

**Contract Documents
for the
Galvanized Service Line Replacement Program
OWASA CIP #275-01**

**Prepared for:
Orange Water and Sewer Authority
Carrboro, North Carolina**

**Prepared By:
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**April 2026
NC License F-1255
272427**

**ORANGE WATER AND SEWER AUTHORITY
GALVANIZED SERVICE LINE REPLACEMENT PROGRAM
OWASA CIP #275-01**

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CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

DOCUMENT 00 11 16
ADVERTISEMENT FOR BIDS

CIP No.: 275-01
Project: Galvanized Service Line Replacement Program
Owner: ORANGE WATER AND SEWER AUTHORITY
400 JONES FERRY ROAD
CARRBORO, NORTH CAROLINA 27510
Date: April 6, 2026

Pursuant to Section 143-129 of the General Statutes of North Carolina, sealed Bids will be received by Orange Water and Sewer Authority from Bidders until 3 P.M., local time, on 14, May, 2026 for CIP No. 275-01, Project: "Galvanized Service Line Replacement Program" at the Board Room at 400 Jones Ferry Road, Carrboro, NC, at which time the Bids received will opened and read aloud.

Bids will be received for a Unit Price General Construction Contract. The Contractor and all Subcontractors shall have valid North Carolina General Contractor's Licenses for the type and value of the work to be performed.

The Project consists of furnishing all materials, labor, equipment, tools, etc. unless otherwise specified, for the complete and operable installation of:

The replacement of galvanized services on the private side of the service line, and all associated appurtenances as described in the Specifications and as shown on the Drawings.

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

Beginning on 6, April, 2026 the Contract Documents will be available. Electronic copies of the Contract Documents will be available upon request. Interested parties can email Dave Malinauskas at malinauskasdg@cdmsmith.com.

Bidders are strongly encouraged to attend a non-mandatory Pre-Bid Conference at 9 A.M., local time, on 23, April, 2026 in the Board Room at 400 Jones Ferry Rd, Carrboro, NC.

Orange Water and Sewer Authority has adopted a minimum ten (10%) percent goal for participation by minority businesses in the total value of the work for this project in accordance with Section 143-128.2 of the General Statutes of North Carolina.

Each Bidder shall be licensed under Chapter 87 of the North Carolina General Statutes. Bidders are notified that "An Act to Regulate the Practice of General Contracting," was ratified by the General Assembly of North Carolina on March 10, 1925, and that this Act and

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subsequent Amendments, will be observed in receiving and awarding Contracts.

Each bidder is required to submit a Non-Collusion Affidavit pursuant to Section 133-30 of the General Statutes of North Carolina.

To ensure that all Bidders are kept up to date on any Addenda, changes, or information notices, please send an e-mail to: Dave Malinauskas at malinauskasdg@cdmsmith.com indicating your intention to prepare a Bid for the Project. Failure to complete this step may render your Bid as non-responsive. Addenda and information notices shall be posted to the Orange Water and Sewer Authority's Bid Opportunities page locate here: <https://www.owasa.org/bid-opportunities/>.

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

Orange Water and Sewer Authority requires the Project to be at Substantial Completion within 270 consecutive calendar days from date of Notice to Proceed and at Final Completion 300 consecutive calendar days from date of Notice to Proceed

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

In lieu of the certified or cashier's check deposit mentioned above, the Bidder may file a Bid Bond in the same amount executed by a corporate surety authorized to execute such bonds in North Carolina and conditioned as provided by North Carolina General Statute 143-129 and on the form(s) found in the Proposal section, or on file with the Engineer. Bid Bond forms enclosed as part of the Bidding Documents must be properly executed at the time Bids are submitted before a Bid will be considered. Properly executed Power of Attorney of the corporate surety's agent shall accompany such bond and be attached to the page provided therefore in the Bidding Documents.

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

Orange Water and Sewer Authority reserves the right to accept or reject any or all Bids, to waive any and all informalities, and to disregard all nonconforming or conditional Bids or counter Bids, and to accept the Bid that will be in the best interest of Orange Water and Sewer Authority.

CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 6, 2026

ORANGE WATER AND SEWER AUTHORITY

Bill Rosa, Project Manager

April 2, 2026

-END OF DOCUMENT-

DOCUMENT 00 21 15

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract, EJCDC C-700 (2013 edition) and modified by Orange Water and Sewer Authority (Copyright 2013) shall have the meanings assigned to them in the General Conditions as modified, changed, added to or deleted by the General Conditions.
- A. Issuing Office - The office at which the Bidding Documents are to be received.
- B. The term "Successful Bidder" means the lowest, qualified, responsive and responsible Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an Award.

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

- 2.01 The Bidding Documents are identified as "Project Manual including Bidding Documents, Contract Documents, and Technical Specifications for CIP No. 275-01, Project: "Galvanized Service Line Replacement Program"
- 2.02 Beginning on 6, April, 2026, the Contract Documents will be available. Electronic copies of the Contract Documents will be available by request. Interested parties can email Dave Malinauskas at malinauskasdg@cdmsmith.com.
- 2.03 Not Used
- 2.04 Complete sets of Bidding Documents shall be used in preparing Bids; neither Orange Water and Sewer Authority nor the Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.05 Upon receipt of Bidding Documents, Bidder shall verify that the Bidding Documents are complete. The Bidder shall notify the Engineer if they have received incomplete Bidding Documents.
- 2.06 Orange Water and Sewer Authority and Engineer, in making copies of the Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

- 3.01 The qualifications of the bidders are described in this section.

- A. The Bidder shall demonstrate the ability to complete all portions of the Contract using equipment and personnel owned and employed by the Bidder, or through qualified subcontractors. The Bidder shall include the following information in the Bid in the spaces provided:
1. The number of years the Bidder has been regularly engaged in similar Contract municipal work and a list of projects they have completed with their equipment and personnel.
 2. A list of the Bidder's personnel experienced to do the Work including the Superintendent to be in charge of the Work, including the length of their experience with this type of municipal work.
 3. A list of the Bidder's equipment in good condition and suitable for completion of the Contract.
 4. That the Bidder will have available to do the Work at the proper time or times, adequate equipment and facilities listing such equipment and facilities in such detail that they can be quickly and accurately checked.
 5. That the Bidder has ample repair parts and supplies to maintain all equipment and facilities properly and with a minimum of delay.
 6. If the Bidder is a corporation, the names of all corporate officers and the name of the executive who will give their personal attention to the Work.
 7. Detailed financial information relating to the resources of the Bidder
 8. List of subcontractors that are intended to perform work on the project, including the type of work intended to be delegated to each subcontractor.
 9. **No portion of the Contract shall be sublet, assigned, or otherwise disposed of without expressed written consent of Orange Water and Sewer Authority.**
- 3.02 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit with its Bid (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information.
- 3.03 The Bidder shall be licensed under Chapter 87 of the North Carolina General Statutes as a General Contractor

ARTICLE 4 - SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 Site and Other Areas

- A. The Sites are identified in the Bidding Documents. By definition, the Sites includes rights-of-ways, easements, and properties that have completed and signed a Service Line Replacement Agreement. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, shall be obtained and paid for by Contractor.

4.02 Existing Site Conditions

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. Records for conditions at each of the replacement sites is not available. Work is primarily being conducted on private property to complete the service line replacement and information regarding subsurface or environmental conditions is not available. Information on physical conditions will have to be collected based on site visits as described in Section 4.03.
- B. Underground Facilities: Information on underground facilities is not available for each of the individual sites.

4.03 Site Visit and Testing by Bidders

- A. Bidder shall conduct the required Site visits during normal working hours, (9:00 a.m. to 4:00 p.m., Monday through Friday) and shall not disturb any residents or businesses at the Sites.
- B. On request, and to the extent Orange Water and Sewer Authority has control over the Sites, and schedule permitting, Orange Water and Sewer Authority will provide Bidder access to the Sites to conduct such additional 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 Sites to their former condition upon completion of such explorations, investigations, tests, and studies.
- C. Orange Water and Sewer Authority will not have any obligation to grant such access if doing so is not practical because of existing operations, security, or safety concerns, or restraints on Orange Water and Sewer Authority's authority regarding the Sites.
- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Sites with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. All requests for access to the Sites must be received forty-eight (48) hours prior to the preferred time of access. **All Site access requests must be made to and coordinated by the Orange Water and Sewer Authority Project Manager Bill Rosa (919-537-4319).**
- F. The Bidder shall not access any Sites without written permission from Orange Water and Sewer Authority. The Bidder shall be responsible for any damage (including damage to any underground utility and acceptable restoration) as a result of additional subsurface investigations.

4.04 Orange Water and Sewer Authority's Safety Program

- A. Site visits and Work at the Sites are to be in accordance with Orange Water and Sewer Authority's safety program. As the General Conditions indicate, an Owner's safety program exists.

