations, elevation, slope, etc. of new utilities as shown on the Drawings. If an interference exists, the Contractor shall bring it to the attention of the Engineer as soon as possible. If the Engineer agrees that an interference exists that was not apparent from the Contract Documents, or could not have been identified during a site visit during bidding, he shall modify the design as required. Additional costs to the Contractor for this change shall be processed through a Change Order as detailed elsewhere in these Contract Documents. An interference shall be defined for these purposes as a conflict with an existing utility or structure that prevents the proposed utility from being installed where shown or specified after existing utilities and structures are adequately supported by the Contractor. In the event the Contractor fails to complete adequate field evaluations to identify conflicts, or bring a potential conflict or interference to the attention of the Engineer prior to beginning excavation work, any actual conflict or interference which does arise during the Project and could have been avoided with diligent utility location efforts shall be corrected by the Contractor, as directed by the Engineer, at no additional expense to the Owner.
- C. A change in conditions may be considered due to the location of the existing facilities as allowed in the General Conditions. This does not include the cost for repair of damaged facilities not properly located in advance of construction.
- D. Separation distances shall be in accordance with utilities requirements.

### 3.03 CONSTRUCTION STAKING

- A. Provide construction staking as indicated in paragraph 4.03 of the General Conditions. Engineer will only provide electronic design files for Contractor's surveyor and key reference points and benchmarks as shown on the Drawings.
- B. Contractor shall report to Engineer whenever a reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations. Contractor shall be responsible for the accurate replacement or relocation of such reference points or property monuments by a registered professional surveyor in the State of North Carolina.

### 3.04 LOCATION OF INSTALLED UTILITIES

- A. Contractor shall be responsible for locating contract installed utilities as requested by third parties proposing to dig in the contract area until the date that the entire contract is recommended for final payment by Engineer to Owner.

### 3.05 WATER CONTROL

- A. Prevent surface water from entering the trench.
- B. When trench bottom is below the existing ground water table, install a dewatering system to maintain water table a minimum of two (2) feet below trench bottom. Provide personnel experienced in dewatering work at the job site.

- C. Maintain dewatering until backfilling has proceeded above the existing ground water level.
- D. Dispose of water from dewatering operations in accordance with the North Carolina Sedimentation Pollution Control Act.
- E. In no case shall trench water or groundwater be pumped into or allowed to enter the sanitary sewer system.

### 3.06 USE OF EXPLOSIVES

- A. Blasting is allowable for the removal of rock, as defined herein, unless specifically prohibited by the Owner, Engineer or a Utility Owner with an existing utility within the proximity of the proposed blast site. The contractor shall review the drawings for specific areas where blasting is prohibited.
- B. Obtain required permits for blasting (e.g., from City of Raleigh Fire Marshall's Office) prior to blasting, 24 hours minimum.
- C. Store, handle, and use explosives in accordance with all applicable local, state, and federal regulations, and in accordance with the provisions of the "Manual of Accident Prevention and Construction" of the Associated General Contractors of America, Inc. Federal regulations include, but are not limited to, Title 27, Chapter 11, Part 555 of the Code of Federal Regulations (CFR) and OSHA Standards – Part 1926, Subpart U.
- D. Provide seismographic monitoring during progress of blasting operations. A minimum of four seismographs, one in each direction shall be used within 500 feet of blasting operations for structures (such as a single-family dwelling or similar size business) unless the structure is larger (such as a building complex, bridge, etc.) in which case additional seismographs shall be installed based upon the blasting specialist's recommendations. Seismographs shall be equipped with remote monitors that are capable of transmitting readings directly to the Contractor, Owner, and "third party" testing firm immediately following the recordings. Seismographs shall also be equipped with visual and audible alarms at each installation."
- E. Take all necessary precautions to protect life and property, including the use of an approved blasting mat where there exists the danger of throwing rock or overburden. Keep the explosive materials that are on the job site in specially constructed boxes provided with locks. Failure to comply with this specification shall be grounds for suspension of blasting operations until full compliance is made. No blasting using electronic blast caps shall be allowed unless a galvanometer is employed to check cap circuits. Non-electronic blasting caps shall be utilized in accordance with all manufacturer's instructions and safety requirements."
- F. . Where blasting takes place within 500 feet of a utility, structure, or property which could be damaged by vibration, concussion or falling rock, keep a blasting log containing the following information for each and every shot. This log shall be kept in an orderly manner and made available to the Engineer and Owner upon request.
  1. Date of shot
  2. Time of shot
  3. Crew supervisor
  4. Number and depth of holes
  5. Approximate depth of overburden
  6. Amount and type of explosive used in each hole
  7. Type of caps used (instant or delay)

8. The weather
  9. Seismograph instrument and readings
- G. Use explosives in such a way to minimize vibration to existing utilities and structures.
  - H. Provide only experienced personnel for blasting in accordance with accepted practices.
  - I. Contractor is responsible for safety of life and damage to property resulting from the use of explosives. The Owner and Engineer shall be made aware of all blasting activities prior to their occurrence.
  - J. Provide services of a testing firm experienced in monitoring vibrations resulting from blasting operations as specified in Section 01 45 00, Quality Control.
  - K. In addition to the above testing/monitoring requirements required, Contractor shall provide the services of a “third party” geotechnical testing firm experienced in monitoring vibrations resulting from blasting operation as specified in Section 01 45 00, Quality Control. The firm selected shall be evaluated by the Engineer and Owner for approval as the official “third party”.
  - L. Third Party testing/monitoring as related to blasting operations shall include the following:
    1. Pre-Construction Condition Assessment
      - a. Prior to beginning construction, the third party testing firm shall perform a pre-construction condition assessment to document the conditions of buildings and other sensitive structures within *\*\*Distance for Blast Assessment\*\** feet of the proposed blasting area. The assessment shall be performed on all adjacent properties and any other properties as directed by the Engineer or Owner. The assessment should include video and photographic documentation of all exteriors including building foundations, and installation of crack monitors on cracks that might occur or expand due to construction vibrations. Provide all documentation described above to the Owner and Engineer prior to construction.
    2. Crack Monitoring During Construction:
      - a. During construction, the third party testing firm shall perform periodic readings of the crack monitors installed prior to construction. Provide readings to the Engineer and Owner within 48 hours of taking the reading. If crack readings monitoring confirm that vibrations are not contributing to crack width, crack monitors may be read once per week. More frequent readings may be required by Owner or Engineer if construction activities could result in greater earthborne vibrations. Testing firm shall notify the Engineer and Owner immediately if monitoring indicates that construction operations have contributed to crack widening. The testing firm shall prepare a detailed plan for repaired the structure and the Contractor shall repair the structure at no cost to the Owner. Contractor shall submit a plan for review that proposes alternate construction methods to address the vibration problems and minimize further damage.
    3. Vibration Monitoring During Construction:
      - a. The third party testing firm shall monitor vibrations at no less than four locations along the perimeter of the project during all blasting activities. The locations shall be based on the location of construction activities and their relative position to offsite structures. Prior to construction, a plan showing the proposed monitoring locations shall be submitted to the Engineer and Owner

for approval. Adjustments may be made to the locations upon approval. The sensitivity range of the seismograph shall be selected such that the recording is initiated below the maximum allowable particle velocity of 1 in/sec and extends above the highest expected intensity. Specific activities of the vibration source (i.e., blasting) shall be indexed in time to allow correlation with the arrivals on the vibration.

- b. The maximum allowable particle velocity is 1 in/sec. The contractor shall notify the Engineer and Owner immediately if monitors indicate that the vibrations are above the criteria established. Activities causing the vibrations shall be suspended until a revised construction plan has been developed by the testing firm to alleviate the problem. The problem shall be resolved by the Contractor at no additional cost to the Owner.
  - c. The vibration monitors shall consist of digital seismographs that display the particle velocities and associated frequencies plotted against the criteria established for this project. Each seismograph shall contain geophones with response capability in three mutually perpendicular axes or components; one vertical and two horizontal (radial and transverse). The frequency response of the geophones shall be linear from at least 4 Hz to more than 200 Hz. The sensitivity shall range from less than 0.02 in/sec to more than 5.0 in/sec. Monitors by InstanTel is one type of seismograph that is suitable for this project.
  - d. Vibration monitors shall be field calibrated by the testing firm before each recording period. The transducer shall be positioned with the longitudinal axis toward the vibration source. Transducers must be adequately coupled with the ground. Operation and calibration of all equipment shall be per manufacturer's recommendations. Vibration records shall be collected in waveform plot or strip chart plot. The peak vector sum of the particle velocity in longitudinal, transverse, and vertical planes shall be shown along with the respective dominant or principle frequencies. The highest recorded particle velocity (i.e., the vector sum of the three orthogonal directions), when indexed to a particle vibration event, shall be reported as the peak particle velocity. The recorded peak particle velocity shall be compared to criteria appropriate for the subject of concern.
  - e. The Engineer and Owner shall be notified immediately of any complaint received by the Contractor. The Contractor shall immediately review those construction activities inducing the vibration and prepare a report documenting all relevant data such as the time and date of the complaint, a description of the construction activities, data from the monitoring instruments for the subject time/date, complaint information (including photographs, if possible) of the alleged damage. The Contractor shall submit for review a detailed plan for repair and revised construction plan to address the vibration problems to minimize further damage and complaints. The Contractor shall perform necessary repairs at no additional cost to the Owner.
  - f. The testing firm shall provide monthly reports containing the results of the crack monitors and vibration monitors during those activities that generate earthborne vibrations, including but not limited to blasting operations. The reports shall document that the firm is provided the work described herein.
- M. Submit monitoring reports in accordance with Section 01 45 00, Quality Control.
- N. The Owner reserves the right to require the removal of rock by other means if blasting operations result in possible hazardous conditions.

- O. The Contractor shall provide as contingency, on-site, by-pass pumping capability when blasting within 100 feet of existing sanitary sewer infrastructure or where required otherwise as noted on the Drawings or specified in other sections of the project manual.

### 3.07 EXCAVATING

- A. Excavation shall be by open cut, unless otherwise indicated on the Drawings or specified herein. Other than where specifically indicated on the Drawings, short sections of trench may be tunneled or direct bored with the approval of the Engineer.
- B. Stockpile excavated material in such a manner that it will not obstruct the flow of runoff, streams, endanger Work, impair the use or appearance of existing facilities, or be detrimental to the completed Work.
- C. Contractor shall segregate excavated material so as to maintain material suitable for backfill separate from material that is unsuitable.
- D. Trench dimensions at the pipe embedment and foundation zone, shall be as detailed on the drawings.
- E. Shape trench bedding to provide uniform bearing for the full pipe length. Bottom shall be free of protrusions that could cause point loading on pipe. Provide bell holes as required for properly making pipe joint.
- F. Do not over excavate. Excavation below grade without approval of Engineer shall be backfilled with Class I material at no additional cost.
- G. Undercut soils that become unsatisfactory by construction activity or by being left exposed to the weather shall be replaced with Class I backfill material at no additional cost.
- H. Remove shoring, bracing, and sheeting, unless otherwise noted, as the trench is backfilled. Engineer shall have the authority to require that the sheeting be left in place. Once the trench box has been removed to the top of the pipe (or initial backfill zone), the stone shall be replenished to have the required stone over the pipe for the entire width of the excavation. This includes area displaced by the trench boxes and any voids outside the box.
- I. Excavation of trench shall not advance more than 100 feet ahead of the installation. In no case should the excavation extend beyond that which can be backfilled by the end of the workday.
- J. Correct unstable soil conditions encountered at trench foundation by the following method:
  - 1. Excavate below grade as approved by Engineer and backfill with Class I material or approved substitute.
- K. Rock and Hard Material
  - 1. Excavate rock and hard material to a minimum depth of 6 inches below the pipe. Excavation shall be backfilled with Class I material.
  - 2. Mechanical removal of rock (i.e., no blasting) may be necessary along portions of the project, as noted on the Drawings or as required by the applicable regulatory agencies, where blasting could result in complications with surrounding infrastructure.
  - 3. Removal of rock by blasting shall only be used when approved by Owner.



- L. Pressure Lines:
  - 1. Provide a minimum 3 feet of cover, unless indicated otherwise on the Drawings.
  - 2. Excavate trenches to provide vertical curve chords that will not exceed the pipe manufacturer's recommended joint deflection.
  - 3. Provide concrete thrust blocks having a compressive strength of 3,000 psi at 28 days at change in horizontal and vertical direction and reduction in the pipe size, unless other restraint systems are indicated otherwise on the Drawings. Cut trench sides vertical and square to receive concrete. Provide bearing area against trench wall as indicated on the Drawings.
- M. Gravity Lines:
  - 1. Excavate trench to the alignment and grade indicated on the Drawings.
- N. Utility Structures: Provide a minimum of 9 inches below subgrade and backfill with Class I material compacted to 95 percent maximum density. If the soil conditions are found to be unsuitable for structural stability of the structure, Engineer may require additional depth of Class I material. The additional Class I material will be paid for under the appropriate bid item as indicated in the Bid Form.

### 3.08 BACKFILLING

- A. Weather Limitations: Proceed with backfill operations based on the following weather conditions:
  - 1. Temperature must be above freezing and rising.
  - 2. In windy, hot, or arid conditions with a high rate of evaporation add moisture to the material to maintain the optimum moisture content.
  - 3. Do not proceed in rain or on saturated subgrade.
  - 4. Do not place material on surfaces that are muddy, frozen, or contain frost.
- B. General
  - 1. Maintain backfill operation within 100 feet from pipe laying operation.
  - 2. Backfill trench to existing ground surface with select excavated material at the specified compaction.
  - 3. If excavated material is unsuitable to obtain specified compaction, provide suitable off-site borrow material for backfill as approved by Engineer.
  - 4. Re-excavate trenches improperly compacted. Backfill and compact as specified.
  - 5. Provide appropriate tamping equipment, and water to obtain proper moisture content, to achieve specified compaction of backfill.
  - 6. Conduct operation of heavy equipment above pipe installation in such a manner as to prevent damage to pipe.
  - 7. Install warning / identification tape over utilities. Bury tape one foot below finished grade above the utility.
  - 8. Install tracer wire for non-metallic pressure pipe. Bury tracer wire one foot below finished grade over the pipe. Wire shall be looped into valve boxes and indication posts to allow access for direct contact location.
- C. Backfill in pipe embedment zone (bedding, haunching, and initial backfill).
  - 1. General:
    - a. Backfill with material as specified below. Material shall be free from objects larger than 2 inches.
    - b. Where rock and hard material has been excavated below pipe bottom, backfill and compact bedding with Class I material. Class II or III material may be used for bedding with Engineer's approval unless specified otherwise below.
    - c. Place backfill material to assure placement of material under pipe haunches.

- d. Take care during placement and compacting of material to avoid movement of pipe.
- 2. Place backfill in bedding and haunching zones in 6 inch maximum lifts in traffic areas and 12 inch maximum lifts in non-traffic areas and compact to 90 percent density. Provide backfill material in pipe embedment zone as specified below.
  - a. Pressure Lines (Flexible and Rigid Pipe)
    - 1) Excavation in Class I, Class II, Class III, and stable Class IV soils suitable for bedding, the bedding surface shall provide a firm foundation of uniform density. Backfill with select excavated material.
    - 2) Excavation in Class V, unstable Class IV soils, running water, and other unstable soil conditions, excavate a minimum of 6 inches below pipe bottom and provide Class I material for bedding and haunch zone. Backfill with Class I, II, or III material in initial backfill.
  - b. Gravity Sewer Lines, Rigid pipe (ductile iron)
    - 1) Excavation in Class I, Class II, Class III, and stable Class IV soils suitable for bedding, the bedding surface shall provide a firm foundation of uniform density. Backfill with select excavated material.
    - 2) Excavation in Class V, unstable Class IV soils, running water, and other unstable soil conditions, excavate a minimum of 4 inches below pipe bottom and provide Class I material for bedding and haunch zone. Backfill with Class I, II, or III material in initial backfill.
  - c. Gravity Sewer Lines, Flexible (CCFRPM)
    - 1) Depth of cover 0 to 40 ft:
      - i) Provide Class I material for bedding and through embedment zone to 12" above the top of pipe.
  - d. Gravity Sewer Lines, Flexible (PVC SDR 35)
    - 1) Depth 0 to 12 ft: Provide Class I material for bedding and haunching. Backfill with Class I, II, or III material in initial backfill.
  - e. Gravity Sewer Lines, C900/C905
    - 1) Refer to Drawings.
- D. Final Backfill
  - 1. Backfill with materials free of stones and debris larger than 6 inches in dimension. Place backfill in lifts not exceeding the thickness and compacted to the minimum density specified below.
  - 2. Lifts and density:
    - a. Undeveloped areas (i.e., forests, fields, and, croplands): Trench may be filled with bulldozer blade provided material fall will not damage pipe. Mound soil over the trench area sufficiently to settle level over time. Degree of compaction shall be 85 percent.
    - b. Lawns: Backfill in 12-inch lifts and compact to 90 percent. Top 12 inches shall be free of material with a dimension over 2 inches.
    - c. Roads (including Rights-of-way), drives, parking areas (including areas within 20 feet), and adjacent to existing utilities: Backfill in 6 inch lifts compact to 95 percent. Compact the final 8 inches below finished subgrades beneath pavements/sidewalks to at least 100% of the soil's Standard Proctor maximum dry density within 2% of optimum moisture.
    - d. Within 20 feet of foundations: Backfill in 6-inch lifts compacted to 95 percent.
- E. Utility Structures: Bring backfill to grade in even lifts on all sides. Lift depths and compaction densities shall be as specified according to area of installation for pipe

above. Backfill against cast-in-place concrete structure only after concrete has attained the specified 28-day compressive strength.

### 3.09 ANTI-SEEP COLLARS

- A. Anti-seep Collars: Provide anti-seep collars to prevent groundwater flow along pipe in wetlands as indicated on the Drawings. Collars shall extend past trench walls and bear against undisturbed soils. Dimension of collars shall be as indicated on the Drawings. Do not place stone in area of anti-seep collars.
- B. Concrete Collar: Provide Class B concrete with minimum cement content of 5 sacks per cubic yard (5.5 sacks for angular course aggregate); 6.8 gallons of water per sack water-cement ratio; 2-4 inch slump range; and 28-day strength of 2,500 psi.
- C. Clay Collar: Provide clay of medium to high plasticity with a soil classification of CL or CH and a permeability of 10-5 cm / second. Place clay in 6-inch lifts and compact by use of a mechanical hydraulic tamper to 95 percent.

### 3.10 SOIL TESTING

- A. Provide services of a soil-testing firm as specified in Section 01 45 00, Quality Control.
- B. Testing laboratory soil specialist shall be at the project site, upon request of the Owner, to perform inspection and in-place density testing as specified in Section 31 05 00 Earthwork.
- C. Density tests shall be made in accordance with ASTM D-698, Standard Proctor Method.
- D. Submit test reports and soil specialist daily logs in accordance with Section 01 45 00, Quality Control.
- E. Allowance established in Section 01 22 00, Unit Prices, shall be utilized to pay for costs of the initial tests.
- F. For each test that fails the compaction requirements, the testing firm, at the direction of the Engineer, shall make two additional tests. Contractor shall pay for cost of additional tests due to failure of compaction/density test.
- G. Based on test results, make corrections, adjustments, and modifications of methods, materials, and moisture content for proper trench compaction.

### 3.11 PAVEMENT REMOVAL AND PATCHING

- A. Repair damaged pavement structure.
- B. Cut existing pavement for utility installation in straight lines generally parallel to the utility. Properly dispose of removed pavement structure.
- C. Extend pavement patch 1 foot beyond each side of trench on firm subgrade. Slope new surface to drain.
- D. Asphalt Pavements: Replace asphalt pavement with a pavement structure equal to existing but no less than as detailed on the Drawings or as indicated in the Encroachment Agreement, whichever is more stringent.
- E. Concrete Pavements: Replace concrete pavement with pavement structure equal to existing but no less than as detailed as Drawings. Concrete shall be minimum 3,000 psi. When existing concrete joint is within 5 feet of trench remove existing concrete to joint. Provide expansion joint at edge of existing concrete. Surface treatment shall

match existing. For overlays, as indicated on Drawings, set new driveway elevation at overlay depth and transition to existing driveway elevation.

- F. Curbs, Gutters, and Sidewalks: Replace curbs and gutters, and sidewalks removed or damaged with similar sections to match the existing. Remove to nearest existing joint.
- G. Approval of Other Authorities: Pavements under the jurisdiction of the NC Division of Highways shall be subject to the approval of a representative of that Division.
- H. For overlays, coordinate final limits with Owner, Engineer, and NC Division of Highways. Perform in accordance with NCDOT Encroachment Agreement.
- I. For overlays, as indicated on Drawings, raise existing and new manholes and valve boxes to finished pavement grade. Excavate around top of existing manhole and valve box as necessary. Remove existing top ring, and install new grade ring(s) as necessary. Install existing cover. Raise existing valve box. Provide concrete collar around manhole ring and valve box per details on the Plans.
- J. See Section 32 10 00, Pavement and Appurtenances for additional requirements.

### 3.12 GRADING AND CLEAN-UP:

- A. Provide for testing and clean up as soon as practicable, so these operations do not lag far behind the pipe installation. Perform preliminary clean up and grading as soon as backfill is complete.
- B. Provide positive drainage of finished grade and drain away from structures. Finished grade shall be reasonably smooth, compacted, free from irregular surface changes and comparable to the adjacent existing ground surface.
- C. Seed disturbed areas in accordance with Section 32 92 00, Lawns and Grasses.
- D. Upon completion of backfilling, remove and properly dispose of excess material and waste. Surplus materials shall be disposed in an Owner-approved facility. A list of approved facilities is available from City of Raleigh Public Utilities Department. The Contractor may submit an alternate facility for Owner approval, prior to utilization, in accordance with the Contract Documents.

END OF SECTION

SECTION 31 25 00  
EROSION CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Provide erosion control work. Work shall include, but not be limited to, the following:
  - 1. Erosion control at project site.
  - 2. Erosion control at borrows and disposal areas as required by Contractor. Cost shall include erosion control permits as necessary for borrow and disposal areas.
  - 3. Removal of surface debris.
  - 4. Maintain and remove erosion control devices.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements
  - 2. Section 31 05 00 Earthwork
  - 3. Section 31 11 00 Clearing and Grubbing
  - 4. Section 31 23 33 Trenching for Utilities
  - 5. Section 32 92 00 Lawns and Grasses

1.03 REFERENCED STANDARDS

- A. "Erosion and Sediment Control Planning and Design Manual," issued by the N. C. Sedimentation Control Commission.

1.04 QUALITY ASSURANCE

- A. Conform to rules and regulations of the Erosion Control Laws of the State of North Carolina, specifically the Sedimentation Pollution Control Act of 1973 (G.S. 113A) as amended, and the local jurisdiction where the project is located.
- B. Post a copy of the approved erosion control permit, furnished by Owner, at the site prior to starting work. Maintain a copy of the approved erosion control plan at the site.
- C. Provide permanent ground cover as soon as possible, and no later than the number of days after completion of work in accordance with Section 32 92 00, Lawns and Grasses.

1.05 WARRANTY

- A. Contractor is liable for damages to public and private property and fines as may be placed on the Project by the governing agencies due to failure to provide erosion control devices in accordance with approved erosion control plan.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Matting / Erosion Control Fabric (ECF): Matting and ECF shall be an excelsior, jute, and or 100% straw mulch fabric encased in a medium weight, no plastic matting (both sides) with a minimum permissible shear stress of 1.75 lbs/ft<sup>2</sup>. Matting shall be

100% biodegradable but suitable until vegetation has been established. Installation of ECF shall be done with staples per details in the Drawings. Commercially available ECFs may be used upon approval of the engineer. Approval of fabrics will require manufacturer's design data regarding velocity, shear strength, ditch slopes, method of installation, decay cycle, repair techniques, and grass growth enhancement characteristics.

- B. Wire Staples: 16 gauge steel wire, with minimum of 3" top and 4" long legs.
- C. Gravel for Stone Filters: #57 crushed stone.
- D. Filter Fabric: 7-1/2 oz. burlap fabric or other silt filtering fabric.
- E. Riprap:
  - 1. Class A: Stone shall conform to NCDOT standards and shall range in size from 2 to 6-inches with the stone gradation being equally distributed within the required size range.
  - 2. Class B: Stone shall conform to NCDOT standards and shall range in size from 5 to 12-inches with the stone gradation being equally distributed within the required size range.
  - 3. Type 1: Stone shall conform to NCDOT standards and shall range in size from 5 to 17-inches with the stone gradation being equally distributed within the required size range.
  - 4. Type 2: Stone shall conform to NCDOT standards and shall range in size from 9 to 23-inches with the stone gradation being equally distributed within the required size range.
- F. Silt Fence
  - 1. Line Wires shall be minimum 10-gauge, and intermediate wires to be minimum 12-½ gauge.
  - 2. Silt fence to be geotextile fabric at a height of 26-inches above grade.
  - 3. Posts to be constructed of 5' steel, buried 2' deep with 3' above grade.

## PART 3 EXECUTION

### 3.01 INSTALL EROSION CONTROL DEVICES

- A. Install erosion control devices, which shall be in place and operational prior to other land disturbing activity.
- B. After installing erosion control devices as indicated on the Drawings, verify that reasonable measures have been taken to prevent the sedimentation of nearby watercourses, existing and new facilities, and adjacent property.
- C. Should Contractor believe that additional measures are necessary to adequately prevent erosion, immediately notify Engineer. If rain is predicted before the Engineer can be notified, take measures as necessary to prevent siltation of nearby water courses and work will be paid for as provided in the General Conditions.
- D. After installing erosion control devices, request an inspection by the local agency having jurisdiction and the Engineer.
- E. Incorporate permanent erosion control work into the project at the earliest practicable time. Coordinate temporary erosion control measures with permanent erosion control measures and other work on the project to assure effective and continuous erosion control throughout the construction and post construction period.

- F. Maintain erosion control devices during construction until the disturbed areas are stabilized and the agency having jurisdiction and the Engineer have approved the removal of the erosion control devices.

### 3.02 BORROW AND DISPOSAL AREAS:

- A. Obtain and pay for erosion control permit for borrow and disposal areas as required by Contractor.
- B. Install and maintain erosion control devices in accordance with Contractor's approved plan.

### 3.03 MAINTENANCE

- A. Make required repairs immediately. Remove sediment deposits when deposits reach approximately one-half of the capacity of the erosion control device.
- B. Respread accumulated sediments on the project site in a manner that will not adversely affect erosion control facilities and permanent ground cover.
- C. Silt Fence/Inlet Protection: Should the filter fabric decompose or become ineffective before approval of its removal by the Engineer, replace fabric immediately at no additional cost to the Owner.
- D. Temporary Construction Entrance: Maintain entrance in a condition that will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with 2 inches of stone, as conditions require, at no additional cost to the Owner.

### 3.04 INSPECTIONS AND REPORTING

- A. Inspect erosion control devices within 24 hours after each rainfall and as required by the Erosion Control permit.
- B. Inspect all stormwater discharge outfalls within 24 hours after each rainfall and as required by the Erosion Control permit.
- C. Generate and submit inspection reports as required by the Erosion Control permit.
- D. Inspection reports shall be submitted to the City and review agency for approval, as applicable.

### 3.05 SEEDING

- A. Disturbed areas not covered by new construction shall be seeded.
- B. Provide temporary and permanent seeding in accordance with Section 32 92 00, Lawns and Grasses.

### 3.06 STABILIZATION AND CLEAN-UP

- A. Remove erosion control devices upon the approval of the permanent stabilization of this site by the agency having jurisdiction of the area and the Engineer. Dress sediment deposits remaining in place after the erosion control devices are removed to conform to the existing grade. Seed disturbed area in accordance with Section 32 92 00, Lawns and Grasses.

### 3.07 MODIFICATIONS

- A. If the Contractor needs additional area outside the allowable construction limits as indicated in the contract documents, Contractor shall notify the Owner and Engineer

as soon as possible. Any additional area requested must be approved by the Owner prior to use and an amended Erosion and Sedimentation Control Plan will be required to be submitted to NCDENR Land Quality for approval. The Contractor shall be responsible for all engineering costs associated with submittal, review and approval of the amended plan including review fees. The Contractor shall not proceed with any work in the additional area prior to receiving a written copy of the modified Erosion and Sedimentation Control Plan approval.

- B. The Contractor shall be responsible for any fees or fines issued by regulatory agencies due to non-compliant erosion and sedimentation control work.