4.05 Other Work at the Sites

- A. Reference is made to the General Conditions for the identification of the general nature of other Work of which Orange Water and Sewer Authority is aware (if any) that is to be performed at the Sites by Orange Water and Sewer Authority or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. Subsurface data are offered in good faith solely for the purpose of placing the Bidder in receipt of all information available to Orange Water and Sewer Authority and Engineer, and in no event is to be considered part of the Contract Documents.

ARTICLE 5 – BIDDER’S REPRESENTATIONS

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

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Sites, conduct a thorough, alert visual examination of the Sites and adjacent areas, and become familiar with and satisfy itself 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, ordinances or rules that may affect cost, progress, and performance of the Work;
- D. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Sites; information and observations obtained from visits to the Sites; the Bidding Documents with respect to the effect of such information 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; and (3) Bidder’s safety precautions and programs;
- E. become aware of the general nature of the Work to be performed by Orange Water and Sewer Authority and others at the Sites that relates to the Work as indicated in the Bidding Documents;
- F. 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;
- G. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- H. correlate the information known to Bidder and information and observations obtained from visits to the Site with the Bidding Documents;
- I. the submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with every requirement of this Article 5, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques,

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

ARTICLE 6 - PRE-BID CONFERENCE

- 6.01 Bidders are strongly encouraged to attend a non-mandatory Pre-Bid Conference at 9 A.M., local time, on 23, April, 2026 at the Board Room at 400 Jones Ferry Road, Carrboro, North Carolina. Representatives of Orange Water and Sewer Authority, and the Engineer will be present to discuss the Project. Bidders are strongly encouraged to participate in the conference. Engineer will transmit to all prospective Bidders of record, such Addenda as Engineer considers necessary in response to questions arising from the Pre-Bid Conference. Oral statements may not be relied upon and shall not be binding or legally effective. Addenda shall be posted to Orange Water and Sewer Authority's Bid Opportunities site for those unable to attend the Pre-Bid Conference: <https://www.owasa.org/bid-opportunities/>.
- 6.02 Bidder questions pertaining to the Work and M/WBE participation will be addressed at the Pre-Bid Conference.

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents shall be submitted in writing to the Engineer via email only to: Dave Malinauskas at malinauskasdg@cdmsmith.com. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda emailed and posted to the following site: <https://www.owasa.org/bid-opportunities/>. All Addenda will also be posted at least five (5) days before Bids are opened. Questions received less than five (5) 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 shall be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Orange Water and Sewer Authority or Engineer.
- 7.03 **It shall be the Bidder's sole responsibility to make inquiry as to the Addenda issued.** All Addenda shall be bound and securely attached to the Bidding Documents and submitted with the Bid. All such Addenda shall become a part of the Contract Documents and Bidder shall be bound by such Addenda, whether or not received by the Bidder.

ARTICLE 8 - BID SECURITY

- 8.01 A Bid must be accompanied by a Bid security made payable to Orange Water and Sewer Authority in an amount equal to five (5%) percent of Bidder's maximum Bid price (if alternates determined by adding the base bid and all alternates), and in the form of a certified check, or bank money order, drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation (FDIC), or a Bid Bond (on the form included in the Bidding Documents) issued by a Surety meeting the requirements of Article 6 of the General Conditions and Article 8.02 herein-below. No Bid shall be considered or accepted unless at the time of its filing the same shall be accompanied by a Bid security. Said Bid security shall guarantee that the Contract shall be entered into by the successful Bidder if the Award is made.
- 8.02 In lieu of the certified check, bank money order deposit mentioned above, the Bidder may file a Bid Bond in the same amount executed by a corporate surety authorized to execute such bonds in North Carolina and conditioned as provided by North Carolina General Statute 143-129 and in the Bid Bond form found in the Proposal section, or on file with the Engineer. Bid Bond forms shall be properly executed at the time Bids are submitted before Bid will be considered. Properly executed Power of Attorney of the corporate surety's agent shall accompany such Bid Bond, and be attached to the page provided therefore in the Contract Documents.
- 8.03 The Bid security of the apparent Successful Bidder shall be retained until Orange Water and Sewer Authority officially Awards Contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required Contract security and met the other conditions of the Notice to Award, whereupon the Bid Security will be released. If the successful Bidder fails to execute and deliver the Contract Documents and furnish the required Contract security within fifteen (15) calendar days after the Notice of Award, Orange Water and Sewer Authority may consider Bidder to be in default, annul the Notice of Award, and the Bid Security of that Bidder will be forfeited. The Bid security of other Bidders whom Orange Water and Sewer Authority believes to have a reasonable chance of receiving the Award may be retained by Orange Water and Sewer Authority until the earlier of seven (7) days after the Effective Date of the Agreement or ninety-one (91) calendar days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.
- 8.04 Bid security of other Bidders that Orange Water and Sewer Authority believes to have a reasonable chance of receiving the Award may be retained by Orange Water and Sewer Authority until the earlier of seven (7) calendar day after the after the Effective Date of the Contract or ninety-one (91) calendar days after the Bid opening, whereupon the Bid security furnished by such Bidders will be released.

ARTICLE 9 - CONTRACT TIMES

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

ARTICLE 10 - LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement in 00 52 15 Section 4.03.

ARTICLE 11 - SUBSTITUTE AND "OR-EQUAL" ITEMS

- 11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the Bidding and Contract Award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.
- 11.02 The burden of proof of the merit of the proposed item is upon Bidder. The Engineer's decision of approval or disapproval of a proposed item will be final.
- 11.03 All prices that Bidder sets forth in its Bid shall 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" or substitution requests are made at Bidder's sole risk.

ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 A Non-Collusion Affidavit Form for all Subcontractors shall be filed with Orange Water and Sewer Authority within five (5) days after the Bid opening.
- 12.02 All Bidders are required to complete the M/WBE Participation Documents and submit the completed forms with its Bid.
- 12.03 All questions regarding M/WBE documents or requirements may be directed to the Orange Water and Sewer Authority Project Manager Bill Rosa at (919) 537-4319.
- 12.04 Orange Water and Sewer Authority reserves the right to reject a proposed Subcontractor for reasonable cause.
- 12.05 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work, if required by the Bidding Documents to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 12.05 Article 7 of the General Conditions and/or the Proposal section, require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Orange Water and Sewer Authority in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall

within five (5) days after Bid opening, submit to Orange Water and Sewer Authority 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 Orange Water and Sewer Authority. If Orange Water and Sewer Authority or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Orange Water and Sewer Authority may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, without an increase in the Bid price.

- 12.06 If apparent Successful Bidder declines to make any such substitution, Orange Water and Sewer Authority may Award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals, or entities. Declining to make requested substitutions will not constitute grounds of forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Orange Water and Sewer Authority or Engineer makes no written objection prior to giving of the Notice of Award will be deemed acceptable to Orange Water and Sewer Authority and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Article 7 of the General Conditions.
- 12.07 Subsequent to the submittal of the Bid, Orange Water and Sewer Authority may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, individual, or entity against which Contractor has reasonable objection.

ARTICLE 13 - PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents. All Bids must be submitted on the approved Bid Form furnished in the Bidding Documents. **DO NOT REMOVE ANY PAGES FROM THE BOUND DOCUMENTS.**
- A. The Lump Sum and/or Unit Price for specific items shall reflect all costs associated with furnishing, installing all items of Work as indicated on the Drawings and Technical Specifications, complete, in place and accepted, per the Engineer's Contract Documents, and any other agency having jurisdiction over the Project such as: Federal Aviation Administration (FAA), North Carolina Department of Transportation (NCDOT) Standards and Specifications, North Carolina Department of Environment and Natural Resources (NCDENR) Erosion and Sediment Control Planning and Design Manual, NCDENR – Public Water Supply (PWS), and Orange Water and Sewer Authority.
- B. All blank spaces on the Bid Form shall be completed by printing in ink or by typewriter in both words and numerals, and the Bid Form signed in ink. Erasures or alterations shall be clearly initialed also in ink by the person signing the Bid Form. In case of a conflict between the price in words and its equivalent shown in numerals, the price in words shall take precedence. **PROPOSALS SHALL NOT BE CONDITIONAL, LIMITED OR RESTRICTED IN ANY WAY.**
- C. A Bid Price shall be indicated for each lump sum or unit price bid item listed therein, or the words "No Bid," "No Change," or "Not Applicable" shall be entered.

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

- 13.10 The Bid shall contain evidence of the Bidder's authority and qualification to do business in the State of North Carolina or covenant to obtain such qualification prior to the award of the Contract. Bidders shall be licensed under Chapter 87 of the North Carolina General Statutes as a General Contractor. Bidder's State of North Carolina contractor license number shall also be shown on the Bid Form.
- 13.11 Minority and Women Business Enterprise Ordinance (M/WBE) Forms shall be submitted with the Bid, or the Bid may be considered non-responsive. Orange Water and Sewer Authority has adopted a minimum ten (10%) percent goal for participation by minority businesses in the total value of the Work for this Project in accordance with Section 143-128.2 of the General Statutes of North Carolina.

ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

~~14.01 Lump Sum~~

~~A. Bidders shall submit a Bid on a Lump Sum basis as set forth in the Bid Form.~~

14.01 Unit Price

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed on the unit price section of the Bid Form.
- B. The "Bid Price" for each unit price Bid item will be the product of the "Estimated Quantity" for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. 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. Discrepancies between words and numerals will be resolved in favor of the words.
- D. The Bid Price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Contract Documents as provided in Article 13 of the General Conditions.
- E. Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents as Liquidated Damages for failing to achieve Substantial Completion and/or Final Completion for each and every day after the time allowed, as set forth in the Agreement.

ARTICLE 15 - SUBMITTAL OF BID

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

CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

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Orange Water and Sewer Authority, must be filed within five (5) days after the Bid opening. Blank Non-Collusion Affidavit Forms can be found in the Proposal section.

15.04 A Bid shall be received no later than the date and time prescribed and at the place indicated in the Section 00 11 16 - Advertisement for Bids, and shall be enclosed in an opaque sealed envelope plainly marked with the following information:

1. CIP No.: _____
2. Project: _____
3. Name of Bidder: _____
4. Address of Bidder: _____

5. Phone Number of Bidder: _____
6. Contact Person for Bidder: _____
7. Phone Number of Contact: _____
8. Bidder's North Carolina General Contractor's License Number: _____
9. The above-name Bidder has enclosed, and checked as appropriate, the following items in the Bid (check all):
 1. _____ Bid Form
 2. _____ M/WBE Forms
 3. _____ Non-Collusion Affidavit of Bidder
 4. _____ Bid Security
 5. _____ List of Bidder's Equipment and Personnel

15.05 Incorrect information, incomplete information, or irregularities on the Bid envelope may be cause for a Bid to be declared invalid or non-responsive. Invalid or non-responsive Bids will not be opened.

15.06 Bids received after the time listed in the Advertisement for Bids or Proposal will be returned to the Bidder unopened.

15.07 If a Bid is sent by mail it should be registered mail. The sealed envelope containing the Bid shall be enclosed in a separate mailing/delivery envelope plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to:

Bill Rosa

Project Manager
Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, North Carolina 27510

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

Bill Rosa
Project Manager
Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, North Carolina 27510

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

- 15.08 Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared unacceptable at Orange Water and Sewer Authority's sole discretion.
- 15.09 Bid Forms, appendices, and enclosures which are improperly prepared may be declared unacceptable at Orange Water and Sewer Authority's sole discretion.
- 15.10 Failure to provide security deposit, bonds, or insurance requirements will invalidate the Bid and therefore be considered non-responsive at Orange Water and Sewer Authority's sole discretion.

ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be 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. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01, and submit a new Bid prior to the date and time for the opening of Bids.
- 16.03 No Bidder may withdraw a Bid after Bid opening and prior to the conclusion to the period of time stated in the Bid Form except to the extent, if any, that may be required by law. Negligence on the part of the Bidder in preparing its Bid confers no right for the withdrawal of the Bid, after it has been opened.

ARTICLE 17 - OPENING OF BIDS

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

17.02 Bidders may be present at the opening of Bids, but it is not required.

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 Orange Water and Sewer Authority 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 Orange Water and Sewer Authority reserves the right to reject any or all Bids, including without limitation, nonconforming, non-responsive, unbalanced, or conditional Bids. Orange Water and Sewer Authority further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Orange Water and Sewer Authority may also reject the Bid of any Bidder if Orange Water and Sewer Authority believes that it would not be in the best interest of the Project to make an Award to that Bidder. Orange Water and Sewer Authority also reserves the right to waive any or all informalities not involving price, time, or changes in the Work, and to negotiate terms with the Successful Bidder.
- 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 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, Orange Water and Sewer Authority 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 whether a Bidders is responsible, Orange Water and Sewer Authority will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Supplies, and other individuals or entities must be provided as provided in the Bidding Documents.
- 19.05 Orange Water and Sewer Authority may conduct such investigations as it deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be Awarded, Orange Water and Sewer Authority will award the Contract to the Bidder whose Bid is determined by Orange Water and Sewer Authority to be in the best interest of the Project.
- 19.07 Notice of Award or notice of intent to Award will not constitute a Contract binding on Orange Water and Sewer Authority and will not obligate Orange Water and Sewer Authority to enter into a Contract with the Bidder. Orange Water and Sewer Authority

will not be legally bound before Orange Water and Sewer Authority executes and delivers to the Bidder a written Contract.

ARTICLE 20 – BONDS AND INSURANCE

- 20.01 Article 6 of the General Conditions sets forth Orange Water and Sewer Authority requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Orange Water and Sewer Authority, it shall be accompanied by such required bonds and insurance documentation.

ARTICLE 21 - SIGNING OF AGREEMENT

- 21.01 After Orange Water and Sewer Authority has identified the Successful Bidder, Orange Water and Sewer Authority will issue to the Successful Bidder, a written Notice of Award.
- 21.02 Orange Water and Sewer Authority will give the apparent successful Bidder a Notice of Award within or ninety (90) calendar days after the day of the Bid opening. When Orange Water and Sewer Authority gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts to the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within fifteen (15) calendar days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement and attached documents to Orange Water and Sewer Authority. Within ten (10) days after execution of the Agreement by the Orange Water and Sewer Authority Board of Directors, Orange Water and Sewer Authority will deliver one fully executed counterpart to Successful Bidder.
- 21.03 Failure or refusal of the Bidder whose Bid is accepted to execute the Contract as hereinbefore provided shall constitute a breach by such Bidder of the Contract created by the acceptance of the Bid, and in such event, Orange Water and Sewer Authority at its option, may determine that such Bidder has abandoned the Contract. Thereupon such Bidder's Bid and the acceptance thereof shall be null and void. It is understood by the Bidder, in the event of the annulment of the Award, that the amount of the Bid security submitted with the Bid shall be forfeited to Orange Water and Sewer Authority, not as a penalty, but as Liquidated Damages.

ARTICLE 22 - SALES AND USE TAXES

- 22.01 The North Carolina General Assembly adopted legislation which required that Contractors pay North Carolina Sale and Use Tax on materials, supplies, fixtures, and equipment used by the Bidder in the performance of contracts with cities, counties, and towns on Contracts dated July 1, 1961 or later. This requirement also applies to Orange Water and Sewer Authority in order that Orange Water and Sewer Authority may recover the amount of tax permitted under the law.
- 22.02 The following procedure in handling the North Carolina Sales Tax is applicable to this Contract. Contractor(s) shall comply fully with the requirements outlined hereinafter, in

order that the Orange Water and Sewer Authority may recover the amount of tax permitted under the law.

- A. It shall be the Contractor's responsibility to furnish Orange Water and Sewer Authority documentary evidence showing the materials used and sales tax paid by the Contractor and each of its Subcontractors with each payment request in a format approved by Orange Water and Sewer Authority.
- B. The documentary evidence shall consist of a certified statement, by the Contractor and each of his Subcontractors individually, showing total purchases of materials from each separate vendor and total sales taxes paid each vendor. Certified statements must show the invoice number or numbers, covered and inclusive dates of such invoices.
- C. Materials used from the Contractor's or Subcontractor's warehouse stock shall be shown in a certified statement at warehouse stock prices.
- D. The Contractor shall not be required to certify the Subcontractor's statements.
- E. The documentary evidence to be furnished to Orange Water and Sewer Authority eligible for sales or use tax refunds covers sales and/or use taxes paid on building materials used by Contractor(s) and Subcontractors in the performance of Contracts with churches, orphanages, hospitals 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(2) and (3) of the 1961 Statute, and is to include the purchases of building materials, supplies, fixtures, and equipment which become a part of or annex to buildings or structures being erected, altered or repaired under Contracts with such institutions, organizations or governmental units.

22.03 The Bidder shall include North Carolina Sales and Use Tax in its Bid.

-END OF DOCUMENT-

CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

DOCUMENT 00 41 44

PROPOSAL

(UNIT PRICE CONTRACT - BID FORM)

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

EXECUTIVE DIRECTOR
ORANGE WATER AND SEWER AUTHORITY
400 JONES FERRY ROAD
CARRBORO, NORTH CAROLINA 27510
(919) 537-4343

Date: _____, 20__

OWASA CIP: **275-01**

Project: **Galvanized Service Line Replacement Program**

Name of Bidder: _____

Address of Bidder: _____

Phone Number of Bidder: _____

Contact Person for Bidder: _____

Phone Number of Contact: _____

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

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Orange Water and Sewer Authority 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.