END OF SECTION



**INSPECTION AND MONITORING RECORDS FOR ACTIVITIES UNDER STORMWATER GENERAL PERMIT NCG010000 AND SELF-INSPECTION RECORDS FOR LAND DISTURBING ACTIVITIES PER G.S.113A-54.1**

<b>Project Name</b>		<b>Land Quality or Local Program Project #</b>	
<b>Financially Responsible Party, (FRP) / Permittee</b>		<b>County</b>	
<b>INSPECTOR</b>		Employer	
<b>Inspector Type (Mark)</b>	<b>X</b>	Name	
<b>FRP/Permittee</b>		Address	
<b>Agent/Designee</b>		Phone Number	Email Address

**PART 1A: Rainfall Data**

Day / Date	Rain Amt (inches)	Daily Rainfall Required, except for Holidays or Weekends. If no rain, indicate with a "zero"
M		
T		
W		
Th		
F		
Sat (Optional)		
Sun (Optional)		

**PART 1B: Current Phase of Project**

Phase of Grading	check the applicable box(es)	X
Installation of perimeter erosion and sediment control measures		
Clearing and grubbing of existing ground cover		
Completion of any phase of grading of slopes or fills		
Installation of storm drainage facilities		
Completion of all land-disturbing activity, construction or development		
Permanent ground cover sufficient to restrain erosion has been established		

**PART 1C: Signature of Inspector**

By this signature, I certify in accordance with the NCG010000 permit & G.S. 113A-54.1 that this report is accurate and complete to the best of my knowledge.	
Financially Responsible Party / Permittee or Agent / Designee	Date

**GROUND STABILIZATION TIMEFRAMES**

Site Area Description	Stabilization	Timeframe Variations
Perimeter dikes, swales and slopes	7 Days	None
High Quality Water (HQW) Zones	7 Days	None
Slopes Steeper than 3:1	7 Days	14 days for slopes 10 ft or less in length and not steeper than 2:1 10 days for Falls Lake Watershed
Slopes 3:1 to 4:1	14 Days	7 days for slopes greater than 50 ft in length, 10 days for Falls Lake Watershed
All other areas with slopes flatter than 4:1	14 Days	10 days for Falls Lake Watershed

**PART 2A: EROSION AND SEDIMENTATION CONTROL MEASURES:** Measures must be inspected at least ONCE PER 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL EVENT EQUAL TO OR GREATER THAN 1.0 INCH PER 24 HOUR PERIOD.

Erosion and Sedimentation Control Measures Inspected				Inspection Date	Describe Actions Needed <u>Corrective actions should be performed as soon as possible and before the next storm event</u>	Date Noted as Corrected
Measure ID or Location and Description	Operating Properly? (Y/N)	Any Repair or Maintenance Needed? (Y/N)	New Measures Installed *			
			Proposed Dimensions (ft.)	Actual Dimensions (ft.)	Significant Deviation from Plan? (Y/N)	

\*New erosion and sedimentation control measures installed since the last inspection should be documented here or by initialing and dating each measure or practice shown on a copy of the approved erosion and sedimentation control plan. List Dimensions of Measures such as Sediment Basins and Riprap Aprons

**PART 2B: STORMWATER DISCHARGE OUTFALLS (SDOs):** SDOs must be inspected at least ONCE PER 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL EVENT EQUAL TO OR GREATER THAN 1.0 INCH PER 24 HOUR PERIOD.

Stormwater Discharge Outfalls Inspected				Inspection Date	Report Visible Sedimentation to streams or wetlands to Land Quality within 24 Hours <a href="https://deg.nc.gov/contact/regional-offices">https://deg.nc.gov/contact/regional-offices</a> <u>Describe Actions Needed</u> <u>Corrective actions should be performed as soon as possible and before the next storm event</u>	Date Noted as Corrected
Stormwater Discharge Outfall ID or Location	Any Visible Sedimentation in Streams, Wetlands or Outside Site Limits? (Y/N)	Any Increase in Stream Turbidity from Discharge? (Y/N)	Any Visible Erosion below SDO? (Y/N)			

**PART 2C: GROUND STABILIZATION Must be recorded after each Phase of Grading**

Areas Where Land Disturbance Has Been Completed or Temporarily Stopped	Time Limit for Ground Cover <u>7 days or 14 days</u>	Is Ground Cover Sufficient to Restrain Erosion? (Y/N)	Inspection Date	Describe Actions Needed	Date Noted as Corrected

SECTION 31 62 16  
STEEL PILES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes steel H piles.

1.3 UNIT PRICES

- A. Contract Sum: Base Contract Sum on number and dimensions of piles indicated from tip to cutoff, plus not less than 12 inches of overlength for cutting piles at cutoff elevations.
- B. Work of this Section is affected as follows:
  - 1. Additional payment for pile lengths in excess of that indicated, and credit for pile lengths less than that indicated, is calculated at unit prices stated in the Contract, based on net addition or deduction to total pile length as determined by Owner and measured to nearest 12 inches.
    - a. Additional payment for splices required to extend pile lengths in excess of that indicated is calculated at unit prices stated in the Contract.
  - 2. Additional payment for number of piles in excess of that indicated, and credit for number of piles less than that indicated, is calculated at unit prices stated in the Contract.
  - 3. Unit prices include labor, materials, tools, equipment, and incidentals for furnishing, driving, cutting off, capping, and disposing of cutoffs.
  - 4. Test piles that become part of permanent foundation system are considered as an integral part of the Work. The cost of the test piles, testing, reporting and all else required shall be included in the cost of the HP 12x53 Steel Pile bid item.
  - 5. No payment is made for rejected piles, including piles driven out of tolerance, defective piles, or piles damaged during handling or driving.

#### 1.4 SUBMITTALS

Submit the following to the Contracting Officer for approval/acceptance in accordance with Section 01 33 00 Submittal Procedures:

- A. Product Data: For each type of product.
- B. Shop Drawings: For steel H piles. Show fabrication and installation details for piles, including details of driving points, splices, and pile caps.
  - 1. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
  - 2. Include arrangement of static pile reaction frame, test and anchor piles, equipment, and instrumentation. Submit structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Welding certificates.
- C. Mill Test Reports: For steel H piles, steel castings and steel plate, signed by manufacturer.
- D. Pile-Driving Equipment Data: Include type, make, and rated energy range; weight of striking part of hammer; weight of drive cap; and, type, size, and properties of hammer cushion.
- E. Static Pile Test Reports: Submit within three days of completing each test.
- F. Pile-Driving Records: Submit within three days of driving each pile.
- G. Certified Piles Survey: Submit within seven days of pile driving completion.
- H. Field quality-control reports.

#### 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
  - 1. Installer's responsibility includes engaging a qualified professional engineer to prepare pile-driving records.
- B. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

## 1.7 PRECONSTRUCTION TESTING

- A. General: Static pile tests are used to verify driving criteria and pile lengths and to confirm allowable load of piles.
  - 1. Furnish test piles 60 inches longer than production piles.
  - 2. Determination of actual length of piles is based on results of static pile tests.
- B. Pile Tests: Arrange and perform the following pile tests:
  - 1. Axial Compressive Static Load Test: ASTM D1143/D1143M. Procedure A, Quick Test
  - 2. Axial Tension Static Load Test: ASTM D3689.
  - 3. Lateral Load Test: ASTM D3966.
- C. Provide pile reaction frame, anchor piles, equipment, and instrumentation with enough reaction capacity to perform tests. Notify Owner at least 48 hours in advance of performing tests. On completion of testing, remove testing structure, anchor piles, equipment, and instrumentation.
  - 1. Allow a minimum of seven days to elapse after driving test piles before starting pile testing.
  - 2. Number of Test Piles: Two piles.
- D. Drive test piles between Manholes 1 and 2 on the State Street Sewer Replacement portion of the project to the minimum penetration or driving resistance indicated. Use test piles identical to those required for Project, and drive with appropriate pile-driving equipment operating at rated driving energy to be used in driving permanent piles. The test piles shall be driven at the location of production piles.
  - 1. Pile Design Load: 20 kips.
- E. Approval Criteria: Allowable load shall be the load acting on the test pile when the lesser of the following criteria are met, divided by a factor of safety of 2:
  - 1. Net settlement, after deducting rebound, of not more than 0.01 inch/ton of test load.
  - 2. Total settlement exceeds the pile elastic compression by 0.15 inch, plus 1.0 percent of the tip diagonal dimension.
  - 3. A plunging failure or sharp break in the load settlement curve.
- F. Test Pile-Driving Records: Prepare driving records for each test pile and provide an electronic copy to the Owner and Engineer. Include same data as required for driving records of permanent piles.

- G. Test piles that comply with requirements, including location tolerances, may be used on Project.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver piles to Project site in such quantities and at such times to ensure continuity of installation. Handle and store piles at Project site to prevent buckling or physical damage.
  - 1. Painted Piles: Protect finish and touch up paint damage before driving piles.

## 1.9 FIELD CONDITIONS

- A. Protect structures, underground utilities, and other construction from damage caused by pile driving.

## PART 2 - PRODUCTS

### 2.1 STEEL H PILES

- A. High-Strength, Low-Alloy, Columbium-Vanadium Structural Steel:  
ASTM A572/A572M, Grade 50.

### 2.2 PILE ACCESSORIES

- A. Driving Points: Manufacturer's standard one-piece driving point, fabricated from steel castings as follows to provide full bearing of web and flange of pile tip:
  - 1. Carbon-Steel Castings: ASTM A27/A27M, Grade 65-35, heat treated.
  - 2. High-Strength Steel Castings: ASTM A148/A148M, Grade 80-40.

### 2.3 FABRICATION

- A. Fabricate and assemble piles in shop to greatest extent possible.
- B. Pile-Length Markings: Mark each pile with horizontal lines at 12-inch intervals; label the distance from pile tip at 60-inch intervals. Maintain markings on piles until driven.
- C. Fabricate full-length piles to eliminate splicing during driving, with ends square.
- D. Fit and weld driving points to tip of pile according to manufacturer's written instructions and AWS D1.1/D1.1M for procedures, appearance and quality of welds, and methods used in correcting welding work.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Site Conditions: If applicable, do not start pile-driving operations until earthwork fills have been completed or excavations have reached an elevation of 6 to 12 inches above bottom of footing or pile cap.

### 3.2 DRIVING EQUIPMENT

- A. Pile Hammer: Air-, steam-, hydraulic-, or diesel-powered type capable of consistently delivering adequate peak-force duration and magnitude to develop the ultimate capacity required for type and size of pile driven and character of subsurface material anticipated.
- B. Hammer Cushions and Driving Caps: Between hammer and top of pile, provide hammer cushion and steel driving cap as recommended by hammer manufacturer and as required to drive pile without damage.
- C. Leads: Use fixed, semifixed, or hanging-type pile-driver leads that hold the full length of pile firmly in position and in axial alignment with hammer.

### 3.3 DRIVING PILES

- A. General: Continuously drive piles to elevations or penetration resistance indicated. Establish and maintain axial alignment of leads and piles before and during driving.
- B. Heaved Piles: Redrive heaved piles to tip elevation at least as deep as original tip elevation with a driving resistance at least as great as original driving resistance.
- C. Driving Tolerances: Drive piles without exceeding the following tolerances, measured at pile heads:
  - 1. Location: 3 inches from location indicated after initial driving, and 3 inches after pile driving is completed.
  - 2. Plumb: Maintain 1 inch in 48 inches from vertical, or a maximum of 4 inches, measured when pile is aboveground in leads.
- D. Withdraw damaged or defective piles and piles that exceed driving tolerances, and install new piles within driving tolerances.
  - 1. Fill holes left by withdrawn piles using cohesionless soil material such as gravel, broken stone, and gravel-sand mixtures. Place and compact in lifts not exceeding 72 inches.
  - 2. Fill holes left by withdrawn piles as directed by Architect.

- E. Cut off tops of driven piles square with pile axis and at elevations indicated.
- F. Pile-Driving Records: Maintain accurate driving records for each pile. Include the following data:
  - 1. Project name and number.
  - 2. Name of Contractor.
  - 3. Pile location in pile group and designation of pile group.
  - 4. Sequence of driving in pile group.
  - 5. Pile dimensions.
  - 6. Ground elevation.
  - 7. Elevation of tips after driving.
  - 8. Final tip and cutoff elevations of piles after driving pile group.
  - 9. Records of re-driving.
  - 10. Elevation of splices.
  - 11. Type, make, model, and rated energy of hammer.
  - 12. Weight and stroke of hammer.
  - 13. Type of pile-driving cap used.
  - 14. Cushion material and thickness.
  - 15. Actual stroke and blow rate of hammer.
  - 16. Pile-driving start and finish times, and total driving time.
  - 17. Time, pile-tip elevation, and reason for interruptions.
  - 18. Number of blows for every 12 inches of penetration, and number of blows per 1 inch for the last 6 inches of driving.
  - 19. Pile deviations from location and plumb.
  - 20. Preboring, jetting, or special procedures used.
  - 21. Unusual occurrences during pile driving.
- G. Certified Piles Survey: Engage a land surveyor to prepare a piles survey showing final location of piles in relation to the property survey and existing benchmarks.
  - 1. Notify Engineer when deviations from locations exceed allowable tolerances.

### 3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  - 1. Pile foundations.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- C. Tests and Inspections:



1. Dynamic Pile Testing: High-strain dynamic monitoring shall be performed and reported according to ASTM D4945 during initial driving and during restriking on two single piles.

D. Steel H piles will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

### 3.5 TOUCHUP PAINTING

A. Clean field welds, splices, and abraded painted areas and field-apply paint according to SSPC-PA 1. Use same paint and apply same number of coats as specified for shop painting.

1. Apply touchup paint before driving piles to surfaces that are immersed or inaccessible after driving.

### 3.6 DISPOSAL

A. Remove withdrawn piles and cutoff sections of piles from site, and legally dispose of them off Owner's property.

--END OF SECTION--

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SECTION 32 10 00  
PAVEMENT AND APPURTENANCES

PART 1 GENERAL

1.01 SCOPE

- A. Provide pavement, curb and gutter, and sidewalk sections as indicated on the Drawings and specified herein. Construction shall conform with the lines, grades, thickness, and typical cross-section indicated on the Drawings.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
1. Section 01 35 13 Specific Project Requirements
  2. Section 31 05 00 Earthwork
  3. Section 31 23 33 Trenching for Utilities
  4. Section 33 14 13 Water Distribution System
  5. Section 33 31 11 Sanitary Sewer System
  6. Section 33 39 00 Reuse Water System

1.03 REFERENCED STANDARDS

- A. The latest revision, at the time of bidding, of the publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
1. N.C. Department of Transportation - Specifications for Roads and Structures (NCDOT).
- B. Paragraphs in the NCDOT Standard regarding measurement and payment do not apply to this Project.

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittal Procedures:
1. Certificates of Compliance: Certificates shall attest that supplied products conform to the referenced standard and this specification, that all tests set forth in each applicable referenced publication have been performed, and that all test requirements have been met. Submit for each of the following materials:
    - a. Asphalt Concrete
    - b. Aggregate Base Course
    - c. Paint

1.05 PROTECTION OF EXISTING PAVEMENT, CURB AND GUTTER, AND SIDEWALK

- A. Contractor, Owner, and Engineer shall inspect existing pavement, curb and gutter, and sidewalks for the entire site prior to the start of construction and mark existing damaged areas and note areas on Contractor's plan set to be used for the Record Drawings.
- B. Protect existing pavement, curb and gutter, and sidewalks during construction.
- C. Remove areas of existing curb and gutter, and sidewalks damaged during construction. Removal shall include to the nearest existing joint. Replace damaged areas with new curb and gutter, and sidewalks to match the existing section.

- D. Remove areas of existing pavement damaged during construction. New pavement patch shall consist of re-stabilizing the subgrade, and providing subgrade, intermediate course, and surface course material and thickness as shown on Raleigh's Standard Asphalt Pavement Patch Detail.
- E. Repair damage to existing pavement, curb and gutter, and sidewalks.

## PART 2 PRODUCTS

### 2.01 MATERIALS AND MIXES

- A. Asphalt Concrete Base Course - Type B-25.0B: Conforming to materials and compositions required in NCDOT Section 610, Asphalt Concrete Plant Mix Pavements.
- B. Tack Coat: Conforming to materials and compositions required in NCDOT Section 605, Asphalt Tack Coat.
- C. Asphalt Concrete Surface Course - Type SF9.5A: Conforming to materials and composition required in NCDOT Section 610, Asphalt Concrete Plant Mix Pavements.
- D. Concrete for Curb and Gutter and Sidewalks: Conforming to materials and composition required in:
  - 1. NCDOT Section 846 - Concrete Curb, Curb and Gutter, Concrete Gutter, Shoulder Berm Gutter, Concrete Expressway Gutter, and Concrete Valley Gutter.
  - 2. Section 848 - Concrete Sidewalks, Driveways, and Curb Ramps.
- E. Base Course: Aggregate base course shall comply with requirements of NCDOT Section 520, Aggregate Base Course.
- F. Pavement Markings and Symbols: Conforming to materials and composition required in NCDOT Section 1205, Pavement Marking General Requirements.
- G. Brick pavers: Type ASTM C62 grade SW, modular size 2-1/4-inch high, 4-inch wide, and 8-inch long.

## PART 3 EXECUTION

### 3.01 PREPARATION OF SUBGRADE

- A. Refer to applicable portions of Section 31 05 00, Earthwork.
- B. Compaction shall be to at least 95 percent maximum density Standard Proctor Method.
- C. Remove unsuitable material to a depth of one foot and replace with an approved material. Loosen exceptionally hard spots and re-compact. Finish subgrade to provide uniform bearing surface.
- D. Maintain subgrade in satisfactory condition and properly drain until surface courses are placed.
- E. Preparation, shaping, and compaction shall be in accordance with NCDOT Section 500, Fine Grading Subgrade, Shoulders, and Ditches.

### 3.02 AGGREGATE BASE COURSE

- A. This applies to the aggregate base course as indicated on the Drawings for paved and unpaved roads.
- B. The stone base shall be constructed in accordance with the applicable paragraphs of NCDOT Section 520.
- C. Compacted base shall be of the thickness indicated on the Drawings.

### 3.03 ASPHALT CONCRETE BASE COURSE

- A. Spreading, compaction, and finishing shall comply with the requirements of NCDOT Section 610, Asphalt Concrete Plant Mix Pavements.
- B. Compacted thickness shall be no less than the thickness indicated on the Drawings.

### 3.04 ASPHALT CONCRETE SURFACE COURSE

- A. Spreading, compaction, and finishing shall comply with the requirements of NCDOT Section 610, Asphalt Concrete Plant Mix Pavements.
- B. Compacted thickness shall be as indicated on the drawings.

### 3.05 TACK COAT

- A. Application rates, method of application, and curing shall be in accordance with the requirements of NCDOT Section 605, Asphalt Tack Coat.

### 3.06 CONCRETE CURB & GUTTER

- A. Provide concrete curb and gutter where indicated on the Drawings. Curb and Gutter shall conform to the section indicated on the Drawings.
- B. Construct Curb and Gutter in accordance with NCDOT Section 846 for new curb and gutter and match existing curb and gutter cross-sections when replacing.

### 3.07 CONCRETE DITCHES

- A. Provide concrete ditches where indicated on the Drawings. Cross section shall be as indicated on the Drawings.
- B. Construct ditches in accordance with NCDOT Section 850, Concrete Paved Ditch for new paved ditches, flumes or troughs and match existing cross sections of ditches, flumes or troughs when replacing.

### 3.08 CONCRETE SIDEWALKS

- A. Provide concrete sidewalks where indicated on the Drawings. Construction shall be in conformity with the materials, lines, grades, thickness, and typical section as indicated on the Drawings.
- B. Construct sidewalks in accordance with NCDOT, Section 848 for new sidewalks and match existing sidewalk cross sections when replacing.
- C. Space contraction joints equal to the width or as shown on the Drawings.
- D. Place a 1/2-inch wide expansion joint at all intersections and wherever walks abut structures and other walks.
- E. Place additional expansion joints at each fifth contraction joint.
- F. Walks shall receive a light broom finish.

3.09 PAVEMENT MARKINGS AND SYMBOLS

- A. Mark parking spaces in paved areas with 4 inch white paint stripe the length of the parking space.
- B. Stripe roads maintained by the NCDOT or the local municipality in accordance with the agency requirements.
- C. Provide painted pavement symbols as indicated on the Drawings and in accordance with NCDOT Standards.

3.10 BRICK PAVERS INSTALLATION

- A. Compact existing earth with mechanical tamper.
- B. Provide geotextile fabric on top of compacted earth.

Test	ASTM Std.	
Fabric weight	D-3776	6 oz/sy
Grab tensile strength	D-5034	200 lbs
Mullen burst strength	D-3786	320 psi
Puncture strength	D-751	80 lbs

- C. Provide 2-inches of compacted sand base.
- D. Install pavers in a pattern as indicated on the Drawings. Coursing shall be in straight line and not deviate more than 1/8-inch over 15 feet.
- E. Scatter sand screenings and sweep into cracks.

END OF SECTION

SECTION 32 92 00  
LAWNS AND GRASSES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work shall include, but not be limited to, the following:
  - 1. Surface preparation of subsoil.
  - 2. Placing topsoil.
  - 3. Addition of lime and fertilizer.
  - 4. Seeding.
  - 5. Maintenance to produce a permanent stand of grass.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements
  - 2. Section 31 05 00 Earthwork
  - 3. Section 31 11 00 Clearing and Grubbing
  - 4. Section 31 23 33 Trenching for Utilities
  - 5. Section 33 14 13 Water Distribution System
  - 6. Section 33 31 11 Sanitary Sewer System
  - 7. Section 33 39 00 Reuse Water System

1.03 REFERENCES

- A. N.C. Department of Agriculture - NCDA
- B. U.S. Department of Agriculture - USDA

1.04 PERFORMANCE REQUIREMENT

- A. Grassed area shall be considered established when it presents a green appearance from eye level 50 feet away and the grass is vigorous and growing well in each square foot of seeded area. It is not required that the seeded area be thick and heavy as an old established lawn.
- B. Should the permanent seed not germinate and produce a strand of grass, reseed affected areas until a permanent stand is established.

1.05 SUBMITTALS

- A. Not less than 6 weeks prior to seeding, obtain representative soil samples from areas to be seeded and deliver the properly packaged samples with an information sheet for each sample properly filled out to the Soils Division of the NC Department of Agriculture or a private laboratory. Based on the test results, submit to the Engineer a recommendation as to the quantity and type of lime, fertilizer and seed for the area covered by the test
- B. Product Data: Submit product data for seed mix, fertilizer, mulch, sod grass species, and other accessories. Include installation instructions.

1.06 QUALITY ASSURANCE

- A. Quality of fertilizer, lime, and seed, and operations in connection with the furnishing of this material, shall comply with the requirements of the N.C. Fertilizer, Lime and Seed

Law; and with the requirements of the rules and, regulations adopted by the NC Department of Agriculture in accordance with the provisions of the said law.

- B. Seed containers shall bear an official "Certified Seed" label as inspected by the N.C. Crop Improvement Association.
- C. Packages for soil conditioners and fertilizer shall bear manufacturer's guaranteed analysis.
- D. Do not apply lime, fertilizer or seed in strong wind, when the soil is extremely wet, or otherwise unworkable. No rolling shall be done if precipitation after seeding would make the operation detrimental to the seed bed.

#### 1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver grass seed mixture in sealed containers showing percentage of seed mix, year of production, net production, net weight, date of packaging, and location of packaging.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

#### 1.08 MAINTENANCE

- A. Maintain seeded areas until grass is well established and exhibits a vigorous growing condition for a minimum of two cuttings. Mow grass at regular intervals to a maximum height of 3 inches. Hand clip where necessary.
- B. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions.
- C. Water areas seeded at such intervals as to maintain the seeded area in a moist condition until the grass is established and accepted by the Engineer. Provide equipment to transport and distribute the water to the seeded areas.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds, and roots; pH value of minimum 5.4 and maximum of 7.0.
- B. Lime: Ground Dolomitic agricultural limestone, not less than 85 percent total carbonates, ground so that 50 percent passes 100 mesh sieve and 90 percent passes 30 mesh sieve. Coarser material will be acceptable, provided the specified rates of application are increased proportionately on the basis of quantities passing No. 100 mesh sieve.
- C. Fertilizer: Mixed, commercial, fertilizer containing 10-10-10 percentages of available nitrogen, phosphoric acid, and potash respectively, plus superphosphate with 20 percent P<sub>2</sub>O<sub>5</sub> content. Fertilizer shall be dry, in granular (pellet) form, shall be delivered to the site in the manufacturer's original bag or container which shall be plainly marked as to formula.
- D. Seed: Fresh seed guaranteed 95 percent pure with a minimum germination rate of 85 percent within one year of tests.

Determine and match existing grass type in residential lawns.



Provide the following seed mixtures with lime and fertilizer in disturbed areas including NCDOT Rights-of-Way:

1. Permanent Seeding (Maximum slope 3:1)

Planting Dates	Grass Type	Pounds/Acre
Aug. 15 - Nov. 1	Tall Fescue	300
Nov. 1 -Mar. 1	Tall Fescue & Abruzzi Rye	300 25
Mar. 1 - Apr. 15	Tall Fescue	300
Apr. 15 - Jun. 30	Hulled Common Bermudagrass	25
Jul. 1 - Aug. 15**	Tall Fescue & Browntop Millet & Sorghum-Sudan Hybrids	120 35 30
Lime		4,000
Fertilizer	10-10-10	1,000
Mulch	Straw	4,000

\*\*Temporary seeding, reseed according to optimum season for permanent seeding.

2. Permanent Seeding (Slopes from 3:1 to 2:1)

Planting Dates	Grass Type	Pounds/Acre
Mar 1 - June 1	Sericea Lespedeza	50
Mar. 1 - Apr. 15	& Add Tall Fescue	120
Mar. 1 - Jun. 30	or Add Weeping Lovegrass	10
Mar. 1 - Jun. 30	or Add Hulled Common Bermudagrass	25
Jun. 1 - Sept. 1**	Tall Fescue & Browntop Millet & Sorghum-Sudan Hybrids	125 30 35
Sept. 1 - Mar. 1	Sericea Lespedeza (unhulled-unscarified)	70
Nov. 1 - Mar. 1	& Tall Fescue & Add Abruzzi Rye	120 25
Lime		4,000
Fertilizer	10-10-10	1,000
Mulch	Straw	4,000

\*\*Temporary seeding, reseed according to optimum season for permanent seeding.

3. The Contractor shall provide seeding and follow fertilizing methods as required by the U.S. Army Corps of Engineers to reestablish disturbed areas in designated wetlands.

E. Matting / Erosion Control Fabric (ECF): Matting and ECF shall be a 100% straw mulch fabric encased in a medium weight, no plastic matting (both sides) with a minimum permissible shear stress of 1.75 lbs/ft<sup>2</sup>. Matting shall be fully biodegradable but suitable until vegetation has been established. Installation of ECF shall be done with staples per temporary liner detail in the Drawings. Commercially available ECFs may be used upon approval of the engineer. Approval of fabrics will require manufacturer's

design data regarding velocity, shear strength, ditch slopes, method of installation, decay cycle, repair techniques, and grass growth enhancement characteristics.

- F. Wire Staples: 16-gauge steel wire, with minimum of 3" top and 4" long legs.
- G. Mulch: Threshed straw of oats, wheat, or rye; free from seed of obnoxious weeds; or clean salt hay. Straw which is fresh and excessively brittle or straw which is in such an advanced stage of decomposition as to smother or retard growth of grass will not be acceptable.
- H. Water: Water shall be free from substances harmful to growth of grass.

## PART 3 EXECUTION

### 3.01 PREPARATION OF SUBSOIL

- A. Complete operations in the area to be seeded and prepare subsoil to eliminate uneven areas and low spots. Bring surface to the approximate design contours.
- B. Scarify subsoil to a depth of 3 inches. Remove weeds, roots, stones and foreign materials 1-1/2 inches in diameter and larger.

### 3.02 PLACING TOPSOIL

- A. Place topsoil during dry weather and on dry unfrozen subsoil where indicated on Drawings.
- B. Spread topsoil to a minimum depth of 4 inches. Remove vegetable matter and foreign non-organic material from topsoil while spreading. Grade surface to provide positive drainage and prevent water ponding. Lightly compact topsoil with at least one pass of a cultipacker or similar equipment
- C. Maintain the finished surfaces by protecting, and replacing topsoil and subsoil as necessary until the area is accepted under the contract.

### 3.03 APPLICATION OF LIME

- A. Liming shall be done immediately after grading has reached the fine grading stage, even though actual seeding may not be done until several months later.
- B. Spread lime evenly by means of a mechanical distributor.
- C. When lime is distributed by commercial liming dealers, sales slips showing the tonnage delivered shall be filed with the Engineer and shall show the full tonnage required for the acres treated.
- D. Incorporate lime in the top 2 to 3 inches of soil by harrowing, disking, or other approved means.

### 3.04 APPLICATION OF FERTILIZER

- A. Spread fertilizer not more than 2 weeks in advance of seeding.
- B. To verify application rate, determine acreage to be fertilized and provide Engineer with total weight of fertilizer applied to the area.
- C. Provide mechanical spreader for even distribution and spread half of the rate in one direction, and the other half at right angles to the first. Mix thoroughly into upper 2 to 3 inches of soil by disking, harrowing or other approved methods.

### 3.05 SEEDING

- A. Accomplish seeding by means of an approved power-drawn seed drill, combination corrugated roller-seeder, approved hand operated mechanical seeder, or other approved methods to provide even distribution of seed.
- B. Do not seed when ground is excessively wet or excessively dry. After seeding, roll area with a roller, not less than 18 inches in diameter and weighing not more than 210 pounds per foot of width. Upon completion of rolling, water area with a fine spray.
- C. Immediately following seeding apply mulch or matting as listed below. Do not seed areas in excess of that which can be mulched on same day.
- D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil depth.
- E. The Contractor shall perform seeding in accordance with the general requirements indicated on the Drawings and as required by construction Permits. In no case should the excavation for pipelines extended more than 1,000 feet without seeding unless approval is granted by the Owner.

### 3.06 MULCHING AND MATTING

- A. Apply mulch or matting as required to retain soil and grass, but no less than the following:
  - 1. Slopes from 0 to 20 percent by spreading a light cover of mulch over seeded area at the rate of not less than 85 lbs. per 1000 sq. ft. Use tack to prevent disruption of mulch.
  - 2. Slopes greater than 20 percent mulch with matting. Pin matting to the ground with wire staples at 5-foot intervals, immediately after seeding.
- B. For tack use an asphalt tie-down of emulsified asphalt grade AE-3 or cut-back asphalt grade RC-2 or other approved equal. The application rate shall be 0.10 gal/sy (11 gal / 1000 sq ft). An approved jute mesh or net may be used in lieu of tacking straw mulch.
- C. Other types of mulch and anchoring methods may be used upon approval by the Engineer.

### 3.07 PROTECTION

- A. Protect seeded areas from damage by barricades, signs, and other appropriate means. Maintain and protect slopes from weather damage.

3.08 STABILIZATION TIMELINE

- A. All disturbed areas must be vegetated or otherwise stabilized after being disturbed in accordance with the table below:

GROUND STABILIZATION*		
SITE AREA DESCRIPTION	STABILIZATION TIME FRAME	STABILIZATION TIME FRAME EXCEPTIONS
Perimeter Dikes, Swales, Ditches and Slopes	7 Days	None
High Quality Water (HQW) Zones	7 Days	None
Slopes Steeper than 3:1	7 Days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
Slopes 3:1 to 4:1	14 Days	7 days for slopes greater than 50 feet in length and slopes steeper than 4:1 10 days for Falls Lake Watershed
All Other Areas with Slopes Flatter than 4:1	14 Days	10 days for Falls Lake Watershed unless there is zero slope
"EXTENSIONS OF TIME MAY BE APPROVED BY THE PERMITTING AUTHORITY BASED ON WEATHER OR OTHER SITE-SPECIFIC CONDITIONS THAT MAKE COMPLIANCE IMPRACTICABLE." (NCG 01 - SECTION II.B.2.b)		

END OF SECTION

SECTION 33 01 30.11  
SEWER LINE CLEANING AND TV INSPECTION

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

- A. Provide labor, materials, and equipment required to clean the sewer lines designated on the drawings, including manhole walls, of dirt, grease, sand, sludge, roots and other solid or semi-solid materials prior to trenchless rehabilitation. Equipment shall be subject to approval of the Engineer.

1.02 SCOPE OF WORK

- A. Clean the lines and perform a TV inspection. Based on the TV inspection, deliver to the Owner and Engineer, in report form, the location and extent of the defects for each pipeline. The report will give location and description of obstructions and will also include service lateral locations. The report will be completed and submitted along with an IT Pipes database. After an appropriate period of time for review, the Engineer will call for a meeting to discuss the report and make determinations on the final scope of work.

1.03 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements
  - 2. Section 01 50 00 Temporary Facilities and Controls

1.04 REFERENCES

- A. National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP).
- B. National Association of Sewer Service Companies (NASSCO) Manhole Assessment and Certification Program (MACP).
- C. National Association of Sewer Service Companies (NASSCO) Lateral Assessment and Certification Program (LACP).

PART 2 PRODUCTS

2.01 HYDRAULIC CLEANING METHOD

- A. Method shall employ the use of a moveable type dam constructed in such a way that the dam may be collapsed at any time during the cleaning. Equipment which cannot be collapsed instantly will not be allowed. Other equipment, equally effective, that will permit passage of sewage when in use may be approved. Moveable dam shall be of equal diameter to the pipe being cleaned and shall provide a flexible scraper around the periphery to insure removal of grease.

2.02 HIGH VELOCITY JET CLEANING METHOD

- A. Method shall employ high pressure water streams containing cleaning and sanitizing chemicals ejected through hose nozzles and pressure gun. Truck mounted mobile

equipment shall carry a 1000-gallon water tank capable of holding corrosive or caustic cleaning or sanitizing chemicals, auxiliary engines, pumps and hydraulically driven hose reel. Refill pipe to the tank shall have a minimum 4-inch air gap to prevent backflow and contamination of the Owner water system.

- B. There shall be included a minimum of 500 feet of high pressure hose with a selection of two or more high velocity nozzles. Contractor shall determine flow and pressure required to scour and flush debris from sewer without damaging pipe. The nozzle shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines designated to be cleaned.
- C. There shall be included a high velocity gun for washing and scouring manhole walls and floor. The gun capacity shall equal 25 gpm at 500 to 800 psi. The gun shall be capable of producing flows from a fine spray to a long distance solid stream and shall be operated from the high pressure hose.

### 2.03 MECHANICAL CLEANING METHOD

- A. Bucket machines shall be in pairs with each machine powered with a minimum of a 25 HP engine to insure sufficient pulling power. Each machine shall be equipped with a two-speed transmission and shall be capable of pulling at rates of 150 feet per minute in high speed and 100 feet per minute in low speed. Machine shall have an overload device that will prevent damage to the sewer.
- B. Power rodding shall be capable of holding a minimum of 800 feet of rod. The rod shall be of specially treated steel. The machine shall have a positive rod drive and produce a 1000-pound rod pull. To insure safe operation, the machine shall have a fully enclosed body and an automatic safety throw out clutch.

## PART 3 EXECUTION

### 3.01 CLEANING OPERATIONS - GENERAL

- A. Take precautions to protect the sewer lines from damage by the improper use of cleaning equipment.
- B. Properly dispose of material removed from the sewer.
- C. When hydraulically propelled cleaning tools, which depend upon water pressure to provide cleaning force, or any in the sewer line are used, take precautions to ensure that tools which retard the flow of water or that use water pressure for cleaning will not cause damage or flooding to public or private property.
- D. Owner's water system may be used in accordance with Section 01 50 00, Temporary Facilities and Controls.
- E. If the Contractor desires to utilize water from the Owner's potable water system, he must first gain authorization prior to use and comply with Owner requirements. The Owner will furnish water for cleaning purposes to the Contractor free of charge, but should it appear to the Engineer or Owner that the Contractor is abusing his privilege to use Owner water free of charge, then the Owner has the option at any time to refuse the Contractor use of the Owner's water supply at no additional cost to the Owner.

- F. When fire hydrants are used, hydrants in use shall have fully opened hydrant valves at all times. Hydrants shall be immediately released to fire fighters in an emergency. Refill pipe to the tank shall have a minimum 4-inch air gap to prevent backflow and contamination of the Owner water system.
- G. Collection of Refuse:
  - 1. Remove solid or semi-solid material resulting from the cleaning operations at the downstream manhole of the section being cleaned. Passing material from manhole section to manhole section shall not be permitted.
  - 2. If material is allowed to migrate to a lower manhole reach that is not scheduled for cleaning or rehabilitation, the lower manhole reach shall be cleaned and CCTV inspected in accordance with these specifications at no additional cost.
- H. Heavy Cleaning:
  - 1. When heavy cleaning is required, CCTV shall be used with the cleaning operation.
  - 2. Contractor shall verify all material and debris has been removed from the main.
  - 3. If cleaning reveals sags or other defects, CCTV shall inspect the defects while the cleaning jetter provides temporary full view of sections prone to holding water.

### 3.02 HYDRAULIC CLEANING:

- A. Construct a suitable temporary weir or dam in the downstream manhole so that both liquid and solids are trapped. Pump trapped material, both solid and liquid, from the manhole into an above ground mobile retention chamber. Chamber shall be enclosed and contain not less than two baffles to allow settlement of the solids. Chamber may be equipped with a piping system to permit relatively clean liquid to return to the sewer.

### 3.03 CLEANING BY BUCKET MACHINE:

- A. Provide a suitable container to receive the materials dumped from the buckets and return liquids to the sewer without spillage.

### 3.04 CLEANING OF MANHOLES:

- A. All manholes within the wastewater line sections designated to be cleaned shall have the walls and floor thoroughly cleaned to the bare masonry and concrete by means of the specified high velocity jet gun. If manhole has an existing liner (i.e. epoxy liner), Contractor shall ensure cleaning and jetting operation does not damage existing liner. Collect debris in manhole that is cleaned. Do not allow debris to flow into sewer system. When manholes are located in reaches of wastewater lines to be cleaned, both the first upstream manhole and the last downstream manhole in each system as well as all intermediate manholes shall be included in the wastewater line cleaning operation.

### 3.05 DISPOSAL OF REFUSE:

- A. Dispose of dewatered sludge, sand and other solid material that results from the cleaning at a State approved sanitary landfill site.
- B. Owner will provide a designated debris drying pad that the Contractor can use to dewater the material. Liquid must be decanted prior to dumping material at Owner provided site.

- C. Comply with State of North Carolina, County, and local regulations, rules, and ordinances regarding the disposal of such materials. If Contractor does not comply with rules and regulations, Contractor shall pay fees and fines arising from the disposal of the materials.

3.06 UNKNOWN OBSTRUCTIONS STOPPING CLEANING PROCESS:

- A. Obstructions such as concrete in joints or badly collapsed pipe may exist that will prevent completing cleaning work. If this should occur, notify the Engineer of the condition and provide recommendation for repair. Engineer will make an assessment of the condition and provide instruction for further rehabilitation work as appropriate.

3.07 BY-PASSING OF SEWER

- A. There will be no by-passing of sewage to any surface outside the sewer system.

3.08 TV INSPECTION

- A. Visually inspect sewer line reaches designated by means of closed-circuit television. Perform inspection on one manhole section at a time in accordance with National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification (PACP) standards. The inspection report shall be in NASSCO PACP v.7 Database format and recorded onto external hard drive, thumb drive, or cloud-based server as agreed upon by Contractor and City of Raleigh Public Utilities Department (CORPUD). All inspection reports and photographs shall become the property of CORPUD.
- B. Inspection shall closely follow cleaning operation.
- C. Television camera used for the inspection shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. Camera shall be operative in 100 percent humidity conditions. Components of the video system shall be capable of producing a high-resolution (minimum 300 line) images and video. Lighting system shall minimize reflective glare.
- D. Move camera through the line in either direction at a uniform rate, but in no case at a speed greater than 30 feet per minute. Stop camera when necessary to insure proper documentation of the sewer's condition. Camera cables shall not obstruct the camera view or interfere with proper documentation of the sewer. If the camera will not pass through the entire sewer section, re-set the equipment to allow inspection from the opposite manhole.
- E. If the camera again fails to pass through the entire section,
  - 1. For pre-installation inspection of sewer pipe to be CIPP lined, notify the City of Raleigh and perform point repairs, cut protruding service connections or clean to remove roots.
  - 2. For post-installation inspection of new sewer pipe or CIPP lining, perform point repairs, cut protruding service connections or clean to remove roots.
- F. There will be no additional cost to the Owner if re-cleaning is required. Point repairs and hammer tap repairs will be paid at the contract unit price.
- G. Whenever non-remote powered and controlled winches are used to pull the television camera through the line, suitable means of communication shall be set up



between the two manholes of the inspected section to insure that good communications exist between members of the crew.

- H. Measurement for location of defects shall be above ground by means of a meter device. Marking on cable which would require interpolation for depth of manhole, will not be allowed. Measurement meters will be accurate to two tenths (0.2) of a foot over the length of the section being inspected. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape or other suitable device.
- I. Prepare and maintain printed location records that clearly show the location, in relation to adjacent manholes, of each service lateral connection and defect requiring repair. During each inspection, make visual and audio recordings of the data on the television monitor onto external hard drive, thumb drive, or cloud-based server as agreed upon by Contractor and CORPUD. Label copies of the recordings and logs as to the content. Labels shall include the sewer segment reach designation, street location and manhole facility identifications numbers on the tape. Contractor shall obtain most current manhole ID numbers from City before CCTV.
- J. Contractor required to conduct CCTV during low flow periods (overnight) if flow in pipe is too high during normal working hours. If bypass pumping is required, notify Owner and Engineer.

END OF SECTION

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SECTION 33 01 30.81  
MANHOLE REHABILITATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish all labor, materials, equipment and incidentals required and install the manhole lining system and appurtenances as specified herein. The lining system shall be used to rehabilitate the interior of all designated existing sewer manholes.
- B. The manhole lining system shall consist of a cementitious coat, epoxy liner, or approved equal applied to the cleaned and prepared manhole surfaces.
- C. The Contractor shall accurately field measure and size each individual manhole. The Contractor is reminded that each existing sewer manhole designated to receive the lining may have a different configuration and varying field dimensions.
- D. The Contractor is advised that the presence or absence of leakage through manhole walls is dependent upon the ground water levels and conditions at the time of the inspections. All leakage shall be stopped prior to lining manholes. Chemical grout injection (and other patching) necessary to stop active infiltration shall be considered incidental to the lining system installed.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
  - 1. Section 01 35 13 Specific Project Requirements
  - 2. Section 33 31 11 Sanitary Sewer System

1.03 SUBMITTALS

- A. Submit to the Engineer, as provided in Section 01 33 00 (Submittal Procedures), shop drawings, schedules of all manhole lining systems and appurtenances, required product data, specific installation procedures, etc. Submit design data and specification data sheets listing all parameters used in the lining design based on applicable ASTM provisions.
- B. Submit the name of the supplier and a list of materials to be furnished, and Contractor's experience with the specified product (number of years installing the product, number of manholes lined with the product, and list of references). Where the Contractor proposes to utilize a sub-contractor to apply the cementitious base coat or multi-layer corrosion barrier, submit all required information for the subcontractor as well.

1.04 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
  - 1. C78 – Standard Test Method for Flexural Strength of Concrete
  - 2. C94 – Standard Test for Ready Mix Concrete

3. C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
  4. C267 – Standard Test Method for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacing
  5. C321 – Standard Test Method for Bond Strength of Chemical-Resistant Mortars
  6. C496 – Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
  7. C596 – Standard Test Method for Drying Shrinkage of Mortar Containing Portland Cement
  8. C666 – Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
  9. C827 – Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
  10. C1072 – Standard Test Methods for Measurement of Masonry Flexural Bond Strength
  11. C1244 – Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill
  12. D256 – Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
  13. D2240 – Standard Test Method for Rubber Property – Durometer Hardness
  14. D638 – Standard Test Method for Tensile Properties of Plastics
  15. D790 – Standard Test Method for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials
  16. D695 – Standard Test Method for Compressive Properties of Rigid Plastics
  17. D4414 – Standard Practice for Measurement of Wet Film Thickness by Notch Gages
  18. D4541 – Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers
  19. D4787 – Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates
- B. The Society for Protective Linings (SSPC)
1. SSPC-SP13/NACE No. 6 – Surface Preparation of Concrete
- C. International Concrete Repair Institute (ICRI)
1. Guideline No. 310.1R – Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion
- D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

#### 1.05 QUALIFICATIONS

- A. The Contractor performing the work shall be fully qualified, experienced and equipped to complete this work expeditiously and in a satisfactory manner and shall be an approved installer of the lining system, as certified and licensed by the manufacturer. The Contractor shall have successfully installed the proposed lining system in a minimum of 400 manholes and shall have a minimum of two years' service in the ground, as documented by verifiable references. The Contractor shall submit the required information to the Engineer for review and approval before any

work is performed, including references and qualifications of sub-contractors. The Contractor shall submit:

1. The number of years of experience in performing this type of specialized work and in installing the specified lining system.
  2. Name of the manufacturer and supplier for this work and for previous work listed as a reference.
  3. A list of municipal clients that the Contractor has performed this type of work for including names, phone numbers, and number of manholes.
  4. A certified statement from the manufacturer that the Contractor is a certified and/or licensed installer of the liner.
- B. The Contractor shall also be capable of providing crews as needed to complete this work without undue delay.
- C. Where the Contractor intends to sub-contract the installation of the liner, the Contractor must submit a work plan showing how the work shall be scheduled and coordinated.
- D. The Owner reserves the right to approve or disapprove the Contractor, based on the submitted qualifications.

#### 1.06 GUARANTEE

- A. All lining materials installed shall be guaranteed by the Contractor for a period of two years from the date of final acceptance. During this period, all defects discovered in the lining, as determined by the Owner or Owner's Engineer, shall be repaired or replaced in a satisfactory manner by the Contractor at no cost to the Owner.
- B. The Contractor is responsible for properly preparing the existing manhole for lining prior to the installation of the lining system, including stopping all leaks, patching voids, removing steps/manhole rungs, cleaning, removing rubble, root removal, etc.

#### 1.07 QUALITY ASSURANCE

- A. The supplier shall be responsible for the provisions of all test requirements specified in the above referenced ASTM Standards as applicable. In addition, all lining products to be installed under this Contract may be inspected at the plant for compliance with these specifications by an independent testing laboratory provided by the Owner. The Contractor shall require the manufacturer's cooperation in these inspections. The cost of plant inspection of all lining products and materials approved for this Contract shall be borne by the Owner.
- B. Inspections of the lining products and materials may also be made by the Engineer or other representatives of the Owner after delivery. The lining products and materials shall be subject to rejection at any time on account of failure to meet any of the Specification requirements, even though samples may have been accepted as satisfactory at the place of manufacture. Lining materials rejected after delivery shall be marked for identification and shall be removed from the job at once.

## 1.08 DELIVERY, STORAGE AND HANDLING

- A. Care shall be taken in shipping, handling and placing to avoid damaging the lining products. Extra care may be necessary during cold weather construction. Any lining product or material damaged in shipment shall be replaced as directed by the Engineer.
- B. Any lining product showing deterioration, or which has been exposed to any other adverse storage condition that may have caused damage, even though no such damage can be seen, shall be marked as rejected and removed at once from the work.
- C. While stored, the lining products shall be adequately packaged and protected. The lining products shall be stored in a manner as recommended by the manufacturer.

## PART 2 PRODUCTS

### 2.01 MANHOLE MODIFICATIONS

- A. Solid brick
  - 1. Any necessary materials needed for manhole rehabilitation shall be hard clay, grade SM, ASTM, C32-Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale), and AASHTO M91.
- B. Concrete Block
  - 1. Any necessary materials needed for manhole rehabilitation shall conform to the requirements of ASTM C139 Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes.
- C. Mortar for Concrete Block and Clay Brick
  - 1. Mortar shall be Type S, ASTM C270 Standard Specification for Mortar for Unit Masonry and ASTM C144 Standard Specification for Aggregate for Masonry Mortar.
  - 2. Mortar shall be prepared from cement in perfect condition and shall be prepared in boxes for that purpose. No mortar that has stood beyond forty-five minutes shall be used. Proportion by volume for the different types of application shall be as follows:
    - a. Brick masonry: 1 part cement to 2 parts sand
    - b. Pointing: 1 part cement to 1 part sand
- D. Iron Casting: Manhole Frames and Covers
  - 1. Manhole frames and covers shall meet City of Raleigh standards details.

### 2.02 INFILTRATION CONTROL MATERIAL

- A. Infiltration control grout shall be an acrylamide, acrylic or urethane (hydrophobic or hydrophilic) based grout and application. Grout might require the addition of a shrink control agent, gel reinforcing agent or accelerator. The chemical grout shall be

volume stable and have a minimum 28 day compressive strength of 250 psi and a minimum one day strength of 50 psi.

### 2.03 PATCHING MATERIAL

A. All non-leaking holes, cracks or voids shall be patched with a quick setting (less than 30 minutes), non-shrink, fiber reinforced, corrosion resistant calcium aluminate or equivalent material that is compatible with the chosen liner system and shall be applied in accordance with the manufacturer's recommendation for basecoat materials. Patch material must meet the following minimum requirements:

- |                                  |            |                             |
|----------------------------------|------------|-----------------------------|
| 1. Compressive strength          | ASTM C109  | >200 psi at (1 hour)        |
| 2. Ultimate Compressive Strength | ASTM C109  | 5,000 psi                   |
| 3. Applied Density               |            | 105 pcf                     |
| 4. Shrinkage                     | ASTM C 596 | 0% at 90% relative humidity |

### 2.04 MANHOLE LINING

A. The manhole lining system shall be a cementitious system suitable for spray-applied monolithic surfacing in sewer manholes, or a cementitious and epoxy system, or approved equal. The liner components, cementitious and/ or epoxy, and component thicknesses are listed on the plans or schedule for each manhole to be rehabilitated. Approved lining system components shall be as described below:

1. The cementitious lining system shall be a pumpable Calcium Aluminate or acrylic product, Strong Seal MS-2C by Strong Seal Systems; Profile Plus Mix by Strong Seal Systems; Permacast CR-9000 by Action Products Marketing Corp., Mainstay ML-CA by Madewell, Inc.; Parson CA Liner 100 by Parson Environmental Products, Inc.; SewperCoat by Kerneos, Inc.; CemTec Silatec CAM by A. W. Cook Cement, Inc.; Aluminaliner by VORTEX Companies.; or MortarCrete Series 217 by Tnemec, or approved equal. The cementitious liner shall be installed via low-pressure application only. The materials shall be suitable for all the specified design conditions.
2. The epoxy system shall be a spray applied, two component, 100% solids, solvent-free epoxy developed specifically for use in the wastewater environment. Epoxy liner shall be Raven 405, manufactured by Raven Lining Systems; Dura-Plate 5900 or 6100 manufactured by Sherwin-Williams; Perma-shield H<sub>2</sub>S Series 434 and Perma-glaze Series 435, manufactured by Tnemec, or approved equal.

#### B. CEMENTITIOUS LINER

1. The materials used in the cementitious lining systems shall be mixed on site in accordance with the manufacturer's recommendations. Water shall only be added to the materials during the mixing process and prior to material pumping or spray application. No water shall be added at the nozzle. All exposed concrete shall be air entrained.
2. The cementitious liner, when cured, shall have the following minimum characteristics at 28 days as measured by the applicable ASTM standards referenced herein:
  - a. Minimum compressive strength: 8,000 psi

- b. Minimum 28-day bond strength: > 2,000 psi
  - c. Shrinkage: less than 0% @ 90% RH
3. The cured cementitious lining shall be continuously bonded to all the brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside the sewer manhole. Provide bond strength data on cured, cementitious lining based on ASTM C321 test method. Provide test data on shrinkage of the cementitious lining based on ASTM C596.

C. EPOXY LINER

- 1. Application procedures for the epoxy lining system shall be in accordance with the manufacturer's recommendations, including materials handling, mixing, environmental controls during application, safety and spray equipment.
- 2. The epoxy liner, when cured, shall have the following minimum characteristics measured by the applicable ASTM standards referenced herein:
  - a. Hardness, Shore D    ASTM D-2240        70
  - b. Tensile Strength     ASTM D-638         >7,000 psi
  - c. Flexural Strength    ASTM D-790         >10,000 psi
- D. All lining materials shall be approved by U.S. EPA for sewer system rehabilitation.
- E. When cured, the lining shall form a continuous, tight-fitting, hard, impermeable surface which is suitable for sewer system service and chemically resistant to any chemicals or vapors normally found in domestic sewage.
- F. The lining shall be compatible with the thermal condition of the existing sewer manhole surfaces. Surface temperatures will range from 20°F to 100°F.

PART 3     EXECUTION

3.01    INSTALLATION – GENERAL

- A. The Contractor shall clean each sewer manhole to be rehabilitated and shall dispose of any resulting material.
  - 1. Use a high-power jet wash at a minimum of 3,500 psi water pressure. Remove all dust, biological growth, grease, oil, paint, or any other surface contaminants or coatings.
  - 2. Coatings that cannot be removed shall be sanded with coarse sand paper to roughen the surface sufficiently to obtain and insure adequate bonding of the cementitious base coat material.
  - 3. All material or debris shall be removed from manhole. Contractor shall not allow material or debris to enter sewer main.
- B. The Contractor shall conduct a visual inspection of each manhole after it is cleaned. All active, hydrostatic infiltration leaks shall be sealed with infiltration control grout conforming to the requirements of this specification. Remove all loose mortar and rubble of existing walls, benches and inverts. Prepare manhole to receive the lining as necessary by reshaping and repairing benches, and wall where required. All



interior surfaces shall be prepared as recommended by the lining manufacturer. Minimum requirements are as listed below.

1. All cracks and other voids must be repaired and filled with suitable non-shrinking cements, sealants or grouts, including all voids between the existing sewer pipes and manhole walls. Patching compounds shall conform to the requirements of this specification. All patches shall be smooth and even with the manhole wall.
  2. All existing manhole rungs/steps shall be removed and the void patched or cut off and ground smooth.
  3. All surfaces shall be suitably prepared for the required bonding of the lining system as recommended by the manufacturer.
- C. The Contractor shall notify all property owners who discharge sewage directly to the manhole being surfaced that their service will be discontinued while the lining is being placed, cured and active pipe and service connections reopened. The Contractor shall notify individual property owners at least 72 hours in advance, giving the date, start time and estimated completion time for the work being conducted. This notification shall be coordinated with the distribution of the door hangers.
- D. The Contractor shall provide bypass pumping of sewage flows as required to prevent sewage overflows, basement backups or damage to upstream facilities due to the rehabilitation work.
- E. A complete, watertight seal shall be provided at pipe and manhole wall connections. Contractor shall submit details of how the watertight connections will be made to the Engineer for review and approval.
- F. The Contractor shall reopen all of the existing active pipe connections in each sewer manhole following lining.
- G. Following curing of lining and completion of work, inform property owners that they can resume sewer use.
- 3.02 INSTALLATION – EXPOSED REBAR / STEEL REINFORCING CLEANING AND COATING
- A. Rebar or any reinforcing steel exposed or exposed after removal of deteriorated concrete shall be cleaned in accordance with SSPC-SP3. The cleaned steel shall be painted by brush or spray, with a material compatible with the cementitious liner, as approved by the manufacturer of the cementitious liner.
- 3.03 INSTALLATION – PATCHING HOLE OR VOID
- A. All loose or disintegrated material shall be removed from the area to be patched. Holes or voids around steps, joints or pipes, spalled areas, and cavities caused by missing or broken brick or mortar shall be repaired using patching material conforming to the requirements of these specifications. The patching material shall be mixed and applied in accordance with the manufacturer's requirements.
- 3.04 INSTALLATION – STOPPING ACTIVE LEAKS AND INFILTRATION
- A. Stopping Active Leaks and Infiltration: All active leaks and infiltration shall be repaired using chemical grout conforming to the requirements of these specifications.

Any areas that show evidence of leakage either active or non-active during inspection shall be injected. At each point of leakage within the manhole structure a hole shall be carefully drilled through the wall to the exterior of the manhole. Grout ports or sealant injection devices shall be placed in these holes in a way as to provide a watertight seal between the holes and the injection device. Chemical grout shall be pumped through the hole until material refusal is recorded on a pressure gauge mounted on the pumping unit. Care shall be taken during the pumping operation to insure that excessive pressures do not develop and cause damage to the manhole structure. Upon completion of the injection, the ports shall be removed and the remaining holes filled with mortar and troweled flush with the surface of the manhole wall. To prevent the migration of infiltration leaks the Contractor shall comply with the following requirements for points of injection:

1. Pre-cast Section Joint Leaks: A minimum of 4 injection points shall be evenly spaced around the circumference of the manhole joint.
2. Pipe Connection Leaks: A minimum of 2 injection points shall be evenly spaced around pipe connection. Note: Large diameter pipe may require more than 2 injection points.
3. Pipe Invert Leaks: A minimum of 2 injection points, one on each side of trough.
4. Lift Holes / Voids: A minimum of 1 injection point below the center of the lift hole / void.