1.03 The undersigned Bidder hereby declares that the names of all persons interested in this Bid as principals appear in the blank spaces hereinafter provided for such purpose, that this Bid is in all respects fair and without collusion, that the Bidder has examined the locations of the proposed Work, the Advertisement to Bidders, the Instructions to Bidders, Technical Specifications, M/WBE requirements of Orange Water and Sewer Authority, the Contract Documents and Bond forms, and the Drawings therein referred to and fully understands the same and agrees and accepts the terms and conditions thereof, that it is understood that the estimated quantities are approximate only and



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are given for the purpose of comparing Bids upon a uniform basis, and that said estimate shall in no way affect the unit prices for the Work.

- 1.04 The undersigned Bidder hereby agrees to furnish at the Bidder's cost the expense of all the necessary labor, tools, apparatus, machinery, equipment, transportation, and all other things which may be required to fully and properly perform all the terms, covenants, provisions, and agreements of this Contract.
- 1.05 The undersigned Bidder hereby agrees to do said Work and furnish said materials as prescribed in the Contract Documents and Technical Specifications, and, according to the Drawings and requirements of the Engineer under said Contract Documents and Technical Specifications, in a first-class manner and to the best of the undersigned's ability at the following lump sum or unit prices.
- 1.06 The undersigned Bidder has examined the Sites of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by the Engineer for the Project, we, the undersigned Bidder, hereby offers to enter into a Contract to perform the Work for the lump sum or unit prices listed in this Bid Form in lawful money of the United States of America.
- 1.07 The undersigned Bidder acknowledges that it is the intent of these Contract Documents to obtain a Contract based on a **Unit Price Bid**, unless Lump Sum Prices are applied to the various portions of the Work and are specifically requested. In the event of errors in the arithmetical extension of unit prices to total prices, the unit price bid shall govern, and the Award of the Contract shall be based on the recomputed total prices. Where discrepancy exists between words and numerals, the written words shall govern. If a Bidder submits a Bid showing a unit price for a particular item and omits an extended total for that item, or a Bidder submits a Bid showing an extended total for a particular item and omits a unit price for that item, the omitted numbers shall be computed using the equation "Estimated Quantity x Unit Bid Price = Extended Total", so that the omission shall not render the Bid non-responsive or incomplete. If the Bidder leaves blank any lines or spaces indicated for the dollar amount of any item in the Bid, that omission will be understood and treated as if the Bidder had written in zero dollars (\$0.00) for that particular item in the Bid. Before applying the preceding two (2) sentences this paragraph, the following rule shall apply in the special case that it describes: In places where it is indicated that a Bid should show both words and numerals for a particular dollar amount, if the Bid shows the dollar amount in numerals but omits to show any dollar amount in words (or vice versa), the Bid shall be treated as if it had shown the indicated dollar amount in both numerals and words.
- 1.08 The undersigned Bidder shall be required to submit a complete detailed cost breakdown of Lump Sum Bid items for payment purposes, for approval by the Engineer, prior to the Award of the Contract.
- 1.09 The undersigned Bidder acknowledges that all costs for mobilization, demobilization, bonds, insurance, etc. shall be included in the Unit Price Bid indicated. There shall be no additional compensation for mobilization, demobilization, bonds, insurance, etc. and no adjustments to the Bid based on changes in the Scope of Work, including but not limited to, any additions to the Work on the Contract.



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- 1.10 The undersigned Bidder acknowledges that the Project will be Awarded to the lowest responsible, responsive Bidder for the Project, as selected by Orange Water and Sewer Authority whose evaluation indicates that the Award will be in the best interest of the Project.
- 1.11 The undersigned Bidder acknowledges that all blanks on the Bid Form shall be completed by printing in ink or by typewriter and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid Price shall be indicated for the Lump Sum or each Unit Price item listed therein, or the words, "No Bid", "No Change", or "Not Applicable" entered."
- 1.12 The undersigned Bidder acknowledges that the omission of prices for any item on the Bid Form, or the tendering of any unbalanced Bid may be the cause for the rejection of the submitted Bid.
- 1.13 The undersigned Bidder acknowledges that the payment will be made on the basis of the Work as actually executed at the Unit Prices or Lump Sum Prices set forth in the executed Contract and under the provisions of such Contract.
- 1.14 The undersigned Bidder acknowledges that there shall be no additional compensation to the Bidder for materials, equipment, or Work that is incidental to the successful completion of the Contract. Incidental costs include the costs inherent to the complete installation of those individual items included on the Bid Form.
- 1.15 The undersigned Bidder acknowledges that the Non-Collusive Affidavit for the Contractor shall be submitted with the Bid, and Non-Collusive Affidavit(s) for all Subcontractors (all tiers) for the apparent low Bidder shall be submitted within five (5) calendar days of the Bid Opening.
- 1.16 The undersigned Bidder acknowledges that it has included the Bid security as required by the Instruction to Bidders.
- 1.17 The undersigned Bidder agrees to comply with all requirements of local, State, or Federal permits that may be required for the completion of the Work.
- 1.18 The undersigned Bidder shall have all proper Contractors licenses and privilege licenses required under State and local laws governing their respective trade(s).
- 1.19 The undersigned agrees that the rights of Orange Water and Sewer Authority and the recommendations of the Engineer are not to be questioned in the Award of a Contract.
- 1.20 The undersigned Bidder certifies compliance with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes ("E-Verify"), and represents that it will require any subcontractors to comply with the requirements of Article 2 of Chapter 64 of the General Statutes.
- 1.21 The undersigned Bidder certifies compliance with the requirements of Article 6 of Chapter 143 of the North Carolina General Statutes ("Iran Divestment") and that it is not listed on the State Treasurer's Final Divestment List found at the website address www.nctreasurer.com/Iran and updated every 180 days, and represents that it will require any subcontractors to comply with the requirements of Article 6 of Chapter 143 of the General Statutes.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

Proposal – Unit Price Contract Bid Form

00 41 44-3

Galvanized Service Line
Replacement Program



Orange Water & Sewer Authority

- 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 shall remain open and remain subject to acceptance, and is irrevocable, except as required by law, for ninety (90) calendar days from the Bid opening date, or for such longer period of time that Bidder may agree to in writing upon request of Orange Water and Sewer Authority.
- 2.02 If this Bid is accepted by Orange Water and Sewer Authority within the time period stated above, the Bidder will:
- Execute the Agreement within fifteen (15) days of receipt of Notice of Award.
 - Furnish the required Bonds within fifteen (15) days of receipt of Notice of Award.
 - Commence Work within ten (10) days after written Notice to Proceed.
- 2.03 If this Bid is accepted by Orange Water and Sewer Authority within the time stated, and the Bidder fails to commence the Work or fails to provide the required bonds, the Bid security shall be forfeited as damages to Orange Water and Sewer Authority by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this Bid and the Bid upon which a Contract is signed.
- 2.04 In the event Bid is not accepted by Orange Water and Sewer Authority within the time stated above, the required Bid security will be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.:

Addendum Date:

_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Sites, conducted a thorough, alert visual examination of the Sites and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself 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 adjacent to the Sites and all drawings of physical conditions relating to existing surface or subsurface structures at the Sites that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Sites that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Bidder has considered the information known to Bidder itself; 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 any 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; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price 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 Sites that relate 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 confirms that 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 and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

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;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

"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;



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“fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Orange Water and Sewer Authority, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Orange Water and Sewer Authority of the benefits of free and open competition;

“collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Orange Water and Sewer Authority, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

“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 (UNIT PRICE BID)

5.01 CIP: **275-01**

Project: **Galvanized Service Line Replacement Program**

Project Description:

UNIT PRICE BID SHALL INCLUDE:

Work associated with test pitting and replacing galvanized service lines between the water meter and the building foundation and restoration activities required to restore sites to the pre-construction conditions such as sidewalk or road restoration, sodding or planting to replace any disturbed green space. This work may include full excavation of the service line where trenchless methods of replacement are not feasible.

CONTINGENCY ALLOWANCE: The Contractor shall include in its Bid a contingency allowance in the amount of **\$50,000**. *The contingency allowance shall only be used at the specific direction and written approval of the Engineer.*

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

The Unit Price Bid shall reflect all costs associated with furnishing and installing, and placing into service all items of Work as indicated on the Drawings and in the Technical Specifications, complete, in place, operable and accepted by Orange Water and Sewer Authority, per the Engineer’s Contract Documents.

5.02 Orange Water and Sewer Authority has established a “Contingency Allowance” for this project. The contingency allowance is intended to provide adequate budget to cover items not precisely determined by Orange Water and Sewer Authority, and unforeseeable conditions prior to the Bid. Orange Water and Sewer Authority has provided for a contingency allowance of **\$50,000.00** as indicated in the Proposal. Funds allocated as part of the allowance will be used *at the sole discretion of Orange Water and Sewer Authority*. This allowance is included on the Bid Form in the Proposal, and will be included in the total amount of each Bid. Orange Water and Sewer Authority shall approve use of the contingency allowance funds prior to any Work associated with a contingency allowance being performed. The Contractor shall invoice items authorized for



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payment under the Contingency Allowance with its monthly pay applications. The amount invoiced will be deducted from the indicated amount.