### 3.05 INSTALLATION – REFORMING / REBUILDING BENCH AND INVERT

- A. Reform/Repair Existing Bench and Invert: Manhole inverts and benches shall be reformed as identified in the plans using the patching material referenced in this specification. Fast setting hydraulic cement may be used to repair the invert. The patch material shall be applied to the invert and bench at a minimum thickness of ½", extending sufficiently to the wall to tie into the cementitious liner to be applied later. The finished invert and bench shall be troweled to a smooth finish free of any ridges. The bench shall be sloped a minimum of 2 inches from the manhole wall toward the invert to prevent debris build-up on the bench. Repairs on the invert shall not compromise grade. The invert and bench shall be allowed to cure for a minimum of 30 minutes before being subject to active flow.
- B. Building Bench and Invert: Inverts and benches shall be constructed in manholes with no hard bottom and no defined invert (channel of flow) using the patching material identified in this specification. Fast setting hydraulic cement may be used to build the invert. The bench shall be constructed of brick or block and finished by troweling smooth with patching material. The patching material shall have a minimum thickness of 1". The finished invert and bench shall be troweled to a smooth finish free of any ridges. The bench shall be sloped from the manhole wall toward the invert to prevent debris build-up on the bench. The invert and bench shall be allowed to cure for a minimum of 30 minutes before being subject to active flow.

### 3.06 INSTALLATION – CEMENTITIOUS LINER

- A. The Contractor shall furnish and place the lining in each manhole as and where directed by the Engineer. The installation of the lining shall be in complete accordance with the manufacturer's specifications.

1. Prior to placing the lining, the Engineer and the Contractor must inspect and approve the surface preparation work. The Contractor shall notify the Engineer

when the manholes are ready for inspection. The Contractor is responsible for ensuring proper installation conditions including temperature and moisture.

2. Liner Application: No application shall be made to frozen surfaces or if freezing is expected to occur inside the manhole within 24 hours after application. If ambient temperatures are in excess of 95 degrees, precautions shall be taken to keep the mix temperature below 90 degrees. For each bag of product, use the amount of water specified by the manufacturer and mix for 30 seconds to 1 minute using equipment per manufacturer's recommendation.

The surface prior to spraying shall be damp without noticeable free water, but totally saturated. Materials shall be applied using low-pressure spray equipment from the bottom of the wall (including the bench but not invert) to the top (terminating at or near the frame / cone connection), to insure that all cracks, crevices, and voids are filled and a relatively smooth surface is achieved at a minimum total finished thickness of 1 inch. Cementitious liner thickness indicated on the plans or schedule greater than 1 inch shall be performed in lifts or as recommended by the manufacturer. The surface is then troweled to a smooth finish being careful not to over trowel so as to bring additional water to the surface and weaken it. A final profiled finish shall be achieved with a brush when top coating with epoxy.

3. Where the manhole to be rehabilitated is subject to vehicular traffic, the lining shall be installed to no closer than 1 inch below the bottom of the manhole frame so as to avoid transfer of impact loads to the new liner. The termination of and surface of the lining shall be suitable for proper installation of the manhole frame chimney seal specified in Section 33 31 11, Sanitary Sewer System. Where the manhole to be rehabilitated is not subject to vehicular loads, the cementitious liner shall be continuous up to the manhole frame and shall overlap the manhole frame by a minimum of 1 inch.

4. Curing: Caution should be taken to minimize exposure of applied product to sunlight and air movement. If application of second coat is to be longer than 15 minutes after completion of first coat, the manhole cover shall be set back in place. At no time should the finished product be exposed to sunlight or air movement for longer than 15 minutes before replacing the manhole cover. The final application shall have a minimum of 4 hours cure time before being subjected to active flow. Traffic shall not be allowed over manholes for 12 hours after application is complete. Specific manufacturers may require longer cure times.

### 3.07 INSTALLATION – EPOXY LINER

A. When required on the plans, the epoxy liner shall be applied over a back-build of cementitious surface. Exact minimum thicknesses of cementitious back-build will be determined after deteriorated concrete has been. The cementitious liner shall be applied in accordance these specifications. The epoxy lining shall take place only after the cementitious liner has cured the appropriate length of time as recommended by the manufacturer.

1. Liner Application: Surfaces shall be coated by spray application to a minimum dry film finished thickness of 100 mils including bench (not including invert) and walls (terminating at cone / frame joint). If necessary, subsequent top coating or additional coats should occur no later than the recoat window for the specified products. Additional surface preparation will be required if this recoat window is

exceeded. The coating material must be applied by a Certified Applicator of the coating system manufacturer. Spray application equipment approved by the coating manufacturer shall be used.

### 3.08 MANHOLE CLEANING

- A. The Contractor shall verify existence of debris and remove any debris from manhole utilizing jet-vac machine, removal by hand, or any other approved method.

### 3.09 MANHOLE FRAME AND COVER RAISING

- A. The Contractor shall adjust existing manhole frame and covers to the appropriate elevation or to be flush with surrounding area using the following materials as appropriate:
  1. 1" cast iron riser rings up to a maximum of three rings
  2. Brick and mortar for adjustments up to 6"
  3. Concrete riser rings for adjustments greater than 6"

### 3.10 FIELD TESTING AND ACCEPTANCE

- A. Field acceptance of manhole lining system shall be based on the Engineer's evaluation of the appropriate installation of the lining per field inspections. Acceptance shall also be based on the Engineer's evaluation of the curing test data and vacuum testing results, where appropriate, and still photographs of the finished manholes.
- B. There shall be no groundwater infiltration or other leakage through the manhole wall after it has been lined. If leakage is found, it shall be eliminated with an appropriate method as recommended by the liner manufacturer and approved by the Engineer at no additional cost to the Owner.
- C. All pipe connections shall be open and clear.
- D. There shall be no cracks, voids, pinholes, uncured spots, dry spots, lifts, delaminations or other defects in the lining.
- E. If any defective lining is discovered after it has been installed, it shall be repaired or replaced in a satisfactory manner within 72 hours and at no additional cost to the Owner. This requirement shall apply for the entire guarantee period.
- F. For each pay request, 20% of the manholes submitted on that pay request shall be inspected via vacuum testing once the liner has sufficiently cured. The vacuum testing shall be accomplished prior to submitting the pay request for the manholes. The manholes inspected shall be chosen by the Engineer or their designated representative and the testing shall be witnessed by the Engineer or their designated representative. If 10% or more of the total system manholes fail the vacuum testing due to defects in the liner, the Contractor shall be required to test 100% of the manholes rehabilitated in the project at no additional cost to the Owner. The vacuum testing shall be conducted in conformance with ASTM C1244. All detected defects in the liner shall be immediately repaired and the manhole retested until passing. All repair procedures shall follow manufacturer's recommended procedures.

- G. Where the vacuum test failed due to defects not in the liner (such as cracked pipes or defects in the manhole frame), the Contractor shall note the cause of the failure on the test log and provide a still photograph of the defect.
- H. The cured epoxy lining shall be spark tested for pinholes with a spark tester set at 10,000 volts minimum (100 V per mil). All pinholes shall be repaired according to manufacturer recommendations. All pinholes shall be marked off on surface areas containing pinholes to a point 6 inches beyond all pinholes and patch with epoxy to a minimum additional thickness of 40 mils. Blisters and uncured lining shall be completely removed and the areas recoated with epoxy to a point 6 inches beyond the repair areas at a minimum thickness of 100 mils.
- I. The Contractor shall provide to the Owner, through the Engineer, a still photograph of all rehabilitated manholes with the manhole identification number visible in the photograph (for instance written on a dry erase board) and not obscuring the view of the manhole. The Owner, through the Engineer, shall have final say as to the acceptability of the photographs. If a photograph is deemed unacceptable, the Contractor shall be required, at no additional cost to the Owner, to take additional photographs of the manhole until an acceptable photograph is submitted. Photographs shall include:
  - 1. Pre-rehabilitation
  - 2. Post-rehabilitation
  - 3. Intermediate rehabilitation steps (i.e., grout injection, repairs, cementitious coatings)
  - 4. File name shall include the manhole number and description as follows:
    - a. 123456\_Pre
    - b. 123456\_Post
    - c. 123456\_Intermediate

END OF SECTION

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SECTION 33 31 11  
SANITARY SEWER SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work under this section includes, but is not limited to, piping, manholes, diversion structures, valves, and appurtenances for a complete sanitary sewer collection system.

1.02 RELATED SECTIONS

- A. The following Sections have work that is directly related to this Section. This does not relieve the Contractor of his responsibility of proper coordination of all the work:
1. Section 01 35 13 Specific Project Requirements
  2. Section 31 23 33 Trenching for Utilities

1.03 REFERENCES

- A. Publications are referred to in the text by basic designation only.
1. American Society for Testing and Materials (ASTM)
    - a. A126 Gray Iron Castings and Valves, Flanges and Pipe Fittings.
    - b. B117 Operating Salt Spray (Fog) Apparatus
    - c. C33 Concrete Aggregates
    - d. C76 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
    - e. C150 Portland Cement
    - f. C361 Reinforced Concrete Low-Head Pressure Pipe.
    - g. C443 Flexible Watertight Joints for Precast Manhole Sections
    - h. C478 Precast Reinforced Concrete Manhole Sections
    - i. C497 Standard Methods Testing Concrete Pipe, Manhole Sections or Tile
    - j. C618 Coal Fly Ash and Raw or Calcined natural Possolan for Use as a Mineral Admixture in Portland Cement Concrete
    - k. C655 Reinforced Concret D-Load Culvert, Storm Drain and Sewer Pipe
    - l. C822 Definition of Terms Related to Concrete Pipe and Related Products
    - m. C890 Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures
    - n. C923 Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
    - o. C1103 Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines
    - p. C1131 Least Cost (Life Cycle) Analysis of Concrete Culvert, Storm Sewer, and Sanitary Sewer Systems
    - q. C1244 Test Method for Concrete Sewer Manholes by the Negative Air Pressure
    - r. C1619 Elastomeric Seals for Joining Concrete Structures
    - s. D638 Tensile Properties of Plastics
    - t. D714 Evaluating Degree of Blistering of Paints
    - u. D1248 Polyethylene Plastics Molding and Extrusion Materials
    - v. D1784 Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
    - w. D2241 Poly(Vinyl Chloride) (PVC) Pressure Rated Pipe (SDR Series)

- x. D2321 Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe
  - y. D2412 Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
  - z. D2794 Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
  - aa. D2924 Standard Test Method for External Pressure Resistance of Fiberglass (Glass Fiber Reinforced Thermosetting Resin) Pipe
  - bb. D2996 Filament Wound Fiberglass (Glass Fiber Reinforced Thermosetting Resin) Pipe
  - cc. D2997 Centrifugally Cast Fiberglass (Glass Fiber Reinforced Thermosetting Resin) Pipe
  - dd. D3034 Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
  - ee. D3139 Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
  - ff. D3262 "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe.
  - gg. D3350 Polyethylene Plastics Pipe and Fittings Materials
  - hh. D3567 Determining Dimensions of Fiberglass (Glass Reinforced Thermosetting Resin) Pipe and Fittings
  - ii. D3681 Chemical Resistance of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe in a Deflected Condition
  - jj. D3839 Underground Installation of "Fiberglass" (Glass Fiber Reinforced Thermosetting Resin) Pipe
  - kk. D4060 Abrasion Resistance of Organic Coatings by the Taber Abraser
  - ll. D4161 "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Joints Using Flexible Elastomeric Seals
  - mm. D4541 Pull-Off Strength of Coatings Using Portable Adhesion Testers
  - nn. D4258 Surface Cleaning Concrete for Coating
  - oo. D4259 Abrading Concrete
  - pp. E96 Water Vapor Transmission of Materials
  - qq. F477 Elastomeric Seals (Gaskets) for Joining Plastic Pipe
  - rr. F1417 Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air
  - ss. G95 Cathodic Disbondment Test of Pipeline Coatings
2. American Water Works Association (AWWA)
- a. C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
  - b. C110 Ductile-Iron and Gray-Iron Fittings, 3 inch through 48 inch, for Water and Other Liquids
  - c. C151 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids
  - d. C153 Ductile-Iron Compact Fittings, 3 inch through 16 inch, for Water and Other Liquids
  - e. C504 Rubber-Seated Butterfly Valves
  - f. C508 Swing-Check Valves for Waterworks Service, 2 inch Through 24 inch NPS
  - g. C512 Air-Release, Air / Vacuum, and Combination Air Valves for Waterworks Service
  - h. C550 Protective Epoxy Interior Coatings for Valves and Hydrants
  - i. C600 Standard for Installation of Ductile Iron Water Mains and Their Appurtenances



- j. C900 Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 inch through 60 inch.
- k. C950 Standard for Fiberglass Pipe
- l. M23 PVC Pipe - Design Installation
- m. M41 Ductile Iron Pipe and Fittings
- n. M45 Fiberglass Pipe Design
- 3. National Sanitation Foundation (NSF) Standards
  - a. 14 Plastic Piping Components and Related Materials
- 4. UNI-BELL Plastic Pipe Association (UNI)
  - a. B-5 Recommended Practice for the Installation of Polyvinyl Chloride (PVC) Sewer Pipe
  - b. B-6 Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe
- 5. Ductile Iron Pipe Research Association (DIPRA)
  - a. 8-08/5M Design of Ductile Iron Pipe
- 6. Reinforced Concrete Pipe
  - a. American Concrete Pipe Association (ACPA) Design Data 9 Standard Installations and Bedding Factors for the Indirect Design Method.

#### 1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00, Submittal Procedures:
  - 1. Affidavit of Compliance: Affidavit shall attest that supplied products conform to the referenced standard and this specification and that tests set forth in each applicable referenced publication have been performed and that test requirements have been met. Submit for each of the following materials:
    - a. Pipe
      - 1) All pipe used on Project
      - 2) All pipe coatings or liners
    - b. Pre-cast concrete manholes
      - 1) The precast manufacturer shall provide detailed design calculations for each configuration (standard, T-base, etc.), which shall include calculations for wall stresses, flotation, depth, reinforcement, and all other criteria necessary for a complete design.
    - c. Valves
      - 1) All valves used on Project
  - 2. Catalog Data and Calculations: Submit manufacturer's standard drawings or catalog cuts and calculations for pipe pressure/thickness class, concrete reinforcement and stiffness class for the appropriate type pipe based on the Drawings and Specifications for the following. Clearly indicate material to be furnished for the Project including options to be provided and indicate if a greater pipe pressure/thickness class, concrete reinforcement or pipe stiffness class will be necessary based on the manufacturer's calculations.
    - a. Pipe
      - 1) All pipe used on Project
      - 2) All pipe coating or liners
    - b. Pre-cast Concrete Manholes and the following appurtenances:
      - 1) Pipe connectors
      - 2) Joint material
      - 3) Castings
      - 4) Interior Coating System

- c. Service saddles
- d. Valves
  - 1) All valves used on Project
- 3. Reports:
  - a. Field test report for each section of pipe for the following:
    - 1) Pressure test for force mains.
    - 2) Low-pressure air test for gravity mains.
    - 3) Vacuum test for manholes.
    - 4) Deflection test for gravity mains.
- 4. Operation and Maintenance Instructions: Submit complete operation and maintenance manual for the following:
  - a. Valves.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide a rope sling when handling the pipe. Lifting of the pipe shall be done in a vertical plane. Under no conditions shall the sling be allowed to pass through the pipe unless adequate measures are taken to prevent damage to both tongue and groove ends.
- B. Deliver pipe in the field as near as practicable to the place where it is to be installed. Distribute pipe along the side of the trench opposite to the spoil bank. Where necessary to move the pipe longitudinally along the trench, it shall be done in such a manner as not to injure the pipe or coating.
- C. Shield PVC pipe and fittings stored on site from the sun's ultraviolet rays by suitable cover, or indoor storage.

## PART 2 PRODUCTS

### 2.01 DUCTILE-IRON PIPE

- A. Pipe and fittings shall conform to the following requirements:
  - 1. Size shall be as indicated on the Drawings.
  - 2. Minimum pipe pressure class shall be 350 for pipes 6-inch to 12-inch diameter, and a minimum pressure class 250 for pipes 14-inch and larger.
  - 3. Suitable for a system working pressure of 250 psi minimum for gravity sewer, 150 psi for force mains.
  - 4. Pipe shall be supplied in nominal lengths of 18 or 20 feet.
  - 5. Pipe lining:
    - a. Less than 12-inches: Cement-mortar lined with seal coat in accordance with AWWA C104
    - b. 12-inch and larger: Interior of pipes and fittings shall be lined with PROTECTO 401 ceramic epoxy as described in paragraph in this section.
  - 6. Pipe pressure/thickness class shall be suitable for the type laying condition as provided in Section 31 23 33, Trenching for Utilities, and at the depth indicated on the Drawings. The proper pressure/thickness class shall be at a minimum as shown on the Contract Drawings. Pipe manufacturer to verify pipe selection, and document to Engineer, prior to ordering and manufacture of pipe.
  - 7. Pipe class shall not transition between manholes and shall be the highest pressure/thickness class required for that reach with exception to sections between manholes including jacking pipe as indicated on the Drawings.

8. Ductile Iron may be used for gravity sewers and force mains.
- B. Ductile-iron pipe for below ground service shall have push-on or mechanical joints, unless noted otherwise on the Drawings, conforming to AWWA C150 and C151, and to the following requirements:
  1. Provide mechanical joint fittings for push-on or mechanical joint pipe, unless noted otherwise on the Drawings.
- C. Ductile-iron pipe for above ground service shall have flanged joints, unless noted otherwise on the Drawings, and conform to AWWA C115.
  1. Pipes to be painted shall have only a shop primer on the outside by the manufacturer. Verify that proposed manufacturer's primer is compatible with the proposed paint system.
- D. Fittings for ductile-iron pipe shall conform to AWWA C110, or C153 and to the following requirements:
  1. Joint type shall be as specified above for the supplied ductile-iron pipe.
  2. Fittings shall be made of ductile-iron.
- E. Ductile iron pipe on piers shall have Mech-Lok™ rigid restrained joint by US Pipe or approved equal.
- F. Special Pipe Joints
  1. River Crossing (Ball Joint)
    - a. Boltless
    - b. Bolted
- G. Restrained Joints:
  1. Provide restrained joint pipe at fittings and valves where indicated on the Drawings. Length of restrained pipe shall be as shown. Restrained joints shall be Flex Ring and Lok-Ring (American), TR Flex (U.S. Pipe) or approved equal.
  2. Restrained joint pipe and fittings shall meet all AWWA standards and other requirements as specified above for standard ductile iron pipe and fittings unless addressed herein.
  3. Field made joints are allowable but should be avoided where possible. Careful planning to locate field cuts in standard pipe sections is preferred. For field made joints in restrained piping, use field weldments or wedge restraint glands or approved equal. Gasket type field made joints will not be allowed.
  4. Restrained joint fittings shall be provided by the restrained joint pipe manufacturer where located within restrained joint pipe sections. Fittings shall be of the same model and type as the pipe supplied from the pipe manufacturer.
  5. Restrained joint fittings may be push-on joint type.
  6. Megalugs, Series 1100, as manufactured by EBAA Iron Sales or approved equal shall be allowable for restraint where fittings or valves are not available with restrained joints.
  7. Where additional fittings/valves are required and not shown on Drawings, consult with Engineer for length of restrained joint pipe necessary each side of fittings/valve prior to installation of pipe/fitting.
  8. Contractor shall develop a field layout schedule and drawing(s) for restrained joint pipe installations that are to be submitted for approval as outlined in Section 01 33 00, Submittal Procedures.

## 2.02 DUCTILE IRON PIPE LINER

### A. General

1. The interior wall of ductile iron sewer pipe and fittings 12" and larger in diameter shall be protected by the Protecto 401 Ceramic Epoxy liner or equal.
2. The lining shall meet the manufacturer's recommendations and the following requirements as a minimum.
3. The liner manufacturer shall have a minimum of ten (10) years of successful experience and be able to demonstrate successful performance on comparable projects.

### B. Lining Material

1. The material shall be an amine cured novalac epoxy containing at least 20% by volume of ceramic quartz pigment.
2. Permeability rating of 0.00 when tested according to Method A of ASTM E-96, Procedure A with a test duration of 30 days.
3. The following tests must be run on coupons from factory lined ductile iron pipe:
  - a. ASTM B-117 Salt Spray (scribed panel) – Results to equal 0.0 undercutting after two years.
  - b. ASTM G-95 Cathodic Disbondment 1.5 volts @ 77°F. Results to equal no more than 0.5mm undercutting after 30 days.
  - c. Immersion testing rated on using ASTM D-714.
    - 1) 20% Sulfuric Acid – No effect after two years.
    - 2) 140°F 25% Sodium Hydroxide – No affect after two years.
    - 3) 160°F Distilled Water – No effect after two years.
    - 4) 120°F Tap Water (scribed panel) – 0.0 undercutting after two years with no effect.
  - d. An abrasion resistance of no more than 3 mils (0.075mm) loss after one million cycles using European Standard EN 598: Section 7.8 Abrasion resistance.

## 2.03 POLYVINYL CHLORIDE (PVC) PRESSURE PIPE

### A. General

1. Pipe and fitting size shall be as indicated on the Drawings.
2. PVC materials shall comply with ASTM D1784.
3. PVC pipe is allowable for gravity sewers and pressure pipe.

### B. AWWA C900: C900 PVC pipe 4-inch to 60-inch shall conform to AWWA C900 and the following requirements:

1. Outside diameter shall conform to ductile-iron pipe.
2. Pipe DR shall be as shown on the Drawings.
3. Pipe shall have plain end and elastomeric-gasket bell ends.
4. Fittings shall conform to AWWA C110 or C153 and have mechanical joints. Fittings shall be made of gray-iron or ductile-iron. Interior of fittings shall be cement-mortar lined with seal coat in accordance with AWWA C104. Fittings 12" and larger in diameter shall be protected by Protecto 401 Ceramic Epoxy liner or equal.

## 2.04 POLYVINYL CHLORIDE (PVC) GRAVITY PIPE

### A. General

1. All PVC pipe shall be designed in accordance with AWWA M23 PVC Pipe – Design and Installation and the Unibell Handbook of PVC Pipe Design and Construction by the PVC Pipe Association.
2. PVC materials shall comply with ASTM D1784 and D3034.
3. See Section 31 23 33, Trenching for Utilities, for trench bedding and haunching requirements.

### B. Sewer Mains:

1. Pipe size and DR shall be as shown on the Drawings.
2. Pipe shall have an integral elastomeric-gasket bell end. Gaskets shall be in conformance with ASTM F477.
3. Nominal pipe length shall be a minimum of 13 feet.

### C. Sewer Services:

1. Pipe and fittings shall be Schedule 40 or 80 as specified on the drawings.
2. Schedule 40 fittings shall be manufactured in accordance with ASTM D2466. Schedule 80 fittings shall be manufactured in accordance with ASTM D2467.
3. Joints shall be solvent cement weld. Solvent cement shall be in accordance with ASTM D2564. Joints shall be made in strict accordance with the pipe manufacturer's recommendations including necessary field cuttings, sanding of pipe ends, joint support during setting period, etc.

## 2.05 CENTRIFUGALLY CAST FIBERGLASS REINFORCED POLYMER MORTAR (CCFRPM) PIPE

### A. CCFRPM Pipe is allowable only for gravity sewers.

### B. Pipe and fittings shall conform to the following requirements:

1. Size and stiffness class (SN) shall be as indicated on the Drawings.
2. Pipe shall be supplied in 20-foot nominal lengths.
3. Each length of pipe, fittings, couplings, and specials to be used shall be plainly and permanently marked with the following: pipe class or strength designation, manufacturer's name or trademark, date of manufacture, and the nominal pipe size.

### C. CCFRPM Pipe shall conform to ASTM D3262, for CCFRPM pipe manufactured of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) materials, and to the following requirements:

1. CCFRPM pipe shall be as manufactured by HOBAS Pipe.
2. The pipe shall be manufactured in accordance with ASTM D3262 and shall meet the following cell limits: Type 1, Liner 2, Grade 3, as described by Section 4.2 and Table 1 of ASTM D3262. The stiffness is to be measured in accordance with ASTM D2412. The corrosion liner shall not be considered as contributing to the structural strength of the pipe.
3. The pipe shall be manufactured by the centrifugal casting process resulting in a dense, nonporous, corrosion-resistant, consistent, composite structure to meet the operating conditions as shown on the Drawings.
4. Pipe shall conform to ASTM D2412 for minimum stiffness and external loading characteristics.

5. Couplings, fittings and push-on joints shall be manufactured with flexible, elastomeric seals conforming to the requirements of ASTM D4161 and ASTM F477 and shall meet or exceed the pipe class at the location of its installation.
6. Pipe joint shall be push-on type couplings unless specified otherwise.
7. Pipe shall meet the minimum requirements of ASTM D3681 and ASTM D3262. Manufacturer shall provide complete 10,000-hour test results on pipe produced at the proposed location of manufacture. Results shall reflect that the pipe has a minimum allowable strain of no less than 0.9% at fifty years when tested in accordance with ASTM D3681 and D3262.
8. Normal production pipe for this project shall not incorporate raw materials that are not in compliance with ASTM D3681 and ASTM 3262.
9. Interior of pipe shall be manufactured using a nonstructural resin with a minimum allowable elongation of 50% when measured in accordance with ASTM D638. The liner nominal thickness shall be 40-mils.
10. Exterior pipe surfaces shall be comprised of a layer of sand and resin to provide UV protection to the exterior.

## 2.06 FILAMENT-WOUND FIBERGLASS REINFORCED POLYMER MORTAR PIPE

- A. Filament-Wound Fiberglass Reinforced Polymer Mortar Pipe is allowable only for gravity sewers.
- B. Pipe and fittings shall conform to the following requirements:
  1. Size and stiffness class (SN) shall be as indicated on the Drawings.
  2. Pipe shall be supplied in 20-foot or 40-foot nominal lengths.
  3. Each length of pipe, fittings, couplings, specials to be used shall be plainly and permanently marked with the following: pipe class or strength designation, manufacturer's name or trademark, date of manufacture, and the nominal pipe size.
  4. Wall Thickness: The average wall thickness of the pipe shall not be less than the nominal wall thickness published in the manufacturer's literature, and the minimum wall thickness at any point shall not be less than 87.5% of the nominal wall thickness.
  5. End Squareness: All points around each end of a pipe unit shall fall within +/-1/4 inch or +/-0.5% of the nominal diameter of the pipe, whichever is greater, to a plane perpendicular to the longitudinal axis of the pipe.
  6. Stiffness: Each pipe shall have sufficient strength to exhibit the minimum pipe stiffness at 5% deflection as required by the Engineer. Stiffness shall be tested in accordance with the test method of ASTM D2412. A minimum of one pipe shall be tested every 100 lengths of each type, grade, and size pipe produced.
- C. Filament-Wound Fiberglass Reinforced Polymer Mortar Pipe shall conform to ASTM D3262, for fiberglass reinforced polymer mortar pipe manufactured of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) materials, and to the following requirements:
  1. The pipe shall be Flowtite Pipe.
  2. The pipe shall be manufactured in accordance with ASTM D3262 with a minimum nominal pipe stiffness of (SN) as shown on the Drawings. The pipe shall meet the following cell limits: Type 1, Liner 2, Grade 3, as described by Section 4.2 and Table 1 of ASTM D3262. The stiffness is to be measured in accordance with ASTM D2412. The corrosion liner shall not be considered as contributing to the structural strength of the pipe.

3. The pipe shall be manufactured by the continuous advancing mandrel (filament wound) process resulting in a dense, nonporous, corrosion-resistant, consistent, composite structure to meet the operating conditions as shown on the Drawings.
  4. Pipe shall conform to ASTM D2412 for minimum stiffness and external loading characteristics.
  5. Couplings, fittings and push-on joints shall be manufactured with flexible, elastomeric seals conforming to the requirements of ASTM D4161 and ASTM F477 and shall meet or exceed the pipe class at the location of its installation.
  6. Pipe joint shall be push-on type couplings unless specified otherwise.
  7. Pipe shall meet the minimum requirements of ASTM D3681 and ASTM D3262. Manufacturer shall provide complete 10,000-hour test results on pipe produced at the proposed locaton of manufacture. Results shall reflect that the pipe has a minimum allowable strain of no less than 0.65% at fifty years when tested in accordance with ASTM D3681 and D3262.
  8. Normal production pipe for this project shall not incorporate raw materials that are not in compliance with ASTM D3681 and ASTM 3262.
  9. Interior of pipe shall be manufactured using a nonstructural resin with a minimum allowable elongation of 50% when measured in accordance with ASTM D638. The liner nominal thickness shall be 40-mils.
  10. Exterior pipe surfaces shall be comprised of a layer of sand and resin to provide UV protection to the exterior.
- D. Resin Systems: The manufacturer shall use only approved polyester resin systems with a proven history of performance in this particular application.
- E. Glass Reinforcements: The reinforcing glass fibers to be used to manufacture the components shall be of the highest quality commercial grade of glass filaments suitably treated with binder and sizing compatible with impregnating resins.
- F. The internal liner shall be suitable for service in a sewer pipe, and shall be highly resistant to exposure to sulfuric acid as produced by biological activity from hydrogen sulfide gases. Pipe shall meet or exceed requirements off ASTM D3681.
- G. Silica Sand: Sand shall be minimum 98% silica with a maximum moisture content of 0.2%
- H. Additives: Resin additives, such as curing agents, pigments, dyes, fillers, thixotropic agents, etc., when used, shall not detrimentally affect the performance of the product.
- I. Elastomeric Gaskets: Gaskets shall be supplied by qualified gasket manufacturers and be suitable for the service intended.

## 2.07 MANHOLES - GENERAL

- A. Provide manholes to the depth as indicated on the Drawings. Manhole style, type, and inside diameter shall be as noted on the Drawings.
- B. Manholes on lines 12" and larger in diameter, as well as manholes that directly receive a force main discharge, shall be polymer concrete manholes or precast concrete manholes internally coated with a polyurea or epoxy coating.

## 2.08 PRECAST CONCRETE MANHOLES

- A. Provide manholes made of precast concrete sections in conformance with ASTM C478, the Drawings, the City of Raleigh Public Utilities Handbook, NC Department of Transportation, and the requirements that follow:

B. General:

1. Precast concrete manholes shall be as manufactured by Tindall Concrete Products, Inc., Adams Concrete, Hanson Pipe and Precast, Lindsay Precast, Oldcastle, or approved equal.
2. T-series manholes as manufactured by Tindall Concrete Products or approved equal shall be an acceptable substitute to round manholes as specified herein. The T-series shall be the same size manhole as shown on the Drawings for round manholes (e.g., 6' ID manhole, etc.) and shall meet all applicable requirements of the specifications. No reduction in size of the riser sections and top slab shall be allowable.

C. Coatings:

1. When applying coatings to new manholes, coatings will be applied above ground (before manhole components are installed). Areas to be coated shall meet coating manufacturer requirements for surface preparation. Joints shall be coated after manhole installation.
2. Polyurea:
  - a. Coating shall be Duramer 1030 as manufactured by SewerKote or approved equal. Coatings may be applied by brush, spray, or roller. Coating shall be provided in three separate parts; primer, intermediate coat, and top coat.
  - b. Primer coat shall be a 20% solids, deeply penetrating, dual-component polyurea primer applied to 0.5 – 1.0 mils dry film thickness (150 ft<sup>2</sup>/gal).
  - c. Intermediate coat shall be a dual component polyurea applied at 50 – 100 mils dry film thickness (50 ft<sup>2</sup>/gal).
  - d. Top coat shall be a 65% solids, two-part polyurea applied at 7.5 – 10 mils dry film thickness (125 ft<sup>2</sup>/gal).
3. Epoxy:
  - a. The epoxy system shall be a spray applied, two component, 100% solids, solvent-free epoxy developed specifically for use in the wastewater environment. Epoxy liner shall be Raven 405, manufactured by Raven Lining Systems; Dura-Plate 5900 or 6100 manufactured by Sherwin-Williams; Perma-shield H<sub>2</sub>S Series 434 and Perma-glaze Series 435, manufactured by Tnemec, or approved equal.
  - b. Application procedures for the epoxy lining system shall be in accordance with the manufacturer's recommendations, including materials handling, mixing, environmental controls during application, safety and spray equipment.
  - c. The epoxy liner, when cured, shall have the following minimum characteristics measured by the applicable ASTM standards referenced herein:
    - 1) Hardness, Shore D ASTM D-2240 70
    - 2) Tensile Strength ASTM D-638 >7,000 psi
    - 3) Flexural Strength ASTM D-790 >10,000 psi
4. When cured, the lining shall form a continuous, tight-fitting, hard, impermeable surface which is suitable for sewer system service and chemically resistant to any chemicals or vapors normally found in domestic sewage.
5. The lining shall be compatible with the thermal condition of the existing sewer manhole surfaces. Surface temperatures will range from 20°F to 100°F.

D. Precast Concrete Sections:

1. Minimum wall thickness shall be 5-inches.



2. Base: Cast monolithically without construction joints or with an approved PVC waterstop in the cold joint between the base slab and the walls. Minimum thickness of base shall be 6-inches.
  3. The width of the base extensions on Extended Base Manholes shall be no less than the base slab thickness. Extended bases shall comply with the details on Drawings.
  4. Riser: Minimum lay length of 16 inches.
  5. Cone: Eccentric or concentric cones may be used on 8 through 12-inch mains. Concentric cones shall be used on all 15-inch and larger mains.
  6. Transition Slab: Provide a flat transition from 60-inch and larger manholes to 48-inch diameter risers, cones, and flat slab top sections. The maximum height of manhole over the transition top section shall be 12 feet. Transition sections shall not be used in areas subject to vehicle traffic.
  7. Flat Slab Top: Designed for HS-20 traffic loadings as defined in ASTM C890. Items to be cast into Special Flat Slab Tops (i.e. ring, cover, vent base) shall be sized to fit within the manhole ID and the top and bottom surfaces. Provide a float finish for exterior slab surface.
  8. Precast or core holes for pipe connections. Diameter of hole shall not exceed outside diameter of pipe by more than 3-inches.
  9. Lifting Devices: Devices for handling precast components shall be provided by the precast manufacturer and comply with OSHA Standard 1926.704.
- E. Joints:
1. Manufacturer in accordance with tolerance requirements of ASTM C 990 for butyl type joints.
  2. Minimize number of joints. Do not use riser section for manholes up to 6 feet tall and no more than one riser for each additional 4 feet in height.
  3. Flexible Joint Sealants: Flexible Joint Sealants: Preformed butyl rubber based sealant material conforming to Federal Specification SS-S-210A, Type B and ASTM C990.
  4. External Seal: Polyethylene backed flat butyl rubber sheet no less than 1/16-inch thick and 8-inches wide.
- F. Inverts:
1. Brick and mortar or precast concrete invert constructed to the width of the effluent pipe.
  2. Form and finish invert channel to provide a consistent slope from inlet(s) to outlet up to 6-inches.
  3. Channel walls shall be formed to the springline of the outlet pipe diameter.
  4. Finish benches at 60 degrees to manhole walls. Provide a 1/4-inch radius at the edge of bench and trough.
- G. Flexible Pipe Connectors: Provide flexible connectors for pipe to manhole that conform to ASTM C923. Location of connectors shall vary from Drawings no more than 1/2-inch vertically and 5 degrees horizontally. Boot sleeves shall have stainless steel expansion bands and pipe clamps that meet or exceed ASTM C923.
- H. Steps:
1. Steps are not allowed inside manholes.
  2. Steps shall be provided on outside of raised manholes when top elevation is greater than three (3) feet above existing ground elevation.

## 2.09 POLYMER CONCRETE MANHOLE

### A. General:

1. Polymer concrete manholes shall be non-porous, corrosion-resistant, homogenous, composite structures.
2. Provide manholes to the depth as indicated on the Drawings. Manhole style, type, and inside diameter shall be as noted on the Drawings.
3. Provide manholes with manufacturing tolerances per ASTM C478.
4. Provide base with riser as a monolithic section, unless shown otherwise.
5. Extended bases: the width of the base extensions on extended base manholes shall be no less than the base slab thickness. Extended bases shall comply with the details on Drawings.
6. Manhole shall support dead and live loads including vehicle loads.
7. Manhole wall thickness shall be designed to resist hydrostatic pressures with a minimum safety factor of 2.0. Wall thickness shall be consistent from invert to grade. Wall thickness shall be a minimum of 4".
8. Cones and adjusting rings shall be made of the same polymer concrete material.
9. Manholes shall include engineered lifting devices that shall not penetrate through the wall.
10. Portland cement concrete shall not be used.

### B. Materials:

1. Manhole shall consist of thermosetting resin, sand, and aggregate.
2. Resin content shall be a minimum of 7% by weight. Resin shall be suitable for sewer applications.
3. If resin additives, such as curing agents, pigments, dyes, fillers, and thixotropic agents, are used, they shall not be detrimental to the manhole.
4. Patching or grouting material, if needed, shall be a polyester mortar compound provided by the manhole manufacturer or equal that is approved by the manufacturer.

### C. Joints:

1. Provide riser sections with bell and spigot type joints.
2. Manufacturer in accordance with tolerance requirements of ASTM C 990 for butyl type joints.
3. Minimize number of joints. Do not use riser section for manholes up to 6 feet tall and no more than one riser for each additional 4 feet in height.
4. Flexible Joint Sealants: Flexible Joint Sealants: Preformed butyl rubber based sealant material conforming to Federal Specification SS-S-210A, Type B and ASTM C990.
5. External Seal: Polyethylene backed flat butyl rubber sheet no less than 1/16-inch thick and 8-inches wide.

### D. Inverts

1. Factory cast invert(s) into base section with polymer concrete.
2. Provide a consistent slope from inlet(s) to outlet.
3. Channel walls shall be formed to the springline of the outlet pipe diameter.
4. Finish benches at 60 degrees to manhole walls. Provide a 1/4-inch radius at the edge of bench and trough.

- E. Flexible Pipe Connectors: Provide flexible connectors for pipe to manhole that conform to ASTM C923. Location of connectors shall vary from Drawings no more than 1/2-

inch vertically and 5 degrees horizontally. Boot sleeves shall have stainless steel expansion bands and pipe clamps that meet or exceed ASTM C923.

## 2.10 CASTINGS

### A. General

1. Made of gray iron, ASTM A-48 - class 30.
2. Castings shall be free from imperfections not true to pattern. Casting tolerances shall be plus or minus 1/16-inch per foot of dimension. Top shall set neatly in frame, with edges machined for even bearing and proper fit to prevent rattling and flush with the edge of frame.
3. Castings shall be as manufactured by Neenah Foundry Co., U.S. Foundry & Manufacturing Corp., or approved equal.

### B. Manhole Frame and Cover:

1. Minimum clear opening shall be 22 inches.
2. Minimum weight for frame and cover shall be 300 pounds and suitable for Heavy Duty Highway Traffic Loads of H-20.
3. Frame shall have four 3/8-inch anchor bolt holes equally spaced.
4. Cast "SANITARY SEWER" and "DANGER PERMIT REQUIRED – CONFINED SPACE DO NOT ENTER" on the cover. Casting shall bear the name of the manufacturer and the part number.
5. Provide camlocks on all manholes located in sanitary sewer easement.
6. Provide cover with one 1-inch perforated hole unless noted as watertight on the Drawings.
7. Provide the following where indicated on the Drawings:
  - a. Ring and cover shall be watertight.
  - b. Bolt down cover. Bolt down covers shall be provided with four (4) 3/8-inch stainless steel hex head bolts at 90 degrees.

## 2.11 COMPOSITE FRAME AND COVER

- A. Composite frame and cover shall not be used in roadways.
- B. Minimum clear opening shall be 22 inches.
- C. Cover shall be heavy duty with minimum H-20 load rating.
- D. "SANITARY SEWER" and "DANGER PERMIT REQUIRED – CONFINED SPACE DO NOT ENTER" shall be included on the cover.
- E. Provide cover with one 1-inch perforated hole unless noted as watertight on the Drawings.
- F. Provide stainless steel camlocks on all composite covers. Cam locks shall be operable without any special tools.
- G. Where required, provide gasket for watertight cover.
- H. Provide cover with manhole pick access.
- I. Frame and cover shall be provided by the same manufacturer.
- J. Frame and cover shall be manufactured by EJ, Trumbull Manufacturing, Composite Access Products, or equal.

## 2.12 SEWER SERVICE

- A. Provide PVC wye sewer saddles for services on PVC mains. Saddles shall be solvent welded and fastened with double stainless-steel bands.
- B. Provide a cast or ductile iron wye sewer saddle for services on ductile iron main. Saddles shall be "Geneco E40" sewer saddles or approved equal consisting of a virgin SBR gasket compounded for sewer service, a ductile iron saddle casting, a 304 stainless-steel adjustable strap for fastening the gasket and the saddle casting to the sewer main, and a 304 stainless steel adjustable circle clamp for securing the service line into the SBR gasket.

## 2.13 VALVES

- A. General: Valves shall meet the following requirements:
  - 1. Size shall be as required for the pipe size and material as indicated on the Drawings and specified.
  - 2. Open by counterclockwise rotation.
  - 3. Standard system working pressure is pressure 175 psi.
  - 4. Equip valves with a suitable means of operation.
  - 5. For buried valves over 5 feet deep, provide extension stems of cold rolled steel to bring the operating nut to within 2 feet of the ground surface.
  - 6. Provide valve accessories as required for proper valve operation for valve locations as indicated on the Drawings and as recommended by valve manufacturer.
  - 7. Valve accessories shall be compatible to proper valve operation.
  - 8. Similar valve types shall be of one manufacturer.
- B. Gate Valves, Resilient-Seated: Gate valves 3-inch to 36-inch shall conform to AWWA C509 for and to the following requirements:
  - 1. O-ring stem seal on non-rising (NRS) stem valves.
  - 2. Ends shall be mechanical joint for underground locations and flanged joint for above ground locations.
  - 3. Valves shall be non-rising stem (NRS) with wrench nut for underground locations and Outside Screw and Yoke (OS&Y) with handwheel for above ground locations unless noted otherwise on the Drawings.
  - 4. Be of one manufacturer.
  - 5. Valves 16-inch and larger shall be equipped with cast iron gearing to facilitated opening. Gear cases shall be extended or totally enclosed type. Geared valves shall be equipped with indicators to show the position of the gate in relation to the water.
  - 6. Valves 20-inch and larger shall be equipped with a bypass.
- C. Plug Valves: Plug valves shall conform to the following requirements:
  - 1. Plug valves shall be of the non-lubricated, eccentric type designed for a working pressure of 175 psi for valves 12 inch and smaller, 150 psi for vales 14 inch and larger.
  - 2. Valves shall provide tight shut-off at rated pressure.
  - 3. The plug valve body shall be cast iron ASTM A126 Class B with a welded-in overlay of not less than 90% nickel alloy content on all the surfaces contacting the face of the plug.
  - 4. The valve plug shall be constructed of cast iron conforming to ASTM A126 Class B, with Buna N resilient seating surface to mate with the body seat.
  - 5. Valve flanges shall be in accordance with ANSI B16.1 Class 125.

6. Shaft bearings shall be sleeve-type, sintered, oil impregnated, and permanently lubricated stainless steel.
  7. Plug valve shaft seals shall be of the multiple V-ring type and shall be adjustable. Sealing system shall conform to AWWA C504 standards. All packing shall be replaceable without removing the bonnet or actuator and while valve is in service.
  8. Valves 6" and larger shall be provided with gear actuators.
  9. Provide levers or hand wheels to operate the valve as recommended by the manufacturer.
- D. Swing Check Valves: Swing check valves from 2 to 24-inch shall conform to AWWA C508 and to the following requirements:
1. Provide lever and weight for swing check control.
  2. Resilient material to Metal seat construction.
  3. Ends shall be flanged.

#### 2.14 AIR RELIEF VALVES

- A. Provide air valves in conformance with AWWA C512 and the following:
1. Valve type shall be a combination valve.
    - a. Inlet size: 2 inch
    - b. Large orifice minimum: 1 inch
    - c. Small orifice minimum: 1/8 inch
  2. Valve shall be designed for the following automatic operation:
    - a. Release of large quantities of air during the filling of the main.
    - b. Permit air to enter the main when it is being emptied.
    - c. Release accumulated air while the main is in operation and under pressure.
  3. Valve shall be designed for a system pressure 150 psi. Valve shall also operate at a minimum system pressure of 20 psi.
  4. Provide threaded inlet.
  5. Provide stainless steel ball float and internal trim.
  6. Provide isolating bronze ball valve for connection to main line.
  7. For sewage force mains provide tall body to minimize possibility of sewage plugging orifice or linkage.
  8. Sewage force main valve shall include backwash accessories. They shall include bronze flushing ball valves and 5 feet of rubber hose with quick-connect coupling on each end.

#### 2.15 VALVE BOX

- A. Valve Box, Below Ground: Boxes shall be high strength cast iron of the screw or telescopic type. Box shall consist of a base section, center extension as required, and a top section with cover marked "SEWER."

#### 2.16 THRUST BLOCKING

- A. Provide concrete thrust blocking for pressure lines in accordance with the detail on the Drawings.
- B. Thrust blocking is not required where restrained joint fittings and equivalent length of restrained joint pipe are used unless shown otherwise on the Drawings.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. Pipe installation shall meet the following general guidelines:
  - 1. Lay pipe in the presence of the Owner's designated resident project representative, unless specifically approved otherwise.
  - 2. Handle pipe and accessories in accordance with manufacturer's recommendations. Take particular care not to damage pipe coatings.
  - 3. Carefully inspect pipe immediately prior to laying. Do not use defective pipe. Replace pipe damaged during construction.
  - 4. Lay pipe to grade and alignment indicated on the Drawings.
  - 5. Provide proper equipment for lowering pipe into trench.
  - 6. Provide tight closure pipe ends when work is not in progress.
  - 7. Keep pipe interior free of foreign materials.
  - 8. Do not lay pipe in water or when the trench or weather conditions are unsuitable for the work.
  - 9. Clean bell and spigots before joining. Make joints and lubricate gasket in accordance with pipe manufacturer recommendation.
  - 10. Block fittings with concrete or restrained as indicated on the Drawings or as required to prevent movement.
- B. Gravity Pipe: Gravity pipe installation shall meet the following general guidelines:
  - 1. Lay pipe upgrade from the lower end and at the grades and alignment indicated on the Drawings.

### 3.02 RELATION OF WATER MAINS TO SEWERS

- A. Lateral Separation: Lay water mains at least 10 feet laterally from existing and proposed sewers. Where existing conditions prevent a 10-foot lateral separation, the following shall be followed with approval of the Engineer:
  - 1. Lay water main in a separate trench, with the elevation of the bottom of the water main at least 18 inches above the top of the sewer.
  - 2. Lay water main in the same trench as the sewer with the water main located at one side on a bench of undisturbed earth, and with the elevation of the bottom of the water main at least 18 inches above the top of the sewer.
- B. Crossing Separation: Lay bottom of water main at least 18 inches above the top of the sewer. Where existing conditions prevent an 18-inch vertical separation, construct both the water main and sewer of ferrous materials and with joints that are equivalent to water main standards for a distance of 10 feet on each side of the point of crossing.
- C. Crossing a Water Main Under a Sewer: When it is necessary for a water main to cross under a sewer, construct both the water main and the sewer of ferrous materials and with joints equivalent to water main standards for a distance of 10 feet on each side of the point of crossing. A section of water main pipe shall be centered at the point of crossing.

### 3.03 GRAVITY SEWER PIPE

- A. Lay sewer pipe to true lines and grades by using laser beam equipment or other acceptable means.
- B. Minimum Separation Distances:
  - 1. In general, 100-foot horizontal separation from wells or other water supplies. If sewer pipe is installed within 50 foot of a public well or water supply or 25 foot of

a private well or water supply, ferrous pipe must be used. Manholes shall not be located within 50-foot of a public well or water supply or 25 foot from a private well or water supply.

2. 24-inch vertical separation from storm sewers or ferrous pipe shall be used.
3. For separation from water mains see paragraph 3.02 above.

### 3.04 DUCTILE IRON PIPE

A. Install pipe in conformance with AWWA C600 and the following:

1. For laying pipe in a vertical or horizontal curve, each full-length pipe may be deflected by the following offset distance unless the pipe manufacturer's recommended distances are less:
  - a. Push-on joint
    - 1) 3 to 12-inch pipe: 14-inch offset
    - 2) 14 to 36-inch pipe: 8-inch offset
  - b. Mechanical joint
    - 1) 3 to 6-inch pipe: 20-inch offset
    - 2) 8 to 12-inch pipe: 15-inch offset
    - 3) 14 to 20-inch pipe: 8-inch offset
    - 4) 24 to 36-inch pipe: 6-inch offset
2. For laying restrained joint pipe in a vertical or horizontal curve, except for horizontal directional drills (HDD), each full-length pipe may be deflected by the following offset distance:
  - a. 6 to 12-inch pipe: 11-inch offset
  - b. 16 to 20-inch pipe: 7-inch offset
  - c. 24 to 30-inch pipe: 5-inch offset
  - d. 36-inch pipe: 4-inch offset
  - e. 42 to 48-inch pipe: 1 ¼ -inch offset
3. For laying restrained joint pipe in a vertical or horizontal curve, except for horizontal directional drills (HDD), each full-length pipe may be deflected by the following offset distance:
  - a. 6 to 12-inch pipe: 11-inch offset
  - b. 16 to 20-inch pipe: 7-inch offset
  - c. 24 to 30-inch pipe: 5-inch offset
  - d. 36-inch pipe: 4-inch offset
  - e. 42 to 48-inch pipe: 1 ¼ -inch offset
4. The Contractor shall verify the offset distances specified are acceptable with the pipe manufacturer prior to installation.
5. Carrier pipe of any joint type may not be deflected.

### 3.05 DUCTILE IRON PIPE LINER

A. Application

1. The entire surface shall be inspected prior to receiving protective compound to ensure that no oil, grease, etc. exists on the surface. If any surface contains any of these items shall be solvent cleaned to remove said substances.
2. Once free of any oil, grease, etc., all surfaces shall be abrasive blasted using sand or grit abrasive media. No rust shall be present on surface at the time of application.
3. After surface preparation, the pipe interior shall receive 40 mils nominal dry film thickness of Protecto 401 or approve equal. Follow manufacturer's thickness requirements.

4. No lining shall take place when the substrate or ambient temperature is below 40°F.
5. The surface must be dry and dust free during application.
6. Bell Sockets and Spigot Ends shall be coated with 6 mils nominal, 10 mils maximum with Protecto Joint Compound 6 inches back from the end of the spigot end.
7. The joint compound shall be applied by brush to ensure full coverage.
8. No excessive buildup shall be present in the gasket seat or on the spigot ends.
9. Coating of the gasket seat and spigot ends shall be done after the application of the lining to the interior of the pipe.
10. The number of coats shall be as recommended by the lining manufacturer.
11. No material shall be used for lining which is not indefinitely recoatable with itself without roughening of the surface.
12. Provide touch up, as necessary, using Protecto Joint Compound per manufacturer's recommendations.

**B. Inspection and Certification**

1. A magnetic film thickness gauge shall be used to confirm the thickness on all ductile iron pipe and fittings. Thickness testing shall be done in accordance with SSPC-PA-2 Film Thickness Rating.
2. The interior lining shall be tested using a non-destructive 2,500 volt test to check for pinholes. Repair defects prior to shipment.
3. Each pipe joint and fitting shall be marked with the date of application of the lining system along with its numerical sequence of application on that date and records maintained by the applicator of his work. These records shall be made available to the Engineer upon request.
4. The pipe/fitting manufacturer shall provide a certificate attesting that the applicator meets the requirements of this specification, and that the material used was as specified and applied as specified.

**3.06 PVC PRESSURE PIPE**

A. Install PVC C900/ pipe in conformance with AWWA C605.

B. Bell and Spigot Joints: Clean bell and spigot ends prior to jointing. Ends of field cut pipe shall be beveled with file. Gasket shall be clean and lightly lubricated. Joint shall be made as recommended by the manufacturer.

**3.07 FIBERGLASS REINFORCED PIPE – CENTRIFUGALLY CAST AND FILAMENT WOUND**

A. Install pipe in accordance with manufacturer's recommendations and the following requirements:

1. The bedding and burial of pipe and fittings shall be in accordance with the Drawings and Specifications and the Manufacturer's requirements.
2. Do not exceed forces recommended by the manufacturer when joining pipe.
3. Gasket shall be wiped clean prior to joining. Damaged, defective, or bulging gaskets shall be replaced with a new coupling.
4. Wipe the plain end of pipe clean prior to insertion in the coupling. The coupling components shall also be wiped clean prior to connection.
5. Apply joint lubricant, as approved by pipe manufacturer, to pipe end and elastomeric gaskets.



6. For handling pipe, use textile slings or other suitable materials or a forklift. Use of cables or chains is not permitted. Damaged pipe will be rejected.
7. Pipe shall be free of nicks, scratches and gouges at the time of installation. Visible gouges shall be cause for rejection of pipe.
8. Join pipe in straight alignment then deflect slightly if required. Do not allow the deflection angle to exceed the deflection permitted by the manufacturer.
9. No blocking under the pipe will be permitted.
10. Storage of pipe on the job site shall be done in accordance with the pipe manufacturer's recommendation and with approval of the Engineer.
11. Under no circumstances shall pipe or fittings be dropped either into the trench or during unloading. The interior of the pipe shall be kept clean of oil, dirt, and foreign matter; and the machined ends and couplings shall be wiped clean immediately prior to jointing.
12. Use a pipe cutter where necessary to cut and machine all pipe in the field. A "full insertion mark" shall be provided on each field-cut pipe end. Field-cut pipe shall be beveled with a beveling tool in accordance with the manufacturer's recommendations. Bevels shall be in accordance with the manufacturer's requirements.
13. If not integral to the bell or coupling, rubber gaskets shall be marked with manufacturer's identification sizes and proper insertion direction.
14. Before use, all pipe and specials shall be thoroughly examined for defects; and no piece shall be installed which is known to be defective. If any defective piece should be discovered after having been installed, it shall be removed and replaced with a sound one in a satisfactory manner at no additional cost to the Owner.
15. For open-trench construction, the laying of the pipe in finished trenches shall begin at the lowest point with the coupling/bell ends pointing opposite to the direction of flow. The interior of the pipe and the jointing seal shall be free from sand, dirt, and trash before installing in the line. Extreme care must be taken to keep the couplings of the pipe free from dirt and rocks so joints may be properly assembled without overstressing the coupling. The jointing of the pipe shall be done in strict accordance with the pipe manufacturer's instructions and shall be done entirely in the trench.

### 3.08 REINFORCED CONCRETE HDPE LINED SEWER PIPE

- A. Care shall be taken in loading, transporting, and unloading to prevent damage to the pipe. All pipe shall be examined and approved by the Engineer or his appointed representative before laying and no piece shall be installed which is found to be defective.
- B. Preparation of bedding and backfill shall be as specified on the Drawings and per the requirements of the American Concrete Pipe Association's Design Data 9. Pipe shall be laid with uniform bearing under the full barrel of the pipe.
- C. Pipe shall be protected from lateral displacement by pipe embedment material installed as provided in the Drawings. Under no circumstances shall concrete pipe be laid in water and no pipe shall be laid in unsuitable weather or trench conditions. Pipe shall be laid with bell ends facing the direction of laying except when making closures.
- D. Rubber gaskets shall be installed in strict conformance with the pipe manufacturer's recommendations.

- E. Pipe shall be laid to line and grade as shown on the plans. Curves may be formed using fittings, specials, or unsymmetrical joint closure of straight pipe as required.
- F. As the pipe line is being laid, and prior to welding of the HDPE liner, each joint shall be tested with a Go/No-Go joint air test to verify joint integrity. The test shall be conducted on the mated joint after two subsequent joints have been laid to confirm that the joint and gasket are assembled properly, i.e. no pinched or rolled gaskets or cracked bells. The test shall consist of using a Cherne Joint Tester (or approved equal) employing a modified test procedure. The modified test shall consist of pressurizing the sealing bladders to 80 psi and then pressurizing the joint to 5 psi. The pressure cannot drop more than 1 psi in 5 seconds for the joint to be considered acceptable. Any problems with the joint (bell, spigot, or gasket) will be identified by the inability to pressurize the joint. If the joint fails this test, the joint shall be removed and replaced using new gaskets then re-tested. All joint tests shall be witnessed and approved by the Engineer or the designated representative.

### 3.09 VALVES AND FITTINGS

- A. Install buried valves on top of an 18-inch square, 3-inch thick, solid concrete pad (minimum dimensions). The concrete pad may be provided by a pre-cast manufacturer or cast-in-place in the field above grade. Concrete used for the pads shall be a minimum 3,000 psi mix. The pads may not be cast-in-place in the pipe trench. Connection to pipe shall be such that there shall be no stress at the joint caused by misalignment or inadequate support of pipe or valve.
- B. Install fittings as recommended by the manufacturer. Fittings shall be blocked or otherwise restrained from movement.
- C. Valve Boxes: Set valve boxes flush with finished grade. Box shall be supported so that no stress shall be transmitted to the valve. Operating nut shall be centered in box.
- D. Install valves, gates, and accessories indicated on the Drawings and in complete accordance with the manufacturer's recommendations.
- E. Valve boxes shall be set straight with the operating nut centered and supported on (2) 4" concrete blocks, to prevent load transfer onto valve body or pipe line. Set top of box at finished grade. Provide a 24-inch x 24-inch wide by 6-inch thick concrete pad at top of valve boxes outside paved areas.

### 3.10 AIR RELIEF VALVES

- A. Main shall be drilled for a two-inch connection.
- B. Valve shall be installed on the main line with a service saddle.
- C. Install air valve in a flat top manhole.

### 3.11 MANHOLES

- A. Set base plumb and level. If using precast inverts, then align manhole invert with pipe invert.
- B. Secure pipe connectors to pipe in accordance with manufacturer's recommendation.
- C. Clean bells and spigots of foreign material that may prevent sealing. Unroll the butyl sealant rope directly against base of spigot. Do not stretch. Follow manufacturer's instructions when using O-ring seals.