- 5.03 Bidder shall complete the Work in accordance with the Contract Documents for the following
TOTAL UNIT PRICE BID:

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CIP NO.: 275-01
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BID FORM

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

UNIT PRICE BID CONTRACT

Item No.	Description	Units	Estimated Quantity	Bid Unit Price	Extended Total
1A	0.75" Service Line Replacement – Private Side Only (Water Meter to Foundation)	EA	87		
1B	1" Service Line Replacement – Private Side Only (Water Meter to Foundation)	EA	2		
1C	1.5" Service Line Replacement – Private Side Only (Water Meter to Foundation)	EA	1		
1D	2" Service Line Replacement – Private Side Only (Water Meter to Foundation)	EA	5		
1E	0.75" Service Line Installation Greater than 58 feet	LF	400		
1F	2" Copper Service Line Installation Greater than 47 feet	LF	30		
1G	Pressure Reducing Valve	EA	20		
1H	Access Not Provided	EA	20		
1I	Test Pit at Water Meter	EA	27		
1J	Traffic/Street Permit	Allowance	-	\$5,000.00	
1K	Plumbing Permit	Allowance	-	\$10,000.00	
1L	Soil Testing	Allowance	-	\$10,000.00	
1M	Service Line Excavation Depth Greater than Five (5) Feet	CY	75		
1N	Final Trench Pavement Restoration (Milling and Paving)	SY	50		
1O	Final Pavement (Curb-to-Curb)	SY	100		
1P	Traffic Control	Allowance	-	\$15,000.00	
2	Pitcher Filters and Replacement Cartridges	EA	100		
S-1A	Imported Common Fill	CY	100		
S-1B	Crushed Stone	CY	50		
S-1C	Flowable Fill	CY	30		

Proposal – Unit Price Contract Bid Form
 00 41 44-8

Galvanized Service Line
 Replacement Program



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Item No.	Description	Units	Estimated Quantity	Bid Unit Price	Extended Total
S-2	Miscellaneous Concrete	CY	100		
S-3	Contingency	Allowance	-	\$50,000.00	
Total of All Unit Price Bid Items					

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items shall be based on actual quantities, determined as provided in the Contract Documents.

TOTAL UNIT PRICE BID for the Project described in Sub-Article 5.01, complete as indicated by the Contract Documents (in words and numerals):

_____ Dollars
and _____ Cents (\$ _____)

Bidder _____
(Print Name)

Bidder _____
(Signature)



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

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

The Bidder, _____, as part of the procedure for the submission of Bids on this Project, submits the following list of Equipment/Material Manufacturers and Subcontractors to be used in the performance of Work to be done on said Project. The list of Manufacturers and all equipment/materials furnished and Subcontractors shall be based on requirements of the Contract Documents. Changes to this list after the Bid opening shall only be as approved by Orange Water and Sewer Authority upon request by the Contractor or as required by Orange Water and Sewer Authority based upon review of Contractor's submittals:

EQUIPMENT/MATERIALS	MANUFACTURER
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

WORK TASK	SUBCONTRACTOR
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

It is understood and agreed that, if awarded a Contract, the Contractor will not make any additions, deletions or substitutions to this certified list without the written consent of Orange Water and Sewer Authority.



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
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CERTIFICATION AFFIDAVIT

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

NAME OF SIGNER: _____
(Please Print or Type)

TITLE OF SIGNER: _____
(Please Print or Type)

DATE: _____ SIGNATURE: _____

-END OF CERTIFICATION-

REMAINDER OF PAGE LEFT BLANK INTENTIONALLY



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be Substantially Complete within 270 **CONSECUTIVE CALENDAR DAYS**, after the date when the Contract Time commences 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 15.03 of the General Conditions within **300 CONSECUTIVE CALENDAR DAYS**, of the date when the Contract Time commences to run.
- 6.02 Bidder accepts the provisions of the Agreement as to Liquidated Damages.

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;
 - B. List of Proposed Subcontractors;
 - C. List of Proposed Suppliers;
 - D. List of Project References;
 - E. Evidence of authority to do business in the State of North Carolina; or a written covenant to obtain such license within the time for acceptance of Bids;
 - F. Required Bidder Qualification Statement with supporting data;

ARTICLE 8 – BID CERTIFICATION

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

SIGNATURE: _____

DATE: _____

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



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

ARTICLE 9 - CONTRACTOR EXPERIENCE

9.01 The undersigned Contractor has regularly engaged in and successfully completed contract Work of this Class for a minimum of 5 years. A completed contracts summary shall be submitted that clearly demonstrates a minimum of 5 years' experience. Failure to provide this information shall be just cause for rejection of the Bid: _____

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

<u>Name</u>	<u>Experience</u>	<u>Name</u>	<u>Experience</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

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

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Attach additional sheets as necessary to complete the items above.

ARTICLE 10 - BID FORM SIGNATURES

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

ARTICLE 11 - QUALIFICATIONS OF BIDDERS

- 11.01 In order to assist the Owner in determining whether the Bidder is qualified to perform the Work, as set forth in the Contract Documents, the Bidder shall furnish the following information.
- List of references who are qualified to judge as to his financial responsibility and his experience in work of similar nature to that bid upon:
 - List of previous contracting experience that is similar in nature, including dollar values of contracts:
 - List of facilities or equipment that is available for use:
 - Name, residence, and title of the individual who will give personal attention to the work:
 - Financial Statement:
 - Current projects, indicate value and completion date:

ASSETS

CURRENT ASSETS:

Cash \$ _____
Notes and Accounts Receivable _____
Inventories _____

PLANT ASSETS:

Real Estate \$ _____
Machinery _____
Good Will, Patents, etc. _____ \$ _____

LIABILITIES:

Notes Payable \$ _____
Accounts Payable \$ _____
Accrued Wages _____
Other Liabilities _____ \$ _____

Proposal – Unit Price Contract Bid Form
00 41 44-14

Galvanized Service Line
Replacement Program



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 6, 2026

EXCESS OF
ASSETS OR
NET WORTH \$ _____

Notes:

1. The above is a suggested form for the Financial Statement, and the Bidder is not required to follow the form explicitly. The Financial Statement submitted must clearly show to the satisfaction of the Owner the Bidders current financial condition. The Owner reserves the privilege of requiring additional information as to financial responsibility of the Bidder prior to awarding Contract.
2. Bidder shall attach additional pages, if necessary, in order to complete the required information.
3. The Bidder shall submit detailed information required for above items 1 through 5 with his Bid package. Item 5 may be submitted in a separate envelope marked "Confidential" that is included in the Bid package.

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

CORPORATION

Proposal – Unit Price Contract Bid Form
00 41 44-15

Galvanized Service Line
Replacement Program



Orange Water & Sewer Authority

CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

The Corporate Seal of

(Bidder - print the full legal corporate name of firm)

(President/Vice President/Authorized Corporate Officer)

(Seal)

was hereunto affixed in the presence of:

(Secretary/Assistant Secretary)

(Seal)

Corporate Address:

(State of Incorporation)



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

LIMITED LIABILITY COMPANY

(Bidder - print the full legal name of firm)

(Authorized Firm Member)

(Seal)

was hereunto affixed in the presence of:

(Witness)

(Seal)

Firm Address:

(State of Formation)



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 6, 2026

INDIVIDUAL OR SOLE PROPRIETORSHIP

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

(Seal)

Individual or Sole Proprietorship Address:



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PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

PARTNERSHIP

(Bidder - print the full legal corporate name of partnership)

(Partner and Title)

(Seal)

(Partner and Title)

(Seal)

(Partner and Title)

(Seal)

(Partner and Title)

(Seal)

(Partner and Title)

(Seal)

(Partner and Title)

(Seal)

(Partner and Title)

(Seal)

(Partner and Title)

(Seal)

(Partner and Title)

(Seal)

(Partner and Title)

(Seal)

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

was hereunto affixed in the presence of:

(Witness)

(Seal)

Partnership Address:



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 6, 2026

JOINT VENTURE

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



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

BID BOND

This is a Bid Bond that is subject to the provisions of G.S. 143-129 (b) of the North Carolina General statutes.

This Bond is executed on _____, 20____

The name of the Principal is _____
(Correct name of Contractor)

(A Corporation, a Partnership, or an Individual, as the case may be)

The name of the Surety is _____

Orange Water and Sewer Authority is the Owner.

The amount of the Bond is _____
_____ (Dollars) \$ _____

KNOW BY ALL MEN BY THESE PRESENTS, the Principal and Surety above named are hereby held and firmly bound unto the above named Owner hereinafter called the Owner in the penal sum of the amount stated above in lawful money of the United States, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the Owner a certain Bid attached hereto and hereby made a part hereof to enter into a Contract in writing, for the construction of:

GALVANIZED SERVICE LINE REPLACEMENT PROGRAM

NOW, THEREFORE

- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for its faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid;
- (c) Then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

BID BOND (CONTINUED)

Proposal – Unit Price Contract Bid Form
00 41 44-21

Galvanized Service Line
Replacement Program



Orange Water & Sewer Authority

CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Execution by Principal:

**(If Contractor is a Partnership, all
partners should execute Bond below)**

ATTEST:

Principal Secretary
(SEAL)

BY: _____
Principal

Principal

Principal

Witness as to Principal

(Address)

(Phone Number)

Execution by Surety:

ATTEST:

N. C. Resident Agent
(SEAL)

Surety

(Address)

Witness as to Surety

(Phone Number)



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 6, 2026

POWER OF ATTORNEY

(Attach)



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

PROPOSAL SIGNATURE

Bidder operates under the legal name of _____

BIDDERS COMPLETE THE APPROPRIATE SECTION*

CORPORATION* The Bidder is a corporation, has a corporate seal and the full names of its officers are:

President _____

Secretary _____

Vice President _____

Treasurer _____

The _____ (officer's title) is authorized to sign construction proposals and contracts for the company by action of its Board of Directors taken on _____, 20____ a certified copy of which is attached. (Strike out previous sentence if not applicable. This section must be completed if President or Vice President is not the signatory party.)

PARTNERSHIP* The Bidder is a partnership consisting of individual partners whose full names are:

INDIVIDUAL*

The Bidder is an individual whose full name is:

Print Name of Legal Entity

By: _____

Print name and title of signatory

CORPORATIONS ONLY – Secretary or Assistant
Secretary attest and affix corporate Seal:

Circle one: Secretary or Assistant Secretary

State of Incorporation

Address and telephone number

Subscribe and sworn to me this _____ day of _____, 20____.

Notary Public _____ (Seal)

My Commission Expires: _____



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

CONTRACTOR'S AFFIDAVIT OF ORGANIZATION AND AUTHORITY

STATE OF _____

COUNTY OF _____

_____ being the first duly sworn on oath deposes and says that the Bidder on the attached Bid proposal 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 _____ (officer's title) is authorized to sign construction Contracts and Bids for the company by action of its Board of Directors taken on _____, 20____, 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. INDIVIDUAL / 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____

My commission expires: _____

Notary Public

(SEAL)



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

NON-COLLUSION AFFIDAVIT FOR CONTRACTOR'S

STATE OF _____
COUNTY OF _____

_____ being first duly sworn,
deposes and says that:

- (1) He/She is the: _____
Owner, Partner, President, Vice President or other officer with evidence of authority attached
of _____
the Bidder that has submitted the attached BID;
- (2) He/She 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: _____

CORPORATIONS ONLY

ITS: _____
Title

Secretary or Assistant, attest & affix corporate seal

Subscribed and sworn to before me this _____ day of _____, 20__

_____ My commission expires: _____

Notary Public (SEAL)



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

NON-COLLUSION AFFIDAVIT FOR SUBCONTRACTOR(S)
(DUE WITHIN 5 DAYS OF THE BID OPENING)

STATE OF _____

COUNTY OF _____

_____ being first duly sworn,
deposes and says that:

- (1) He/She is _____ of _____, hereinafter referred to as the "Subcontractor";
- (2) He/She is fully informed respecting the preparation and contents of the Subcontractor's Proposal submitted by the Subcontractor to _____, the Contractor for certain work in connection with the _____ Contract pertaining to the Project in _____ (City or County, and State);
- (3) Such Subcontractor's Proposal is genuine and is not a collusive or sham proposal;
- (4) Neither the Subcontractor nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Proposal in connection with such Contract or to refrain from submitting a Proposal in connection with such Contract, or has in any manner, directly or indirectly, sought by unlawful agreement or connivance with any other Bidder, firm or person to fix the price or prices in said Contractor's Proposal, or to fix any overhead, profit or cost element of the price or prices in said Contractor's Proposal, or to secure through collusion, conspiracy connivance or unlawful agreement any advantage against the _____ (Local Public Agency) or any person interested in the proposed Contract; and
- (5) The price or prices quoted in the Subcontractor's Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) _____

Title

Subscribed and sworn to before me this _____ day of _____, 20__

_____ My commission expires: _____

Notary Public

(Seal)



EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

During the performance of this Contract the Contractor agrees as follows:

- a. The Contractor will not discriminate against any employee or applicant because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to race, color, religion, sex, or national origin. Such action shall include but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause.
- b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- c. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Contract understanding, a notice; to be provided, advising the labor union or worker's representative of the Contractor's commitments under the Equal Employment Opportunity Section of this Contract, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Owner Contracts,
- e. The Contractor will include the provisions of this section in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Owner so that such provisions will be binding upon each Subcontractor or vendor.

(Complete this section for signatures by a CORPORATION):

(CORPORATE SEAL)

Corporate Name

ATTEST:

Secretary* or Assistant Secretary*

BY:

President* or Vice President*

*choose one

(Complete this section for signatures by PARTNERSHIP and INDIVIDUAL):

WITNESS:

BY:

(Seal)

(ACKNOWLEDGEMENT OF THE ABOVE SIGNATURE MUST BE NOTARIZED USING THE FORM
ON THE FOLLOWING PAGE)



CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 6, 2026

**ACKNOWLEDGEMENT FOR
EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION**

Corporate Acknowledgement

(Use this portion of the form for acknowledgement of signature by a Corporation):

STATE OF _____

COUNTY OF _____

I, the undersigned notary public, do hereby certify that _____
personally appeared before me this day and acknowledged that he/she is *Secretary* or Assistant
Secretary** of _____,
a corporation, and that by authority duly given and as the act of the corporation, the foregoing instrument
was signed in its name by its *President* or Vice President**, sealed with its corporate seal, and attested
by himself as its *Secretary* or Assistant Secretary**.

**choose one*

WITNESS my hand and notarial seal this _____ day of _____, 20____

My commission expires _____.
(SEAL)

Notary Public

Individual or Partnership Acknowledgement

(Use this portion of the form for acknowledgement of signature by a partnership or an individual.)

NORTH CAROLINA

(Enter correct State and County if different than
shown.)

_____ COUNTY

I, the undersigned Notary Public, do hereby certify that, _____
personally appeared before me this day and acknowledged the due execution of the foregoing
instrument.

WITNESS my hand and notarial seal this _____ day of _____, 20____

My commission expires: _____.

Notary Public (SEAL)



MINORITY BUSINESS PARTICIPATION

Provide with the Bid:

Under GS 143-128.2(c) the undersigned Bidder shall identify on its Bid Proposal 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 Contractor that performs all of the Work with its own workforce may submit an **Affidavit B** to that effect in lieu of **Affidavit A** required above.

After the Bid opening:

Orange Water and Sewer Authority 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:

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 10% goal established. This affidavit shall give rise to the presumption that the Bidder has made the required good faith effort; or **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.

These forms are included herein:

- (1) Identification of Minority Business Participation
- (2) Affidavit A – Listing of the Good Faith Effort
- (3) Affidavit B – Intent to Perform Contract with Own Workforce
- (4) Affidavit C – Portion of Work to be Performed by Minority Firms
- (5) Affidavit D – Good Faith Efforts



DATE: April 6, 2026

I, _____,
(Name of Bidder)

[illegible]

The total value of minority business contracting will be (\$)_____



Orange Water & Sewer Authority

State of North Carolina AFFIDAVIT A – Listing of the Good Faith Efforts

County of _____

Affidavit of _____ (Name of Bidder)

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive (NC Administrative Code 01 NCAC 30I .0102)

- ☐ **1 – (10 pts)** Contacting 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 or proposal date and notifying them of the nature and scope of the work to be performed.
- ☐ **2 – (10 pts)** Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due.
- ☐ **3 – (15 pts)** Breaking down or combining elements of work into economically feasible units to facilitate minority participation.
- ☐ **4 – (10 pts)** Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ☐ **5 – (10 pts)** Attending any prebid meetings scheduled by the public owner.
- ☐ **6 – (20 pts)** Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.
- ☐ **7 – (15 pts)** Negotiating in good faith with interested minority businesses and not rejecting 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.
- ☐ **8 – (25 pts)** Providing 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. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ☐ **9 – (20 pts)** Negotiating 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.
- ☐ **10 – (20 pts)** Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

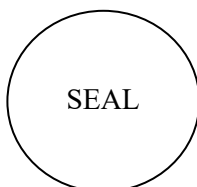
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the OWNER. Substitution of contractors must be in accordance with GS 143-128.2(d). Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the BIDDER to the commitment herein set forth.