- D. Plug lift holes using a non-shrink grout. Cover with a butyl sealant sheet on the outside and seal on the inside with an application of an epoxy gel 1/8-inch thick extending 2 inches beyond the opening.
- E. Set manhole frames to grade with grade rings in paved areas. Grade rings are not allowable for manholes located in easements. Seal joints between cone, adjusting rings, and manhole frame with butyl sealant rope and sheet. Concrete collar as shown in detail on the drawings shall be installed for manholes located in pavement.
- F. Apply external seal to the outside of joint.
- G. Finish the interior by filling fractures greater than 1/2-inch in length, width or depth with a sand cement mortar.
- H. Clean the interior of the manhole of foreign matter.

### 3.12 SEWER CLEANOUTS

- A. Sewer cleanouts connected to ductile iron pipe shall also be ductile iron sewer pipe conforming to these specifications.
- B. Sewer cleanouts connected to PVC pipe shall also be PVC sewer pipe schedule 40 conforming to ASTM-D-3034 latest revision. Use elastomeric gaskets for pipe joints.
- C. PVC wye sewer saddles shall be used on new PVC pipe. Saddles shall be used on existing PVC, solvent welded to the main and fastened with double stainless steel bands.
- D. Cleanouts shall be a minimum of 4-inch diameter unless noted otherwise on the Drawings. Provide sewer cleanouts with screw-in watertight cap. Installation shall be in accordance with the details as shown on the Drawings.

### 3.13 SERVICE CONNECTIONS

- A. Make service connections in accordance with the standard detail(s) on the Drawings.
- B. Service connections to the main lines shall be perpendicular to the main line to the edge of the right-of-way or easement line.
- C. Four-inch lines shall have a minimum slope of 1.0 % and have cleanouts every 75 feet at a minimum in addition to a cleanout at the right-of-way line or at the edge of the easement.
- D. Six-inch lines shall have a minimum slope of 0.60 % and have cleanouts every 100 feet at a minimum in addition to a cleanout at the right-of-way line or at the edge of the easement.
- E. 6-inch service lines shall tie directly into a manhole.
- F. Wye sewer saddles shall be made only when the sewer main is 8-, 10-, or 12-inch diameter concrete, ductile iron, or PVC sewer pipe. This type connection cannot be used on truss sewer pipe. The opening in the sewer main for the saddle shall be cut with a hydraulically driven or pneumatically driven circular tapping saw of the same nominal diameter as the sewer service line.

### 3.14 PAINTING

- A. Equipment shall receive the manufacturer's standard coating for the intended application. Coatings shall be suitable for the intended application.
- B. Repaint damaged paint services.

- C. Above ground piping and piping within vaults shall be painted in accordance with the specification section for each item.

### 3.15 TESTING

#### A. General

1. Clean and flush pipe system of foreign matter prior to testing.
2. Notify Owner and Engineer a minimum of 48 hours prior to testing.
3. Perform tests in the presence of Engineer.
4. Length of line to be tested at one time shall be subject to approval of Engineer.
5. Pipe sections shall not be accepted and placed into service until specified test have been performed and approved.
6. Repair defects in the pipe system. Make repairs to the same standard as specified for the pipe system.
7. Retest repaired sections until acceptance.
8. Repair visible leaks regardless of the test results.

#### B. Pressure Mains

1. The Engineer shall approve the source, quality, and method of disposal of water to be used in test procedures.
2. Obtain Owner's permission 48 hours prior to filling or flushing of pipe system with water from Owner's water system. Owner shall operate valves connected to the existing water system. Keep pipe interior clean during construction to minimize the amount of water required for flushing. Where large quantities of water may be required for flushing, Owner reserves the right to require that flushing be done at periods of low demand.
3. Pressure test in accordance with AWWA C600 for ductile iron pipe and AWWA C605 and M23 for PVC pipe and the following.
4. Make pressure tests between valves. Furnish suitable test plugs where line ends in "free flow."
5. Provide air vents at the high points in the line section to be tested for releasing of air during filling. Service corporation stops may be used for air vent when located at a high point. Include cost of air vents in price of testing. Leave corporation stops in place after testing and note locations on As-Built Drawings.
6. Allow concrete blocking to reach design strength prior to pressure testing.
7. Force main shall be completely filled with water, all air expelled from the pipe, and the discharge end of the pipeline shall be plugged and adequately blocked before hydrostatic test begins.
8. Upon completing a section of pipe between valves, perform hydrostatic pressure test as follows:
  - a. 1.5 times working pressure or 150 psi (whichever is greater) for 2 hours
  - b. Test pressure shall not be less than 1.25 times working pressure at highest point along test section.
  - c. Test pressure shall not vary by more than +/- 5 psi for the duration of the test.
  - d. Test pressure shall not exceed the pressure rating for any system component within the test section.
9. No length of line shall be accepted if the leakage is greater than that determined by the following formula based on the appropriate test pressure:
  - L = Allowable leakage per 1,000 feet of pipe in gallons per hour.
  - D = Nominal diameter of the pipe in inches.
  - 100 psi:  $L = D \times 0.07$
  - 150 psi:  $L = D \times 0.08$

200 psi:  $L = D \times 0.09$

250 psi:  $L = D \times 0.10$

C. Gravity Sewer Mains

1. Test gravity lines between manholes.
2. Light Testing: Engineer will check for displacement of pipe as follows:
  - a. A light will be flashed between the ends of the pipe section being tested.
  - b. If the illuminated interior shows misalignment, or other defects as designated by Engineer, defects shall be repaired.
3. General
  - a. Infiltration shall not exceed 100 gallons per inch of diameter, per mile of pipe, per 24 hours. Engineer may require flow measurement for verification of infiltration.
  - b. Verify that maximum infiltration rate shall not be surpassed by performing an air testing as follows.
4. Low Pressure Air Test:
  - a. Air testing of sewer mains shall conform to UNI-B-6 and the following requirements:
  - b. Perform initial air test when each section of main is complete including services to right of way. Test as construction proceeds.
  - c. Wet interior surfaces of porous pipe material prior to testing.
  - d. Safety
    - 1) Provide a superintendent who has experience in low pressure air testing of gravity sewer mains.
    - 2) Follow safety recommendations of air testing equipment manufacturer.
    - 3) Properly brace sewer plugs during testing. Test plugs prior to use in air testing.
    - 4) No one shall be allowed in manhole or trench when pipe is under pressure.
    - 5) Pressurizing equipment shall include a regulator and a pressure relief valve, which are set no higher than 9 psig. Monitor gauges continuously to assure that the pressure does not exceed 9 psig.
  - e. Equipment
    - 1) Sewer plugs shall be specifically designed for low pressure air testing.
    - 2) Use two separate air hoses.
      - i) One to connect the control panel to the sealed line for introducing the air.
      - ii) One from the sealed line to the control panel to provide constant monitoring of the air pressure in the line.
      - iii) If Pneumatic plugs are used a separate line shall be used to inflate the plugs.
    - 3) As a minimum the above ground air testing equipment shall include a shutoff valve, pressure regulating valve, pressure relief valve, input pressure gauge, and a continuous monitoring pressure gauge having a pressure range from 0 to at least 10 psig.
    - 4) Continuous monitoring pressure gauge shall be at least 4 inches in diameter with minimum divisions of 0.10 psi and an accuracy of +/- 0.04 psi.
    - 5) Monitoring gauges shall be subject to calibration as deemed necessary.
    - 6) Air used for testing shall pass through a single above ground control panel.

f. Testing

- 1) Groundwater Determination: Immediately prior to each air test, determine groundwater level by a method acceptable to the Engineer. Adjust pressure used in air test in accordance with groundwater level.
- 2) Apply air slowly to the test section until the pressure reached is 4.0 psi plus an adjustment of 0.433 psi for each foot of ground water above the crown of the pipe. Internal air pressure, including adjustment for ground water, should never exceed 9.0 psi for ductile iron and concrete pipe and 5.0 psi for Fiberglass pipes. The Contractor may have to dewater trench to maintain ground water at or below crown of fiberglass pipe when testing. Cost for this shall be included in unit price for pipe installation.
- 3) When the above required pressure is reached, throttle air supply to maintain internal pressure for at least two minutes to permit stabilization.
- 4) When pressure has stabilized at required pressure, shut off air supply.
- 5) While observing the continuous monitoring pressure gauge, decrease pressure approximately 0.5 psi from required pressure.
- 6) At this reading timing shall commence with a stop watch and allowed to run until pressure has dropped 1.0 psi or allowable time has lapsed. Line shall be "Acceptable" if the pressure drop does not exceed 1 psig in the time prescribed for the test below in Table 1, Low Pressure Air Testing for Gravity Sewer Mains.

TABLE I  
 LOW PRESSURE AIR TESTING  
 FOR  
 GRAVITY SEWER MAINS

MINIMUM TIME REQUIRED FOR A MAXIMUM 1.0 PSIG PRESSURE DROP  
 FOR SIZE AND LENGTH OF PIPE INDICATED

1 Pipe Dia. (in.)	2 Minimum Time (min:sec)	3 Length for Minimum Time (ft)	4 Time for Longer Length (sec)	5 Specification Time for Length (L) Shown (min:sec)										
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft			
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:40	5:40	5:40	5:40	5:40
8	7:34	298	1.520 L	7:34	7:34	7:34	7:36	7:36	7:36	7:36	7:36	7:36	7:36	7:36
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	9:53	9:53	11:52	13:51	15:49	17:48	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	14:15	14:15	17:05	19:56	22:47	25:38	25:38
15	14:10	159	5.324 L	14:10	14:10	17:48	22:15	22:15	22:15	26:42	31:09	35:36	40:04	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	32:03	32:03	38:27	44:52	51:16	57:41	57:41
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	43:37	43:37	52:21	61:00	69:48	78:31	78:31
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	56:58	56:58	68:22	79:46	91:10	102:33	102:33
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	72:07	72:07	86:32	100:57	115:22	129:48	129:48
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	89:02	89:02	106:50	124:38	142:26	160:15	160:15
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	107:43	107:43	129:16	150:43	172:21	193:53	193:53
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	128:12	128:12	153:50	179:29	205:07	230:46	230:46

This Table is from UNI-B-6-90. The table is based on a Q (allowable air loss rate in test section) = 0.0015 cubic feet / minute / square feet. To shorten required test time a maximum pressure drop of 0.5 psig may be used and time requirements reduced by half.

5. Deflection Test for SDR 35 and Ribbed (ASTM F 949) PVC pipe.
    - a. Measure for deflection of pipe no sooner than thirty days after installation and backfill.
    - b. Deflection shall not exceed 5 percent of pipe diameter. Maximum allowable long-term deflection shall be 5 percent.
    - c. Measure deflection with an approved "GO-NO-GO GAUGE" method or by an approved recording deflectometer. Verify gauge on site prior to testing.
  6. Deflection Test for Fiberglass Pipe.
    - a. Measure for deflection of pipe within 48 hours (initial test) after installation and backfill and again (final test) within thirty days.
    - b. Deflection shall not exceed 3 percent of pipe diameter for the initial test and 4 percent of pipe diameter for the final test. Maximum allowable long-term deflection shall be 5 percent.
    - c. Measure deflection with an approved "GO-NO-GO GAUGE" method or by an approved recording deflectometer. Verify gauge on site prior to testing.
- D. Vacuum test each manhole in accordance with ASTM C1244 and the following:
1. No personnel shall be allowed in manhole during testing.
  2. Test manhole after assembly and prior to backfilling.
  3. Plug pipes with suitably sized and rated pneumatic or mechanical pipeline plugs. Brace plugs to prevent displacement.
  4. Position vacuum test head assembly to seal against interior surface of the top of cone section in accordance with manufacturer's recommendation.
  5. Draw vacuum of 10 inches of mercury on manhole. Shut off the vacuum pump and close valve on vacuum line.
  6. Measure time for vacuum to drop to 9 inches of mercury. Manhole shall pass if time meets or exceeds the following:
 

Manhole I.D. (inches)	48	60	72	84	96	120	T-series
Seconds	60	75	90	105	120	150	105
  7. If manhole fails test, remove head assembly, coat interior with a soap and water solution, and repeat vacuum test for approximately 30 seconds. Leaking areas will have soapy bubbles. Make necessary repairs to the satisfaction of Engineer and repeat test until manhole passes.

### 3.16 CLEANING AND TV INSPECTION

- A. Upon completion of other testing, clean all newly installed sewer mains. This shall include all sewer main and lateral connections. This cleaning shall meet the following requirements:
  1. The Owner's designated resident project representative shall be present throughout the cleaning operations.
  2. The sewer mains shall be cleaned with a high-velocity water jet. No debris of any kind shall be released into the sewer system.
- B. Upon completion of cleaning operations, within 2 hours, Owner shall televise all newly installed sewer mains.
  1. Contractor shall coordinate cleaning and televising operations with Owner to ensure time schedules can be achieved.
  2. If televising is not properly coordinated, Owner may request Contractor to clean sewer mains again at no additional cost to the Owner.

END OF SECTION



## **PERMITS OBTAINED BY OWNER**

- NC DEQ, Division of Land Resources; Erosion and Sediment Control Plan
- NC DEQ; Individual 401 Water Quality Certification
- U.S. Army Corps of Engineers; General Permit Section 404
- NC DEQ, Division of Water Resources; Neuse River Basin Riparian Buffer Impacts with Additional Conditions
- City of Raleigh Flood Study
- City of Raleigh Sewer Permit

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ROY COOPER  
*Governor*  
MICHAEL S. REGAN  
*Secretary*  
BRIAN WRENN  
*Director*



October 9, 2020

## LETTER OF APPROVAL

City of Raleigh  
ATTN: Robert Massengill, Director Raleigh Water  
PO Box 590  
Raleigh, NC 27601

RE: Project Name: 2017 Aerial Sewer Replacement  
Acres Approved: 2.79  
Project ID: WAKE-2021-021  
County: Wake  
City: Raleigh  
Address: State Street, etc.  
River Basin: Neuse  
Stream Classification: Other  
Submitted By: Steve Scruggs, PE, AECOM  
Date Received by LQS: September 10, 2020  
Plan Type: New/Utility

Dear Mr. Massengill:

The subject erosion and sedimentation control plan has been approved. The enclosed Certificate of Approval must be posted at the job site. 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.

As of April 1, 2019, all new construction activities are required to complete and submit an electronic Notice of Intent (eNOI) form requesting a Certificate of Coverage (COC) under the NCG010000 Construction General Permit. After the form is reviewed and found to be complete, you will receive a link with payment instructions for the \$100 annual permit fee. After the fee is received, you will receive the COC via email. You MUST obtain the COC prior to commencement of any land disturbing activity. The eNOI form may be accessed at [deq.nc.gov/NCG01](http://deq.nc.gov/NCG01). Please direct questions about the eNOI form to Annette Lucas at [Annette.Lucas@ncdenr.gov](mailto:Annette.Lucas@ncdenr.gov) or Paul Clark at [Paul.Clark@ncdenr.gov](mailto:Paul.Clark@ncdenr.gov). If the owner/operator of this project changes in the future, the new responsible party is required to apply for his/her own COC.



North Carolina Department of Environmental Quality | Division of Energy, Mineral and Land Resources  
Raleigh Regional Office | 1628 Mail Service Center | 3800 Barrett Drive | Raleigh, North Carolina 27609  
919.791.4200

Title 15A NCAC 4B .0118(a) and the NCG01 permit require that the following documentation be kept on file at the job site:

1. The approved E&SC plan as well as any approved deviation.
2. The NCG01 permit and the COC, once it is received.
3. Records of inspections made during the previous 12 months.

Also, this letter gives the notice required by G.S. 113A-61.1(a) of our right of periodic inspection to insure compliance with the approved plan.

Title 15A NCAC 4B .0118(a) requires that a copy of the approved erosion control plan be on file at the job site. Also, this letter gives 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 Act 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 ensure compliance with the Act.

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 note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you provided. You are requested to file an amended form if there is any change in the information included on the form. This permit allows for a land-disturbance, as called for on the application plan, not to exceed the approved acres. Exceeding the acreage will be a violation of this permit and would require a revised plan and additional application fee. 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.

Letter of Approval  
City of Raleigh  
October 9, 2020  
Page 3 of 3

Your cooperation is appreciated.

Sincerely,

A handwritten signature in black ink, appearing to read "Dylan Reinhardt". The signature is written in a cursive style with a long horizontal stroke at the end.

Dylan Reinhardt  
Assistant Regional Engineer  
Land Quality Section

Enclosures: Certificate of Approval  
NPDES NCG01 Fact Sheet

cc: Steve Scruggs, PE, AECOM ([steve.scruggs@aecom.com](mailto:steve.scruggs@aecom.com))  
René Remy, CPESC, CPSWQ, AECOM ([rene.remy@aecom.com](mailto:rene.remy@aecom.com))  
Regional Office file

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ROY COOPER  
Governor

ELIZABETH S. BISER  
Secretary

RICHARD E. ROGERS, JR.  
Director

April 1, 2022

DWR # 20211761  
Wake County

City of Raleigh Public Utilities Department  
Attn: Dennis Lassiter  
One Exchange Plaza, Suite 620  
Raleigh, NC 27601  
(via email [dennis.lassiter@raleighnc.gov](mailto:dennis.lassiter@raleighnc.gov))

**Subject: Approval of Individual 401 Water Quality Certification**  
2016 Aerial Sewer Replacement Project  
USACE Action ID SAW-2019-00988

Dear Mr. Lassiter:

Attached hereto is a copy of Certification No. 4744 issued to Dennis Lassiter and the City of Raleigh Public Utilities Department., dated April 1, 2022. This approval is for the purpose and design described in your application. The plans and specifications for this project are incorporated by reference as part of this Water Quality Certification. If you change your project, you must notify the Division and you may be required to submit a new application package with the appropriate fee. If the property is sold, the new owner must be given a copy of this Certification and is responsible for complying with all conditions. [15A NCAC 02H .0507(d)(2)].

This Water Quality Certification does not relieve the permittee of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.

This Water Quality Certification neither grants nor affirms any property right, license, or privilege in any lands or waters, or any right of use in any waters. This Water Quality Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and does not create any prescriptive right or any right of priority regarding any usage of water. This Water Quality Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Water Quality Certification to possess any prescriptive or other right of priority with respect to any other consumptive user.

Upon the presentation of proper credentials, the Division may inspect the property.

This Water Quality Certification shall expire on the same day as the expiration date of the corresponding Section 404 Permit. The conditions shall remain in effect for the life of the project, regardless of the expiration date of this Water Quality Certification.



Non-compliance with or violation of the conditions herein set forth may result in revocation of this Water Quality Certification for the project and may also result in criminal and/or civil penalties.

If you are unable to comply with any of the conditions of this Water Quality Certification you must notify the Raleigh Regional Office within 24 hours (or the next business day if a weekend or holiday) from the time the permittee becomes aware of the circumstances.

The permittee shall report to the Raleigh Regional Office any noncompliance with, and/or any violation of, stream or wetland standards [15A NCAC 02B .0200] including but not limited to sediment impacts to streams or wetlands. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the permittee became aware of the non-compliance circumstances.

This approval and its conditions are final and binding unless contested [G.S. 143-215.5].

This Certification can be contested as provided in Chapter 150B of the North Carolina General Statutes by filing a Petition for a Contested Case Hearing (Petition) with the North Carolina Office of Administrative Hearings (OAH) **within sixty (60) calendar days**. Requirements for filing a Petition are set forth in Chapter 150B of the North Carolina General Statutes and Title 26 of the North Carolina Administrative Code. Additional information regarding requirements for filing a Petition and Petition forms may be accessed at <http://www.ncogh.com/> or by calling the OAH Clerk's Office at (919) 431-3000.

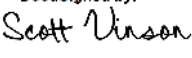
One (1) copy of the Petition must also be served to the North Carolina Department of Environmental Quality:

William F. Lane, General Counsel  
Department of Environmental Quality  
1601 Mail Service Center  
Raleigh, NC 27699-1601

If the party filing the Petition is not the permittee, then the party must also serve the recipient of the Certification in accordance with N.C.G.S 150B-23(a).

This letter completes the Division's review under section 401 of the Clean Water Act and 15A NCAC 02H .0500. Please contact Colleen Cohn at 919-791-4258 or [Colleen.Cohn@ncdenr.gov](mailto:Colleen.Cohn@ncdenr.gov) if you have any questions or concerns.

Sincerely,

DocuSigned by:  
  
BCDA9D825D4A48D...

Scott Vinson, Regional Supervisor  
Water Quality Regional Operations Section  
Raleigh Regional Office  
Division of Water Resources, NCDEQ

cc: Joseph Turner, AECOM (via email)  
Lyle Phillips, USACE Raleigh Regulatory Field Office (via email)  
DWR 401 & Buffer Permitting Branch Electronic file





**NORTH CAROLINA 401 WATER QUALITY CERTIFICATION**

**CERTIFICATION #4744** is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to North Carolina's Regulations in 15 NCAC 02H .0500 and 15A NCAC 02B .0200, to Dennis Lassiter and the City of Raleigh Public Utilities Department, who have authorization for the impacts listed below, as described within your application received by the N.C. Division of Water Resources (Division) on December 3, 2021, and payment received December 6, 2021, and additional information received March 8, 2022.

The State of North Carolina certifies that this activity will comply with water quality requirements and the applicable portions of Sections 301, 302, 303, 306, 307 of the Public Laws 92-500 and PL 95-217 if conducted in accordance with the application, the supporting documentation, and conditions hereinafter set forth.

The following impacts are hereby approved. No other impacts are approved, including incidental impacts. [15A NCAC 02H .0506(b)]

Type of Impact	Amount Approved (units) Permanent	Amount Approved (units) Temporary
<b>404/401 Wetlands:</b>		
W1: Sewer Replacement – Outside Easement	0 (acres)	0.819 (acres)
W2: Sewer Replacement – Within Easement	0 (acres)	0.382 (acres)
W3: Sewer Replacement – New Easement	0.189 (acres)	0 (acres)
<b>404/401 Streams:</b>		
S1: Sewer Replacement – Dewatering/Crossing	0 (linear feet)	63 (linear feet)
S1: Sewer Replacement – Dewatering/Crossing	0 (linear feet)	61 (linear feet)
S1: Sewer Replacement – Dewatering/Crossing	0 (linear feet)	70 (linear feet)
S1: Sewer Replacement – Dewatering/Crossing	0 (linear feet)	31 (linear feet)

**This approval requires you to follow the conditions listed in the certification below:**

**CONDITIONS OF CERTIFICATION [15A NCAC 02H .0507(c)]:**

- All sewer lines shall be designed, constructed and maintained in accordance with Title 15A NCAC Chapter 02T, applicable Minimum Design Criteria (MDC), and/or Alternative Design Criteria.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

- Any utility construction corridor that is parallel to a stream or open water shall not be closer than 10 feet to the top of bank or ordinary high-water mark.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

- Where there are temporary or permanent impacts from stream crossings, utility lines shall cross the stream channel at a near-perpendicular direction (i.e., between 75 degrees and 105 degrees to the stream bank).



*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

4. Construction corridors in wetlands and/or across stream channels shall be minimized to the maximum extent practicable and shall not exceed 40 feet wide.

For construction corridors in wetlands and across stream channels, stumps shall be grubbed only as needed to install the utility and remaining stumps shall be cut off at grade level. The general stripping of topsoil within wetlands along the construction corridor is prohibited.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

5. Permanent maintained access corridors in wetlands and across stream channels shall be restricted to the minimum width practicable and shall not exceed 30 feet wide.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

6. For all utility lines constructed within wetlands, an anti-seep collar shall be placed at the downstream (utility line gradient) wetland boundary and every 150 feet up the gradient until the utility exits the wetland. Anti-seep collars may be constructed with class B concrete, compacted clay, PVC pipe, or metal collars. Wetland crossings that are directionally drilled, and perpendicular wetland crossings that are open cut and less than 150 feet long do not require anti-seep collars. The compacted clay shall have a specific infiltration of  $1 \times 10^{-5}$  cm/sec or less. See Water Quality General Certification No. 4275 for a section and plan view diagram for the anti-seep collars.

The following specifications shall apply to class B concrete:

- i. Minimum cement content, sacks per cubic yard with rounded coarse aggregate 5.0
- ii. Minimum cement content, sacks per cubic yard with angular coarse aggregate 5.5
- iii. Maximum water-cement ratio gallons per sack 6.8
- iv. Slump range 2" to 4"
- v. Minimum strength - 28-day psi 2,500

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

7. The permittee shall restore wetland contours to pre-construction conditions. Any excess material will be removed to a high ground disposal area.

The mixing of topsoil and subsoils within the wetlands along utility corridors shall be minimized to the greatest extent practical. During excavation, the soils shall be placed on fabric to minimize impacts whenever possible. Topsoil excavated from utility trenches will be piled separately from subsoils and will be backfilled into the trench only after the subsoils have been placed and compacted.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

8. The permittee shall report to the DWR Raleigh Regional Office any noncompliance with, and/or any violation of, stream or wetland standards [15A NCAC 02B .0200], including but not limited to sediment impacts to streams or wetlands. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the permittee became aware of the non-compliance circumstances.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*



9. No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the approved impacts (including temporary impacts).

*Citation: 15A NCAC 02H .0506; 15A NCAC 02H .0507(c)*

10. All activities shall be in compliance with any applicable State Regulated Riparian Buffer Rules in Chapter 2B of Title 15A in the North Carolina Administrative Code.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

11. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur.

Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*, or for linear transportation projects, the *North Carolina Department of Transportation Sediment and Erosion Control Manual*.

All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*

12. Sediment and erosion control measures shall not be installed in wetland or waters except within the footprint of temporary or permanent impacts otherwise authorized by this Certification. If placed within authorized impact areas, then placement of such measures shall not be conducted in a manner that results in dis-equilibrium of any wetlands, streambeds, or streambanks. Any silt fence installed within wetlands shall be removed from wetlands and the natural grade restored within two (2) months of the date that DEMLR or locally delegated program has released the specific area within the project to ensure wetland standards are maintained upon completion of the project.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*

13. Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

14. If the project is covered by NPDES Construction Stormwater Permit Number NCG010000 or NPDES Construction Stormwater Permit Number NCG250000, full compliance with permit conditions including



the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*

15. All work in or adjacent to streams shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the *NC Sediment and Erosion Control Manual*, or the *NC Department of Transportation Construction and Maintenance Activities Manual*, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200*

16. In-stream structures installed to mimic natural channel geomorphology such as cross-vanes, sills, step-pool structures, etc. shall be designed and installed in such a manner that allow for continued aquatic life movement.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

17. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. If the width of the culvert is wider than the stream channel, the culvert shall include multiple boxes/pipes, baffles, benches and/or sills to maintain the natural width of the stream channel. If multiple culverts/pipes/barrels are used, low flows shall be accommodated in one culvert/pipe and additional culverts/pipes shall be installed such that they receive only flows above bankfull.

Placement of culverts and other structures in streams shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20% of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life. If the culvert outlet is submerged within a pool or scour hole and designed to provide for aquatic passage, then culvert burial into the streambed is not required.

For structures less than 72" in diameter/width, and topographic constraints indicate culvert slopes of greater than 2.5% culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible (e.g. rock ladders, cross-vanes, sills, baffles etc.). Notification, including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations, shall be provided to DWR 30 calendar days prior to the installation of the culvert.

When bedrock is present in culvert locations, culvert burial is not required, provided that there is sufficient documentation of the presence of bedrock. Notification, including supporting documentation such as a location map of the culvert, geotechnical reports, photographs, etc. shall be provided to DWR a minimum of 30 calendar days prior to the installation of the culvert. If bedrock is discovered during construction, then DWR shall be notified by phone or email within 24 hours of discovery.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.



The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of rip-rap or other bank hardening methods.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

18. Application of fertilizer to establish planted/seeded vegetation within disturbed riparian areas and/or wetlands shall be conducted at agronomic rates and shall comply with all other Federal, State and Local regulations. Fertilizer application shall be accomplished in a manner that minimizes the risk of contact between the fertilizer and surface waters.

*Citation: 15A 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*

19. If concrete is used during construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state.

*Citation: 15A 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*

20. All proposed and approved temporary fill and culverts shall be removed and the impacted area shall be returned to natural conditions within 60 calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross-sectional dimensions, planform pattern, and longitudinal bed profile. All temporarily impacted sites shall be restored and stabilized with native vegetation.