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 _____

Proposal – Unit Price Contract Bid Form

00 41 44-32

Galvanized Service Line

Replacement Program



Orange Water & Sewer Authority

AFFIDAVIT B – Intent to Perform Contract with Own Workforce

County of _____

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

(Name of Project)

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 the work on this project with his/her own current work forces; and

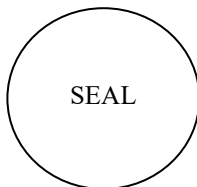
The Bidder agrees to provide any additional information or documentation requested by the Owner in support of the above statement.

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 _____



AFFIDAVIT C – Portion of the Work to be Performed by Minority Firms

County of _____

***** (NOTE: THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL) *****

If the portion of the Work to be executed by minority businesses as defined in G. S. 143-128.2(g) is **equal to or greater than 10%** of the Bidders Total Contract Price, then the Bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive Bidder within **72 hours** after notification of being low Bidder.

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

(Project Name)
Project ID# _____ Amount of Bid \$ _____
I will expend a minimum of _____ % of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

Attach additional sheets if required

Name and Phone Number	*Minority Category	Work description	Dollar Value

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

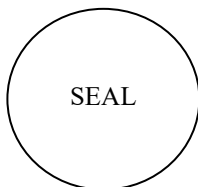
Pursuant to G. S. 143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the Bidder to the commitment herein set forth.

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 _____



Orange Water & Sewer Authority

Proposal – Unit Price Contract Bid Form

00 41 44-34

Galvanized Service Line
Replacement Program

CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 6, 2026

AFFIDAVIT D – Good Faith Efforts

County of _____

***** (NOTE: THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL) *****

If the goal of 10% participation by minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of: _____
(Name of Bidder)

I do certify the attached documentation as true and accurate representation of my good faith efforts.
(Attach additional sheets if required)

Name and Phone Number	*Minority Category	Work description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American, Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

Documentation of the Bidder's good faith efforts to meet the goals set forth in these provisions.

Examples of documentation include, but are not limited to, the following evidence:

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent a solicitation.
- D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster.
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- H. Letter detailing reasons for rejection of minority business due to lack of qualification.
- I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.



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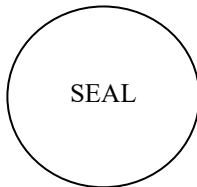
AFFIDAVIT D – Good Faith Efforts (continued)

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

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 _____

-END OF DOCUMENT-



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

DOCUMENT 00 52 15

AGREEMENT

THIS AGREEMENT is dated as of the _____ day of _____, in the year 20____ by and between Orange Water and Sewer Authority, Carrboro, North Carolina, party of the first part, and _____ party of the second part, (Contractor).

Orange Water and Sewer Authority and Contractor, in consideration of the mutual covenants set forth herein, hereby agree as follows:

ARTICLE 1 - WORK

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

The Galvanized Service Line Replacement Program includes the replacement of up to 92 galvanized water service lines between the water meter and building. The lines are designated as Galvanized Requiring Replacement per the Lead and Copper Rule Revisions because they were historically downstream of a lead service line. This work will consist of conducting a test pit approximately three (3) feet downstream of the water meter and at another location between the meter and building to confirm water service material. Upon confirmation of existing galvanized piping, the service line will be replaced with new plastic water services or copper for services greater than 1.5 inches. Replacement will use a trenchless method where possible based on the alignment of the service line. If pipe pulling fails, the service line will need to be replaced through excavation. After replacement, the sites shall be restored to the pre-existing conditions in accordance with the locality's codes. Replacement and all associated appurtenances will be as described in the Specifications and as shown on the Drawings.

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

ARTICLE 2 - THE PROJECT

- 2.01 The Project, of which the Work under the Contract Documents may be the whole or only a part, is generally described as follows:

OWASA CIP: #275-01, Project: **"Galvanized Service Line Replacement Program"**

ARTICLE 3 - ENGINEER

- 3.01 The Project has been designed by CDM Smith, who is to act as Orange Water and Sewer Authority's 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 TIME

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 Contract Times: (Consecutive Calendar Days)

- A. Days to achieve Substantial Completion, Final Completion, and Final Payment:

The Work shall be Substantially Complete in accordance with Paragraph 15.03 of the General Conditions within **270 CONSECUTIVE CALENDAR DAYS**, after the date when the Contract Time commences to run (Notice to Proceed), and Finally Complete and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **300 CONSECUTIVE CALENDAR DAYS** after the date when the Contract Times commence to run (Notice to Proceed).

- B. Parts of the Work shall be substantially completed on or before the following Milestone(s): [INSERT INTERIM COMPLETION DATES IF APPLICABLE]
- C. Bidder accepts the provisions of the Agreement as to Liquidated Damage.

4.03 Liquidated Damages

- A. The Contractor and Orange Water and Sewer Authority recognize that time is of the essence for this Agreement and that the Orange Water and Sewer Authority will suffer financial and other losses if the Work is not completed within either or both the time of Substantial Completion and the time of Final Completion as specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expenses, and difficulties to both parties involved in proving or contesting in a legal or mediation preceding the actual loss suffered by Orange Water and Sewer Authority, if the Work is not completed on time. Accordingly, instead of requiring any such proof of losses, it is agreed that the Contractor shall be liable for and pay the following amounts to Orange Water and Sewer Authority as Liquidated Damages, and not as a penalty:

Completion Milestone Date	Liquidated Damages (per day)
Date of Substantial Completion	\$1,500
Date of Final Completion	\$1,500

- B. Liquidated damages will be assessed for the above listed amounts for each and every day the Work remains incomplete beyond the date of Substantial Completion and the date of Final Completion, either date being independent of the other.

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4.04 Weather Related Delays

- A. Contractor's requests to extend Contract Time based on weather related delays shall be made in writing and shall be made with reference to the table below as the reasonably expected weather conditions for a given month. Contractor will still need to demonstrate the adverse effect on the construction schedule. Unless Orange Water and Sewer Authority agrees otherwise, the weather conditions must be shown by use of data, submitted by the Contractor, from either the National Weather Service (NWS) for Carrboro, North Carolina or NWS readings from a location closer to the sites than Carrboro, North Carolina, and not by use of weather readings on the Sites or by the Contractor. Notwithstanding the General Conditions, in order to request an extension of Contract Time for abnormal weather conditions the form must be submitted by the tenth (10th) day of the month after the month as to which the request is made.

Month	Expected number of days with 0.1 or more inches precipitation
January	10
February	10
March	10
April	9
May	10
June	9
July	11
August	10
September	8
October	7
November	8
December	9

4.05 Work Related to Weekends or Orange Water and Sewer Authority Holiday

- A. The Contractor shall have notified the Resident Project Representative by 3:30 PM, three (3) days in advance of the day of the Contractor's request to Work on a specific Saturday, Sunday, or holiday. Notwithstanding the General Conditions, if the day on which the notice is to be given is a Saturday, Sunday, or Orange Water and Sewer Authority holiday, the request shall be made by the first day before that Saturday, Sunday, or holiday that is not a Saturday, Sunday, or Orange Water and Sewer Authority holiday.

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ARTICLE 5 - CONTRACT PRICE

5.01 Orange Water and Sewer Authority shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work other than Unit Price Work, a Lump Sum of: _____
_____ (words), (\$ _____ (numerals)).

B. All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

C. For all Work, at the price(s) 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. Orange Water and Sewer Authority shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the twenty-fifth (25th) day of each month during performance of the Work as provided in Paragraphs 6.02.A.1 below provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in 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 Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts Orange Water and Sewer Authority may withhold, including but not limited to liquidated damages, in accordance with the Contract.
2. Orange Water and Sewer Authority will retain five (5%) percent of the amount of each estimate until Work covered by the Contract is fifty percent (50%) complete (50% of the Total Contract Amount). If after the Project is deemed fifty percent (50%) complete based upon the Contractor's gross Project invoices, excluding the value of materials stored on and off-site, and the Contractor provides Orange Water and Sewer Authority the following:
 - a. Written verification evidencing fifty percent (50%) completion of the Project;
and,

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- b. Written consent of the surety named in the Project performance and payment bonds agreeing that Orange Water and Sewer Authority shall not retain more than two and one-half percent (2.5%) of the Total Bid Price in retainage from periodic payments due to the Contractor;
- c. Orange Water and Sewer Authority shall reduce retainage to two and one-half percent (2.5%) of the Total Bid Price from future periodic payments if Orange Water and Sewer Authority finds that the Contractor is performing satisfactorily, and any nonconforming Work identified in writing by the Engineer or Orange Water and Sewer Authority (prior to the point of fifty percent (50%) Project completion) has been corrected by the Contractor and accepted by the Engineer or Orange Water and Sewer Authority, whoever provided such prior notice of nonconforming Work. If, however, Orange Water and Sewer Authority determines the Contractor's performance is unsatisfactory, Orange Water and Sewer Authority may reinstate the specified retainage for each subsequent periodic payment.
- d. In addition to the retainage amounts allowed to be held by Orange Water and Sewer Authority, it shall also retain all rights allowed under this Agreement to withhold payment to the Contractor in accordance with the General Conditions and for unsatisfactory job progress, defective or nonconforming construction not remedied, disputed Work, or third-party claims filed against Orange Water and Sewer Authority or reasonable evidence that a third-party claim will be filed.
- e. Within sixty (60) days of receipt by Orange Water and Sewer Authority of (1) an Application for Payment and (2) written consent of the surety, and after City has either (1) received a certificate of Substantial Completion or (2) received beneficial occupancy or use of the Project (if applicable), Orange Water and Sewer Authority shall pay an amount sufficient to increase total payment to Contractor to the Contract Price, less such amounts as Engineer shall determine in accordance with the General Conditions, including up to two hundred fifty percent (250%) of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Orange Water and Sewer Authority shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.
- B. Prior to issuing final payment, the Contractor will furnish to Orange Water and Sewer Authority certification that: All Subcontractors and vendors associated with this Contract have been paid; no liens and/or lawsuits have been placed against the Contractor for this Work; and the total dollar amount has been paid to all Subcontractors, Suppliers, and others associated with this project.