*Citation: 15A NCAC 02H.0506(b); 15A NCAC 02H .0507(c)*

21. All proposed and approved temporary pipes/culverts/rip-rap pads etc. in streams or wetlands shall be installed as outlined in the most recent edition of the *North Carolina Sediment and Erosion Control Planning and Design Manual* or the *North Carolina Surface Mining Manual* or the *North Carolina Department of Transportation Best Management Practices for Construction and Maintenance Activities* so as not to restrict stream flow or cause dis-equilibrium during use of this Certification.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

22. Any rip-rap required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the approved construction activity. All rip-rap shall be placed such that the original streambed elevation and streambank contours are restored and maintained and shall consist of clean rock or masonry material free of debris or toxic pollutants. Placement of rip-rap or other approved materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area or be installed in a manner that precludes aquatic life passage.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

23. Any rip-rap used for stream or shoreline stabilization shall be of a size and density to prevent movement by wave, current action, or stream flows, and shall consist of clean rock or masonry material free of debris or toxic pollutants. Rip-rap shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0201*

24. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the



maximum extent practicable. Fueling, lubrication, and general equipment maintenance shall be performed in a manner to prevent, to the maximum extent practicable, contamination of surface waters by fuels and oils.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*

25. Heavy equipment working in wetlands shall be placed on mats or other measures shall be taken to minimize soil disturbance and compaction.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0231*

26. In accordance with 143-215.85(b), the permittee shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.

*Citation: 15A NCAC 02H .0507(c); N.C.G.S 143-215.85(b)*

27. The permittee and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law.

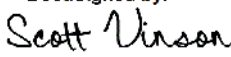
*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

28. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this Water Quality Certification. A copy of this Water Quality Certification shall be available at the project site during the construction and maintenance of this project.

*Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

This approval to proceed with your proposed impacts or to conduct impacts to waters as depicted in your application shall expire upon expiration of the 404 or CAMA Permit. The conditions in effect on the date of issuance shall remain in effect for the life of the project, regardless of the expiration date of this Certification. [15A NCAC 02H .0507(c)]

This, the 1st day of April 2022

DocuSigned by:  
  
BCDA9D825D4A46D...

Scott Vinson, Regional Supervisor  
Water Quality Regional Operations Section  
Raleigh Regional Office  
Division of Water Resources, NCDEQ

CMC

WQC004744



**U.S. ARMY CORPS OF ENGINEERS  
WILMINGTON DISTRICT**

Action Id. SAW-2019-00988 County: Wake U.S.G.S. Quad: NC-Raleigh East

**GENERAL PERMIT (REGIONAL AND NATIONWIDE) VERIFICATION**

Permittee: City of Raleigh Public Utilities Department  
Address: 1 Exchange Plaza, Suite 620  
Raleigh, NC 27601

Size (acres)	<u>~2.27 acres</u>	Nearest Town	<u>Raleigh</u>
Nearest Waterway	<u>Walnut Creek</u>	River Basin	<u>Neuse</u>
USGS HUC	<u>0302021</u>	Coordinates	Latitude: <u>35.756745</u> Longitude: <u>-78.618939</u>

Location description: The project is east of S. State Street, north of Interstate-40 and west of Beacon Ridge Court in Raleigh, Wake County, North Carolina.

Description of projects area and activity: This verification authorizes the temporary discharge of fill material within 225 linear feet of stream channel, the temporary discharge of fill material within 1.201 acres of wetlands and the temporary discharge of fill material within and permanent conversion of 0.189 acres of forested wetland to herbaceous wetland.

Applicable Law(s):  Section 404 (Clean Water Act, 33 USC 1344)  
 Section 10 (Rivers and Harbors Act, 33 USC 403)

Authorization: **NWP 58. Utility Line Activities for Water and Other Substances**

**SEE ATTACHED NWP GENERAL, REGIONAL, AND/OR SPECIAL CONDITIONS**

**Your work is authorized by the above referenced permit provided it is accomplished in strict accordance with the attached Conditions, your application signed and dated 12/3/2021, the ensuing administrative record and the enclosed plans. Any violation of the attached conditions or deviation from your submitted plans may subject the permittee to a stop work order, a restoration order, a Class I administrative penalty, and/or appropriate legal action.**

This verification will remain valid until the expiration date identified below unless the nationwide and/or regional general permit authorization is modified, suspended or revoked. If, prior to the expiration date identified below, the nationwide and/or regional general permit authorization is reissued and/or modified, this verification will remain valid until the expiration date identified below, provided it complies with all requirements of the modified nationwide permit. If the nationwide and/or regional general permit authorization expires or is suspended, revoked, or is modified, such that the activity would no longer comply with the terms and conditions of the nationwide permit, activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon the nationwide and/or regional general permit, will remain authorized provided the activity is completed within twelve months of the date of the nationwide and/or regional general permit's expiration, modification or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend or revoke the authorization.

Activities subject to Section 404 (as indicated above) may also require an individual Section 401 Water Quality Certification. You should contact the NC Division of Water Resources (telephone 919-807-6300) to determine Section 401 requirements.

For activities occurring within the twenty coastal counties subject to regulation under the Coastal Area Management Act (CAMA), prior to beginning work you must contact the N.C. Division of Coastal Management **Morehead City, NC, at (252) 808-2808.**

This Department of the Army verification does not relieve the permittee of the responsibility to obtain any other required Federal, State or local approvals/permits. If there are any questions regarding this verification, any of the conditions of the Permit, or the Corps of Engineers regulatory program, please contact George Lyle Phillips III at (919) 554-4884 X25 or [George.L.Phillips@usace.army.mil](mailto:George.L.Phillips@usace.army.mil).

Corps Regulatory Official: George Lyle Phillips III Date: 05/18/2022  
Expiration Date of Verification: 3/14/2026

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at [http://corpsmapu.usace.army.mil/cm\\_apex/f?p=136:4:0](http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0)

Copy furnished: Colleen Cohn – NCDEQ-DWR – 3800 Barrett Drive, Raleigh, NC 27609



Action ID Number: SAW-2019-00988

County: Wake

Permittee: City of Raleigh Public Utilities Department

Project Name: 2017 Aerial Sewer Replacement Project

Date Verification Issued: 05/18/2022

Project Manager: George Lyle Phillips III

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

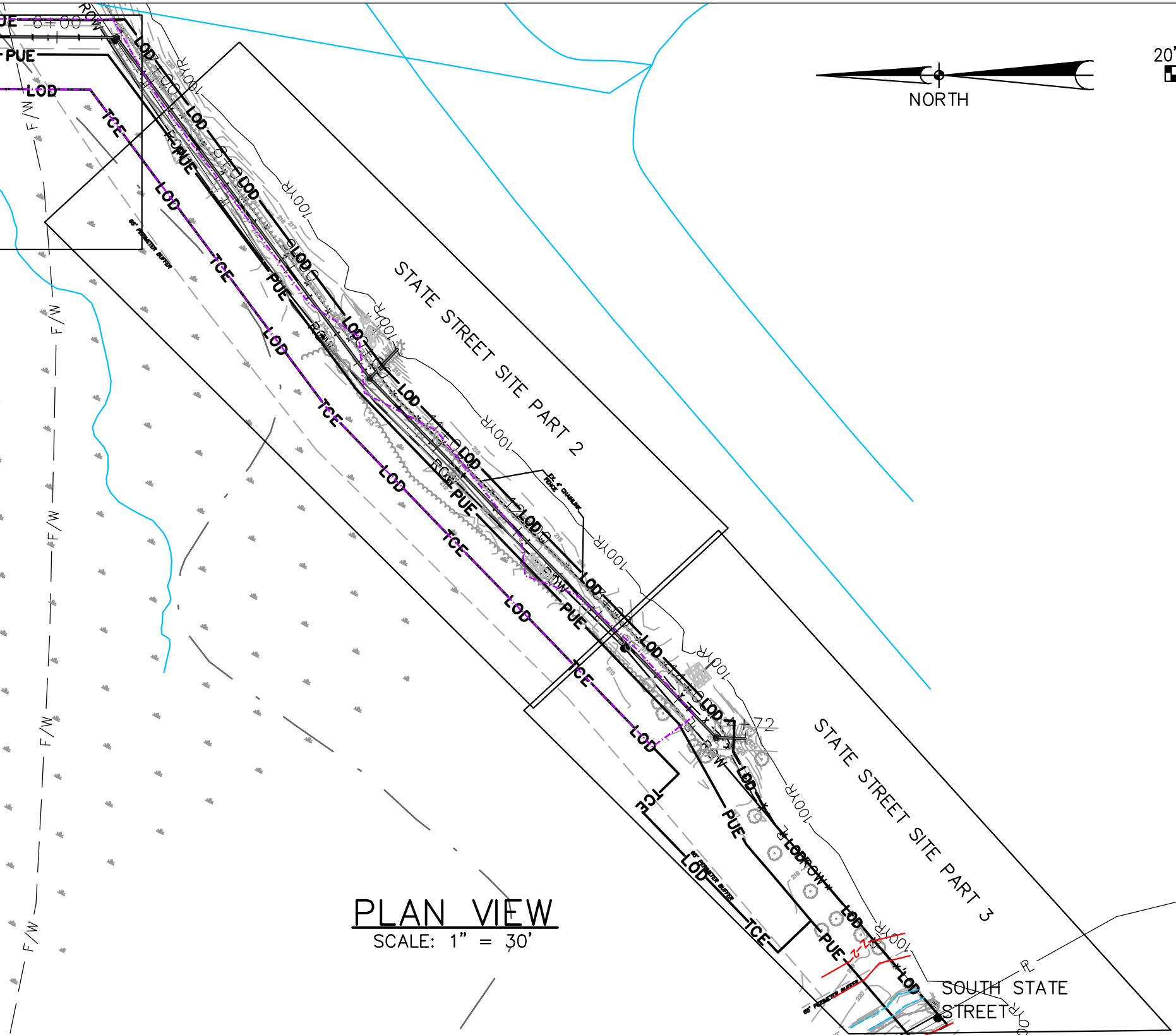
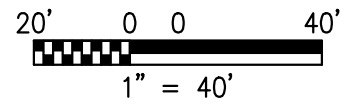
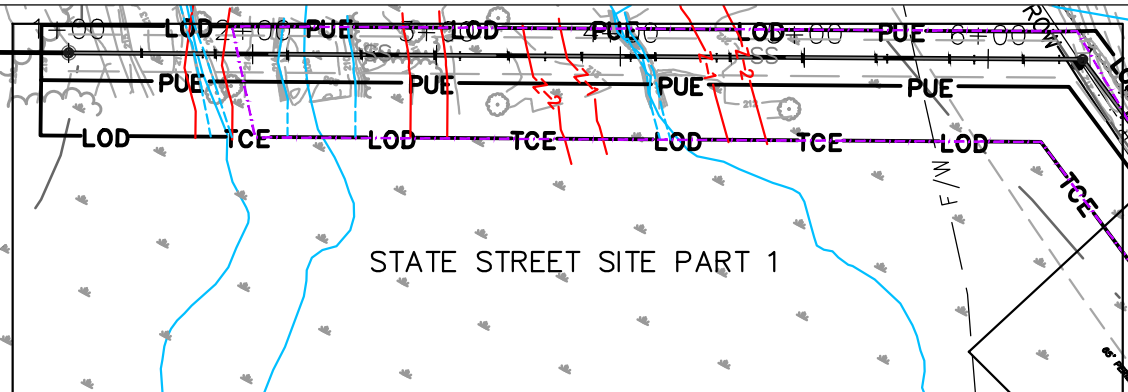
US ARMY CORPS OF ENGINEERS  
WILMINGTON DISTRICT  
Attn: George Lyle Phillips III  
Raleigh Regulatory Office  
U.S Army Corps of Engineers  
3331 Heritage Trade Drive, Suite 105  
Wake Forest, North Carolina 27587  
or  
George.L.Phillips@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers representative. Failure to comply with any terms or conditions of this authorization may result in the Corps suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and condition of the said permit, and required mitigation was completed in accordance with the permit conditions.

\_\_\_\_\_  
Signature of Permittee

\_\_\_\_\_  
Date

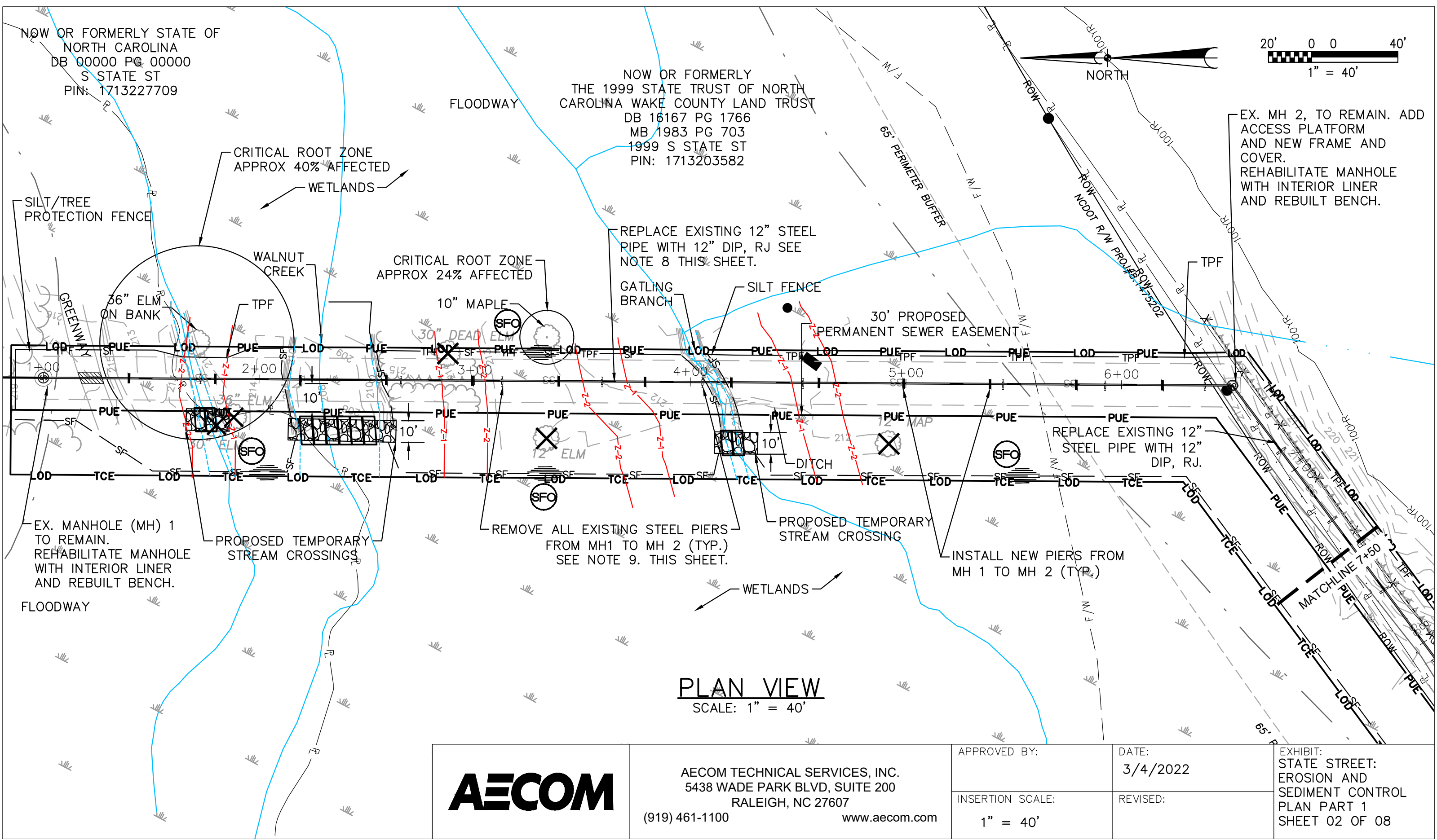
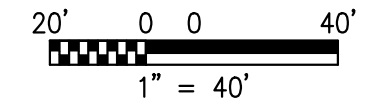


**PLAN VIEW**  
SCALE: 1" = 30'

<b>AECOM</b>	AECOM TECHNICAL SERVICES, INC. 5438 WADE PARK BLVD, SUITE 200 RALEIGH, NC 27607 (919) 461-1100      www.aecom.com	APPROVED BY:	DATE: 3/4/2022	EXHIBIT: STATE STREET: SITE LAYOUT  SHEET 01 OF 08
		INSERTION SCALE: 1" = 40'	REVISED:	

NOW OR FORMERLY STATE OF  
NORTH CAROLINA  
DB 00000 PG 00000  
S STATE ST  
PIN: 1713227709

NOW OR FORMERLY  
THE 1999 STATE TRUST OF NORTH  
CAROLINA WAKE COUNTY LAND TRUST  
DB 16167 PG 1766  
MB 1983 PG 703  
1999 S STATE ST  
PIN: 1713203582

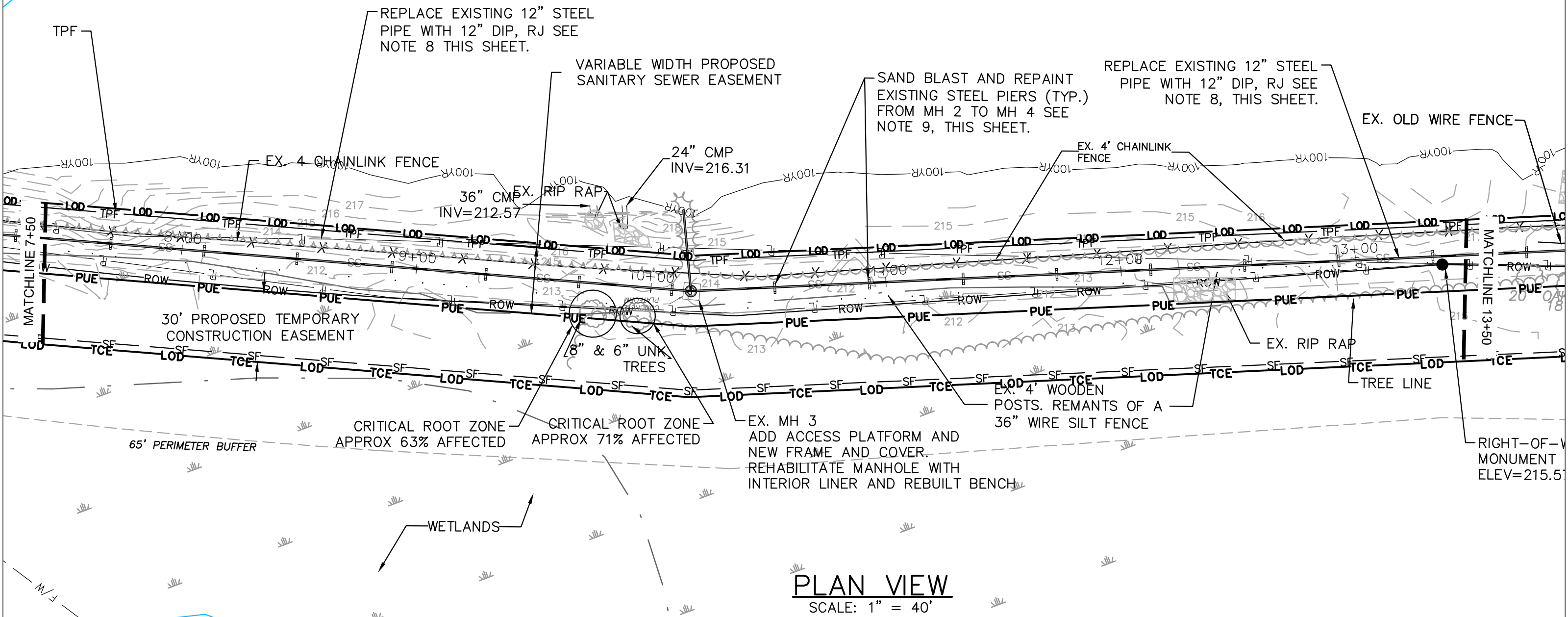
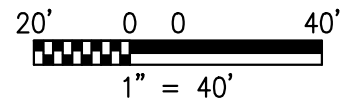


EX. MH 2, TO REMAIN. ADD  
ACCESS PLATFORM  
AND NEW FRAME AND  
COVER.  
REHABILITATE MANHOLE  
WITH INTERIOR LINER  
AND REBUILT BENCH.

**PLAN VIEW**  
SCALE: 1" = 40'

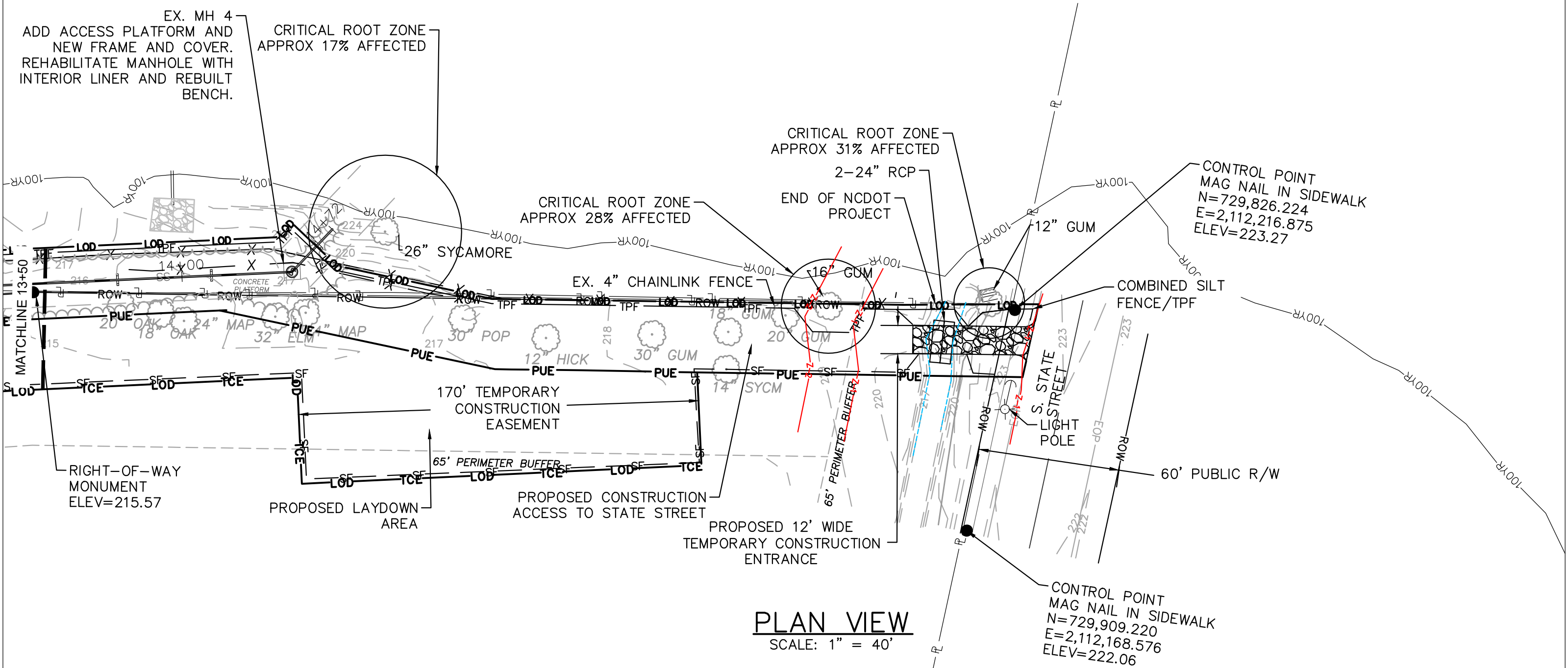
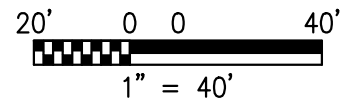
	AECOM TECHNICAL SERVICES, INC. 5438 WADE PARK BLVD, SUITE 200 RALEIGH, NC 27607 (919) 461-1100      www.aecom.com	APPROVED BY:	DATE: 3/4/2022	EXHIBIT: STATE STREET: EROSION AND SEDIMENT CONTROL PLAN PART 1 SHEET 02 OF 08
		INSERTION SCALE: 1" = 40'	REVISED:	

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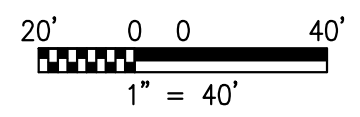
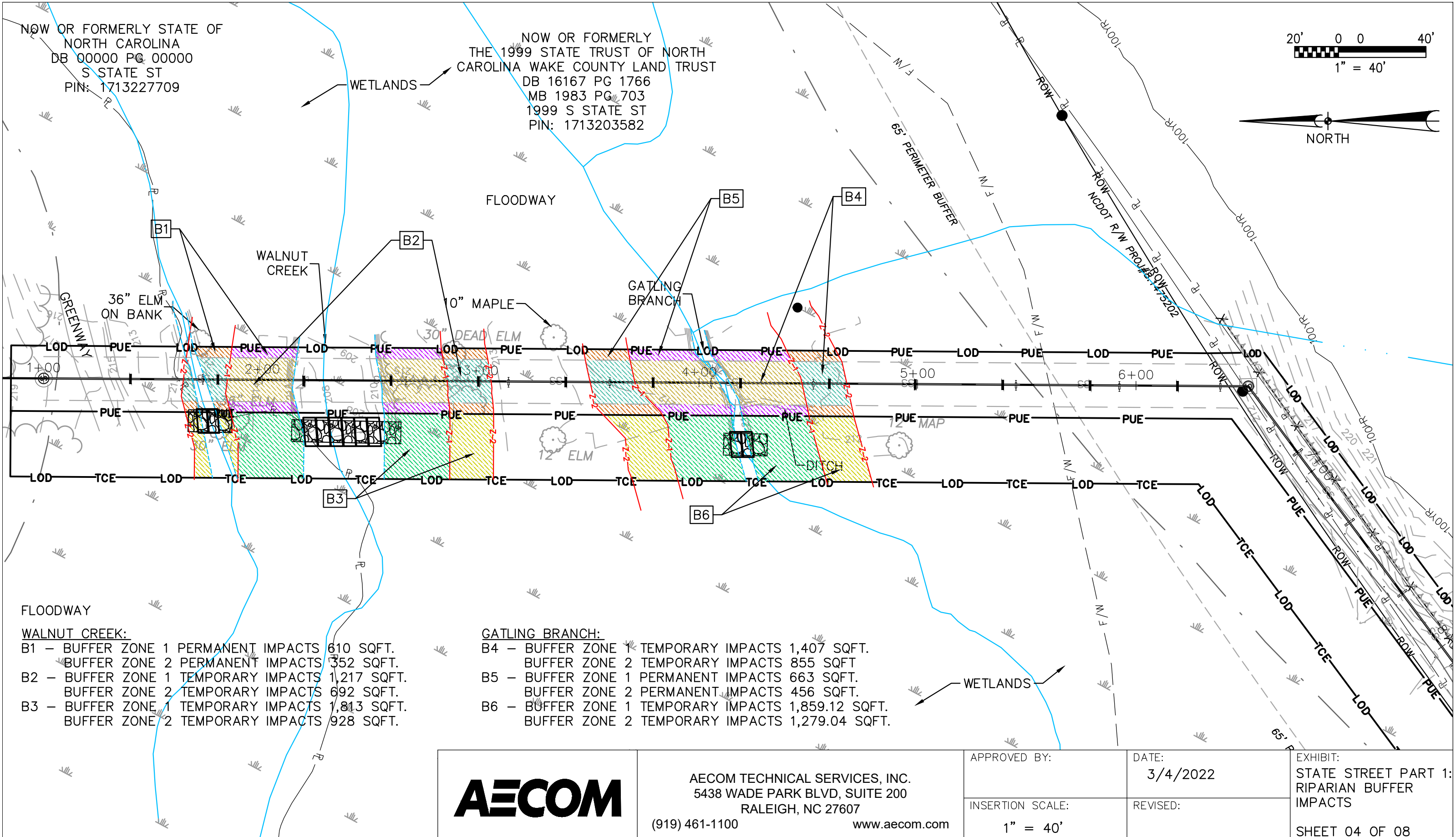
**PLAN VIEW**  
SCALE: 1" = 40'

	<p>AECOM TECHNICAL SERVICES, INC. 5438 WADE PARK BLVD, SUITE 200 RALEIGH, NC 27607 (919) 461-1100      www.aecom.com</p>	APPROVED BY:	DATE: 3/4/2022	<p>EXHIBIT: STATE STREET: EROSION AND SEDIMENT CONTROL PLAN PART 2 SHEET 03 OF 08</p>
		INSERTION SCALE: 1" = 40'	REVISED:	



**PLAN VIEW**  
SCALE: 1" = 40'

	<p>AECOM TECHNICAL SERVICES, INC. 5438 WADE PARK BLVD, SUITE 200 RALEIGH, NC 27607 (919) 461-1100      www.aecom.com</p>	APPROVED BY:	DATE: 3/4/2022	<p>EXHIBIT: STATE STREET: EROSION AND SEDIMENT CONTROL PLAN PART 3 SHEET 03 OF 08</p>
		INSERTION SCALE: 1" = 40'	REVISED:	



NOW OR FORMERLY STATE OF  
NORTH CAROLINA  
DB 00000 PG 00000  
S STATE ST  
PIN: 1713227709

NOW OR FORMERLY  
THE 1999 STATE TRUST OF NORTH  
CAROLINA WAKE COUNTY LAND TRUST  
DB 16167 PG 1766  
MB 1983 PG 703  
1999 S STATE ST  
PIN: 1713203582

**FLOODWAY**

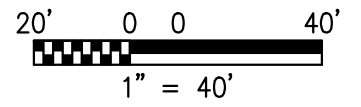
**WALNUT CREEK:**

- B1 - BUFFER ZONE 1 PERMANENT IMPACTS 610 SQFT.  
BUFFER ZONE 2 PERMANENT IMPACTS 352 SQFT.
- B2 - BUFFER ZONE 1 TEMPORARY IMPACTS 1,217 SQFT.  
BUFFER ZONE 2 TEMPORARY IMPACTS 692 SQFT.
- B3 - BUFFER ZONE 1 TEMPORARY IMPACTS 1,813 SQFT.  
BUFFER ZONE 2 TEMPORARY IMPACTS 928 SQFT.

**GATLING BRANCH:**

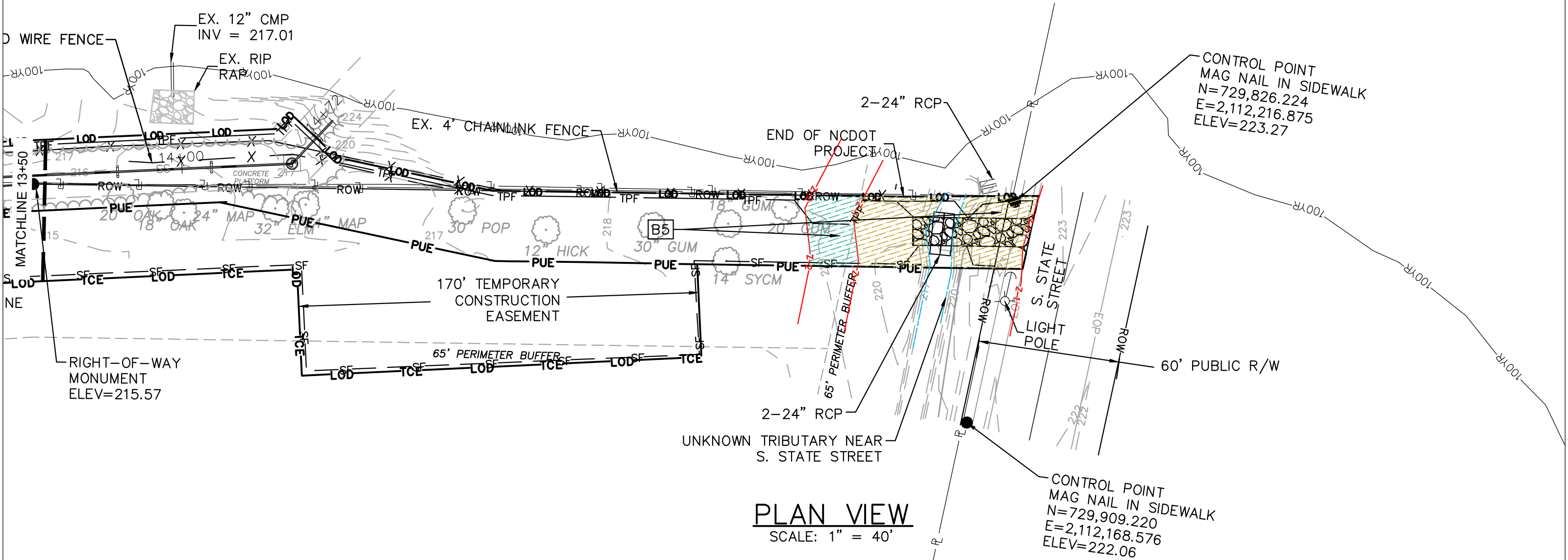
- B4 - BUFFER ZONE 1 TEMPORARY IMPACTS 1,407 SQFT.  
BUFFER ZONE 2 TEMPORARY IMPACTS 855 SQFT.
- B5 - BUFFER ZONE 1 PERMANENT IMPACTS 663 SQFT.  
BUFFER ZONE 2 PERMANENT IMPACTS 456 SQFT.
- B6 - BUFFER ZONE 1 TEMPORARY IMPACTS 1,859.12 SQFT.  
BUFFER ZONE 2 TEMPORARY IMPACTS 1,279.04 SQFT.

<b>AECOM</b>	AECOM TECHNICAL SERVICES, INC. 5438 WADE PARK BLVD, SUITE 200 RALEIGH, NC 27607 (919) 461-1100      www.aecom.com	APPROVED BY:	DATE: 3/4/2022	EXHIBIT: STATE STREET PART 1: RIPARIAN BUFFER IMPACTS  SHEET 04 OF 08
		INSERTION SCALE: 1" = 40'	REVISED:	



UNKNOWN TRIBUTARY NEAR STATE STREET:

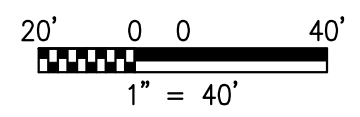
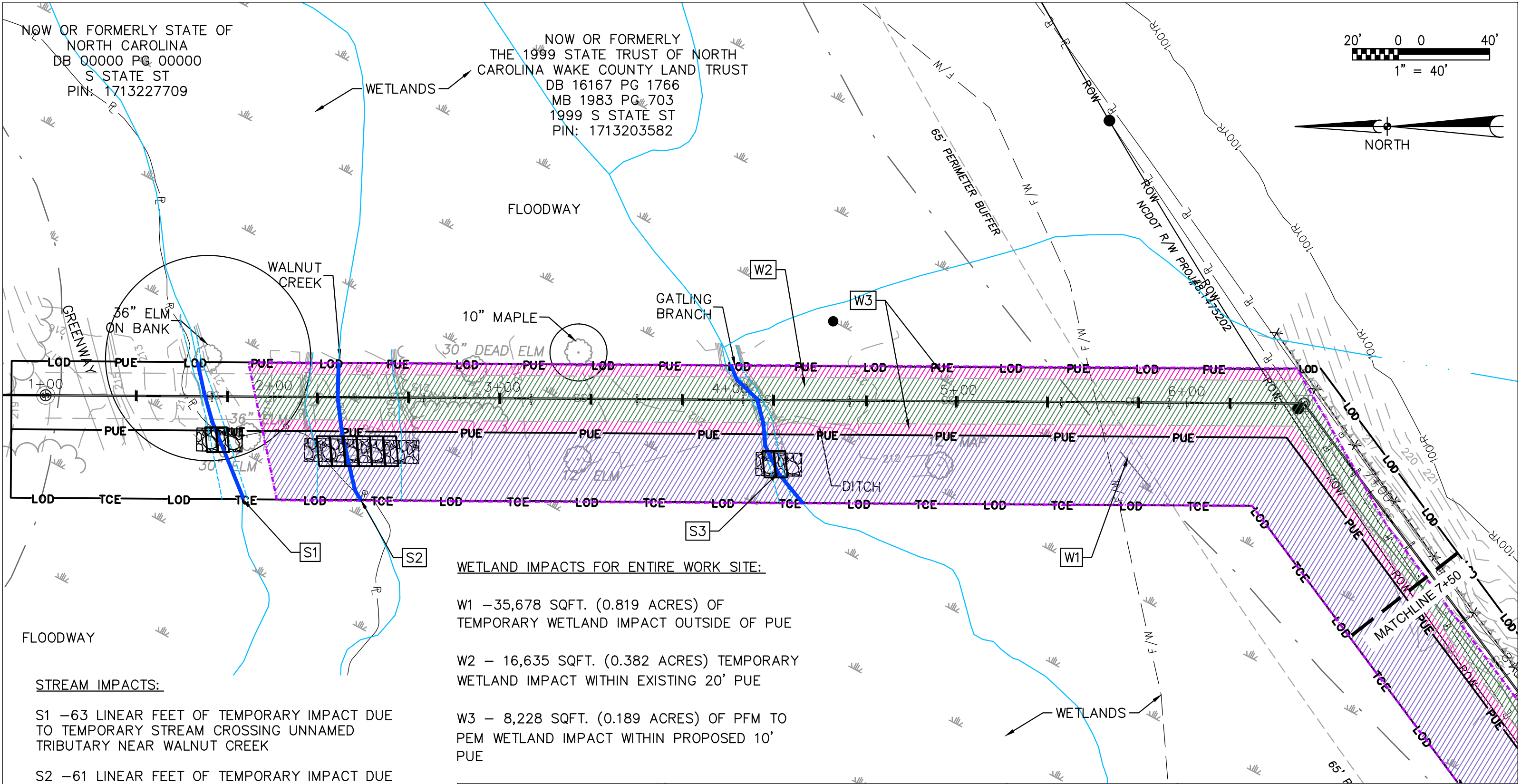
B7 - BUFFER ZONE 1 TEMPORARY IMPACTS 1,901 SQFT.  
 BUFFER ZONE 2 TEMPORARY IMPACTS 622 SQFT.



**PLAN VIEW**  
 SCALE: 1" = 40'

	AECOM TECHNICAL SERVICES, INC. 5438 WADE PARK BLVD, SUITE 200 RALEIGH, NC 27607 (919) 461-1100      www.aecom.com	APPROVED BY:	DATE: 3/4/2022	EXHIBIT: STATE STREET PART 3: RIPARIAN BUFFER IMPACTS  SHEET 05 OF 08
		INSERTION SCALE: 1" = 40'	REVISED:	





**WETLAND IMPACTS FOR ENTIRE WORK SITE:**

W1 - 35,678 SQFT. (0.819 ACRES) OF TEMPORARY WETLAND IMPACT OUTSIDE OF PUE

W2 - 16,635 SQFT. (0.382 ACRES) TEMPORARY WETLAND IMPACT WITHIN EXISTING 20' PUE

W3 - 8,228 SQFT. (0.189 ACRES) OF PFM TO PEM WETLAND IMPACT WITHIN PROPOSED 10' PUE

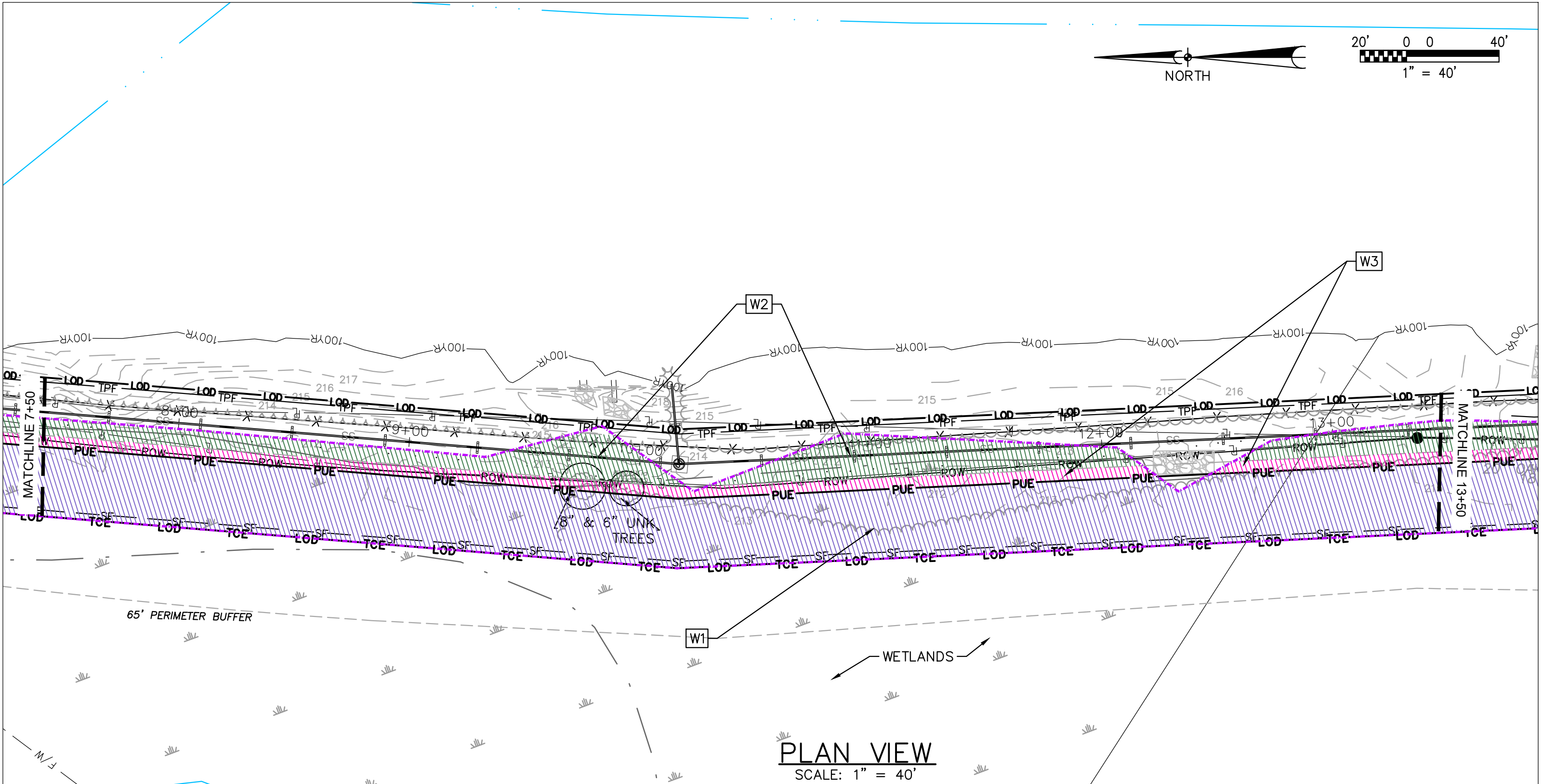
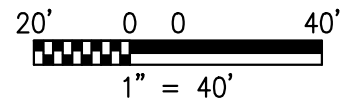
**STREAM IMPACTS:**

S1 - 63 LINEAR FEET OF TEMPORARY IMPACT DUE TO TEMPORARY STREAM CROSSING UNNAMED TRIBUTARY NEAR WALNUT CREEK

S2 - 61 LINEAR FEET OF TEMPORARY IMPACT DUE TO TEMPORARY STREAM CROSSING WALNUT CREEK

S3 - 70 LINEAR FEET OF TEMPORARY IMPACT DUE TO TEMPORARY STREAM CROSSING GATLING BRANCH

	AECOM TECHNICAL SERVICES, INC. 5438 WADE PARK BLVD, SUITE 200 RALEIGH, NC 27607 (919) 461-1100      www.aecom.com		APPROVED BY:	DATE: 3/7/2022	EXHIBIT: STATE STREET PART 1: STREAM & WETLAND IMPACTS  SHEET 06 OF 08
			INSERTION SCALE: 1" = 40'	REVISED:	



AECOM TECHNICAL SERVICES, INC.  
5438 WADE PARK BLVD, SUITE 200  
RALEIGH, NC 27607  
(919) 461-1100      www.aecom.com

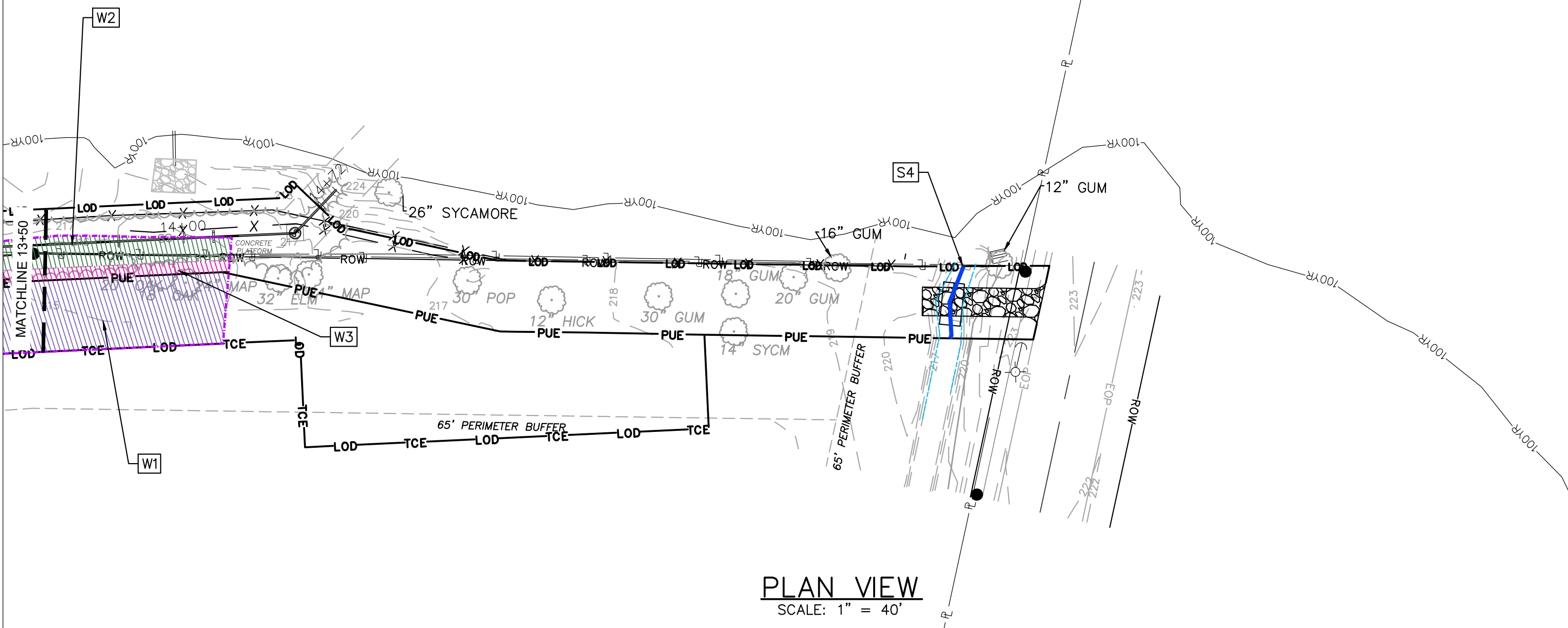
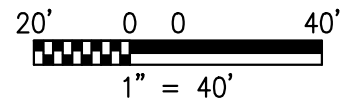
APPROVED BY:  
  
INSERTION SCALE:  
1" = 40'

DATE:  
3/4/2022  
  
REVISED:

EXHIBIT:  
STATE STREET PART 2:  
STREAM & WETLAND  
IMPACTS  
  
SHEET 07 OF 08

STREAM IMPACTS:

S4 – 31 LINEAR FEET OF TEMPORARY IMPACT DUE TO TEMPORARY STREAM CROSSING OF AN UNKNOWN TRIBUTARY NEAR SOUTH STATE STREET



**PLAN VIEW**  
SCALE: 1" = 40'

	AECOM TECHNICAL SERVICES, INC. 5438 WADE PARK BLVD, SUITE 200 RALEIGH, NC 27607 (919) 461-1100      www.aecom.com	APPROVED BY:	DATE: 3/7/2022	EXHIBIT: STATE STREET PART 3: STREAM & WETLAND IMPACTS  SHEET 08 OF 08
		INSERTION SCALE: 1" = 40'	REVISED:	

ROY COOPER  
*Governor*  
MICHAEL S. REGAN  
*Secretary*  
BRIAN WRENN  
*Director*



October 9, 2020

## LETTER OF APPROVAL

City of Raleigh  
ATTN: Robert Massengill, Director Raleigh Water  
PO Box 590  
Raleigh, NC 27601

RE: Project Name: 2017 Aerial Sewer Replacement  
Acres Approved: 2.79  
Project ID: WAKE-2021-021  
County: Wake  
City: Raleigh  
Address: State Street, etc.  
River Basin: Neuse  
Stream Classification: Other  
Submitted By: Steve Scruggs, PE, AECOM  
Date Received by LQS: September 10, 2020  
Plan Type: New/Utility

Dear Mr. Massengill:

The subject erosion and sedimentation control plan has been approved. The enclosed Certificate of Approval must be posted at the job site. 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.

As of April 1, 2019, all new construction activities are required to complete and submit an electronic Notice of Intent (eNOI) form requesting a Certificate of Coverage (COC) under the NCG010000 Construction General Permit. After the form is reviewed and found to be complete, you will receive a link with payment instructions for the \$100 annual permit fee. After the fee is received, you will receive the COC via email. You MUST obtain the COC prior to commencement of any land disturbing activity. The eNOI form may be accessed at [deq.nc.gov/NCG01](http://deq.nc.gov/NCG01). Please direct questions about the eNOI form to Annette Lucas at [Annette.Lucas@ncdenr.gov](mailto:Annette.Lucas@ncdenr.gov) or Paul Clark at [Paul.Clark@ncdenr.gov](mailto:Paul.Clark@ncdenr.gov). If the owner/operator of this project changes in the future, the new responsible party is required to apply for his/her own COC.



North Carolina Department of Environmental Quality | Division of Energy, Mineral and Land Resources  
Raleigh Regional Office | 1628 Mail Service Center | 3800 Barrett Drive | Raleigh, North Carolina 27609  
919.791.4200

Title 15A NCAC 4B .0118(a) and the NCG01 permit require that the following documentation be kept on file at the job site:

1. The approved E&SC plan as well as any approved deviation.
2. The NCG01 permit and the COC, once it is received.
3. Records of inspections made during the previous 12 months.

Also, this letter gives the notice required by G.S. 113A-61.1(a) of our right of periodic inspection to insure compliance with the approved plan.

Title 15A NCAC 4B .0118(a) requires that a copy of the approved erosion control plan be on file at the job site. Also, this letter gives 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 Act 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 ensure compliance with the Act.

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 note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you provided. You are requested to file an amended form if there is any change in the information included on the form. This permit allows for a land-disturbance, as called for on the application plan, not to exceed the approved acres. Exceeding the acreage will be a violation of this permit and would require a revised plan and additional application fee. 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.

Letter of Approval  
City of Raleigh  
October 9, 2020  
Page 3 of 3

Your cooperation is appreciated.

Sincerely,

A handwritten signature in black ink, appearing to read "Dylan Reinhardt". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

Dylan Reinhardt  
Assistant Regional Engineer  
Land Quality Section

Enclosures: Certificate of Approval  
NPDES NCG01 Fact Sheet

cc: Steve Scruggs, PE, AECOM ([steve.scruggs@aecom.com](mailto:steve.scruggs@aecom.com))  
René Remy, CPESC, CPSWQ, AECOM ([rene.remy@aecom.com](mailto:rene.remy@aecom.com))  
Regional Office file



ROY COOPER  
Governor

ELIZABETH S. BISER  
Secretary

RICHARD E. ROGERS, JR.  
Director

April 1, 2022

DWR # 20211761  
Wake County

City of Raleigh Public Utilities Department  
Attn: Dennis Lassiter  
One Exchange Plaza, Suite 620  
Raleigh, NC 27601  
(via email [dennis.lassiter@raleighnc.gov](mailto:dennis.lassiter@raleighnc.gov))

**Subject: APPROVAL OF NEUSE RIVER BASIN RIPARIAN BUFFER IMPACTS WITH ADDITIONAL CONDITIONS**  
2017 Aerial Sewer Replacement Project

Dear Dennis Lassiter:

You have our approval for the impacts listed below for the purpose described in your application dated December 3, 2021, received by the Division of Water Resources (Division) December 3, 2021, with payment received December 6, 2021, and additional information received March 8, 2022. These impacts are covered by the Neuse River Buffer Rules and the conditions listed below. Please note that you should get any other federal, state or local permits before proceeding with your project, including those required by (but not limited to) Sediment and Erosion Control, Non-Discharge, and Water Supply Watershed regulations. **This Authorization shall expire when the corresponding 401 Water Quality Certification Approval DWR#20211761 expires.**

The following impacts are hereby approved, provided that all of the Conditions listed below, and all of the conditions of the Neuse River Buffer Rules are met. No other impacts are approved, including incidental impacts. [15A NCAC 02B Neuse .0611(b)(2)]

Type of Impact	Amount Approved (units) Permanent	Amount Approved (units) Temporary
<b>Buffers – Zone 1</b>		
B1: Sewer Replacement – Existing Easement	610 (square feet)	1,217 (square feet)
B2: Sewer Replacement – Outside Easement	0 (square feet)	1,813 (square feet)
B3: Sewer Replacement – Existing Easement	0 (square feet)	1,407 (square feet)
B4: Sewer Replacement – Outside Easement	663 (square feet)	1,859 (square feet)
B5: Sewer Replacement – Outside Easement	0 (square feet)	1,901 (square feet)
B6: Sewer Replacement	4,256 (square feet)	3,593 (square feet)
<b>Buffers – Zone 2</b>		
B1: Sewer Replacement – Existing Easement	352 (square feet)	692 (square feet)
B2: Sewer Replacement – Outside Easement	0 (square feet)	928 (square feet)
B3: Sewer Replacement – Existing Easement	0 (square feet)	855 (square feet)
B4: Sewer Replacement – Outside Easement	456 (square feet)	1,279 (square feet)
B5: Sewer Replacement – Outside Easement	0 (square feet)	622 (square feet)
B6: Sewer Replacement	4,352 (square feet)	3,362 (square feet)



This approval is for the purpose and design described in your application. The plans and specifications for this project are incorporated by reference as part of this Authorization Certificate. If you change your project, you must notify the Division and you may be required to submit a new application package. If the property is sold, the new owner must be given a copy of this Authorization Certificate and is responsible for complying with all conditions. [15A NCAC 02B .0611(b)(2)]

If you are unable to comply with any of the conditions below, you must notify the Raleigh Regional Office within 24 hours (or the next business day if a weekend or holiday) from the time the permittee becomes aware of the circumstances.

The permittee shall report to the Raleigh Regional Office any noncompliance with the conditions of this Authorization Certificate and/or any violation of state regulated riparian buffer rules [15A NCAC 02B .0714]. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the applicant became aware of the circumstances.

This approval and its conditions are final and binding unless contested. [G.S. 143-215.5] Upon the presentation of proper credentials, the Division may inspect the property.

This Authorization Certificate can be contested as provided in Chapter 150B of the North Carolina General Statutes by filing a Petition for a Contested Case Hearing (Petition) with the North Carolina Office of Administrative Hearings (OAH) **within sixty (60) calendar days**. Requirements for filing a Petition are set forth in Chapter 150B of the North Carolina General Statutes and Title 26 of the North Carolina Administrative Code. Additional information regarding requirements for filing a Petition and Petition forms may be accessed at <http://www.ncoah.com/> or by calling the OAH Clerk's Office at (919) 431-3000.

A party filing a Petition must serve a copy of the Petition on:

William F. Lane, General Counsel  
Department of Environmental Quality  
1601 Mail Service Center  
Raleigh, NC 27699-1601

If the party filing the Petition is not the permittee, then the party must also serve the recipient of the Authorization Certificate in accordance with N.C.G.S 150B-23(a).

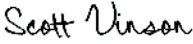
This Authorization Certificate neither grants nor affirms any property right, license, or privilege in any lands or waters, or any right of use in any waters. This Authorization Certificate does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person, nor does it create any prescriptive right or any right of priority regarding any usage of water. This Authorization Certificate shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Authorization Certificate to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded.





This letter completes the review of the Division under the Neuse River Riparian Buffer Rules as described in 15A NCAC 02B .0714. Please contact Colleen Cohn at 919-791-4258 or [Colleen.Cohn@ncdenr.gov](mailto:Colleen.Cohn@ncdenr.gov) if you have any questions or concerns.

Sincerely,

DocuSigned by:  
  
BCDA9D825D4A46D...

Scott Vinson, Regional Supervisor  
Water Quality Regional Operations Section  
Raleigh Regional Office  
Division of Water Resources, NCDEQ

cc: DWR 401 & Buffer Permitting via Laserfiche  
Joseph Turner, AECOM (via email)



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December 29, 2021

**Dennis Lassiter**  
**City of Raleigh Water**

**Joseph Turner**  
**AECOM**

Ref: Flood Study Submitted to the City of Raleigh

The City of Raleigh – Stormwater Management Division has reviewed the flood study that was submitted for **State Street Aerial Sewer Project**. This letter shall serve as the official flood study approval document. A copy of this study will be kept in our office. Your office should keep a copy of this study as well.

Please note the information below on any subsequent submittals, such as site permitting review documents, recorded plats, permits, etc.):

Flood Study Name: **State Street Aerial Sewer Project**

City of Raleigh Flood Study ID #: **766**

Date Approved: **December 28, 2021**

Please contact me at [ben.brown@raleighnc.gov](mailto:ben.brown@raleighnc.gov) or 919-996-3773 if you have any questions.

Sincerely,

Benjamin Brown  
Stormwater Administrator  
City of Raleigh  
Engineering Services – Stormwater Management

cc: File

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