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- C. Upon final completion and acceptance of the Work in accordance with the General Conditions, Orange Water and Sewer Authority shall pay the remainder of the Contract price as recommended by Engineer.

ARTICLE 7 – INTEREST [NOT IN CONTRACT]

ARTICLE 8 - CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Orange Water and Sewer Authority to enter into this Agreement Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
- B. Contractor has visited the Sites, conducted a thorough, alert visual examination of the Sites and adjacent areas, 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. 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.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Sites and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Sites (except Underground Facilities) which have been identified in the General Conditions; and (2) reports and drawings relating to Hazardous Environmental Condition, if any, at or adjacent to the Sites that have been identified in the General Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Contractor has considered the information known to Contractor itself; 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; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no 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.
- G. Contractor is aware of the general nature of work to be performed by Orange Water and Sewer Authority and others at the Sites that relates to the Work as indicated in the Contract Documents.



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- H. 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.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 - CONTRACT DOCUMENTS

9.01 Contents

- A. The Contract Documents consist of all of the items listed in the Table of Contents. See Article 5 of the General Conditions.
- B. The documents listed in Paragraph 9.01 are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in Paragraph 9.01.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.
- E. Coordination of General Conditions, Agreement, and Technical Specifications.
 - 1. All components of the Contract Documents are essential elements of the Contract between the Owner and Contractor, and notwithstanding the requirements of Article 3.03 of the General Conditions, in case of a conflict or contradiction among the General Conditions, Agreement, and Technical Specifications, the following shall be the order of controlling authority as among these documents: The Technical Specifications shall control over the Agreement and the Agreement shall control over the General Conditions.

ARTICLE 10 - MISCELLANEOUS

10.01 Terms

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

10.02 Assignment of Contract

- A. Unless expressly agreed to elsewhere in the Contract, 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, 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



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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. Orange Water and Sewer Authority 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 Orange Water and Sewer Authority 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 Notices and Communications

- A. All notices and other communications required or permitted by Contract shall be in writing and shall be given by personal delivery, email, or certified United States mail (return receipt requested) addressed/email as follows:

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To Orange Water and Sewer Authority:
Attention: Bill T Rosa
Project Manager
Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, North Carolina 27510

To the Contractor:
Attention: _____
Firm Name: _____
Street Address: _____
City, State Zip Code: _____
Phone Number: _____
Email: _____

- B. A change of address, email, or person to receive notices or communications may be made by either party by notice given to the other party. Any notices or communications under Contract shall be deemed given at the time of actual delivery, if it is personally delivered or faxed. If the notices or communications are sent by United States mail, it shall be deemed given upon the third calendar day following the day on which the notices or communications were postmarked, or upon actual delivery, whichever first occurs.

10.06 Technical Data and Other Work

- A. Subsurface and Physical Conditions
No reports of explorations or tests of subsurface conditions at or contiguous to the Sites are known to Orange Water and Sewer Authority or Engineer, that are not included with these documents as an Appendix.
- B. Hazardous Environmental Condition
No reports or drawings related to Hazardous Environmental Condition are known to Orange Water and Sewer Authority or Engineer.
- C. Other Work
Orange Water and Sewer Authority and Engineer are unaware of any other work on the Sites at the time of Notice to Proceed.

10.07 Contractor's Liability Insurance

- A. Workers compensation insurance shall cover employers' liability, \$1,000,000.
- B. Automobile liability insurance shall have a combined single limit not less than \$1,000,000 per occurrence; aggregate limit not less than \$2,000,000 per year.
- C. The policies of insurance required by the General Conditions shall have a combined single limit not less than \$1,000,000 per occurrence; aggregate limit not less than \$2,000,000 per year.

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- D. An Excess Liability Policy naming the contractor or other person who will be performing the activity as insured and also naming Orange Water and Sewer Authority and the Engineer as an additional insured in an amount not less than **[\$4,000,000.00]** for bodily injury, personal injury, property damage and products completed operations. (Coverage shall be at least as broad as provided for in the most current version of the Insurance Services Office Form applicable to such policy.)
- E. Professional liability insurance coverage self-insured retentions/deductibles in excess of \$10,000 must be approved by Orange Water and Sewer Authority's Finance Director.
- F. Professional liability insurance coverage shall have a combined single limit not less than \$2,000,000 per claim applicable to this Contract.
- G. Wherever in this Article the terms "The Insured" and OWNER occurs with respect to coverage in a policy, it shall mean Orange Water and Sewer Authority and its agent and agencies, all municipalities where work is being performed under the Contract, the Engineer, and any other parties specifically designated herein, who shall be named as insured in each policy issued. The insurance policies required herein shall not contain any Third Party Beneficiary Exclusion.

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**CERTIFICATE OF INSURANCE
(Attach)**

See Article 5 of the General Conditions and Article 10.07 herein above for specific requirements.

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DATE: April 2, 2026

POWER OF ATTORNEY
(Attach)



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

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ARTICLE 11 - CERTIFICATE OF ATTORNEY

I hereby certify that I am the duly appointed attorney for Orange Water and Sewer Authority and that I have examined the foregoing instrument and Bond, and insurance documents and I have approved the same as being legal and in proper form.

This _____ day of _____, 20____.

AUTHORITY GENERAL COUNSEL

ARTICLE 12 - CERTIFICATE OF PAYMENTS

I hereby certify that I am the legal and duly appointed Financial Officer for Orange Water and Sewer Authority and that provision for the payment of the moneys to fall due under this agreement has been made by appropriation duly made or by Bonds or notes duly authorized, as required by the Local Government and Fiscal Control Act.

This _____ day of _____, 20____.

BY:

DIRECTOR OF FINANCE



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DATE: April 2, 2026

ARTICLE 13 - CONTRACTOR'S AFFIDAVIT

STATE OF _____

COUNTY OF _____

FOR CORPORATIONS:

THIS IS TO CERTIFY that on this day _____ appeared before me, with whom I am personally acquainted, who, being duly sworn, says that he or she* is the _____ (title of signatory party) and that _____ (name of attesting party) is the Assistant* Secretary of _____, the Corporation described in and which executed the foregoing Contract; that he or she* knows the common seal of said corporation; that the seal affixed to the said instrument is said common seal; that the name of the corporation was subscribed thereto by the said Vice* President and that the said Vice* President and Assistant* Secretary-subscribed their names thereto and said common seal was affixed, all by order of the Board of Directors of said Corporation, and said instrument is the act and Deed of said Corporation.

FOR PARTNERSHIPS AND INDIVIDUALS:

THIS IS TO CERTIFY that on this day _____ appeared before me, with whom I am personally acquainted, who, being duly sworn, says that he or she* is the Owner or Partner* of _____, the entity described in and which executed the foregoing Contract; and that if a Partner, he or she* attests that the consent of all partners was attained before executing said Contract.

Witness my hand and notarial seal, this the ____ day of _____, 20__

Notary Public

My commission expires: _____

* Strike as needed

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ARTICLE 14 - OWNER'S AFFIDAVIT

STATE OF _____

COUNTY OF _____

THIS IS TO CERTIFY that on this day Todd Taylor
_____ personally appeared, and acknowledged before me that
(he or she*) is the _____, of Orange Water and Sewer Authority, and
that, by authority of the Board of its Directors, (he or she*) executed the foregoing document on
its behalf, as its act and deed.

Witness my hand and notarial seal, this the ____ day of _____, 20__

* Strike as needed

Notary Public

My commission expires: _____



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ARTICLE 15 - CONTRACT SIGNATURES

IN WITNESS WHEREOF, said Individual, Partnership or Corporation (circle one) has caused these presents to be signed in its corporate name, its corporate seal to be hereto affixed and attested by its secretary, and the Owner has caused these presents to be executed in its name by the Executive Director, attested by its Secretary and its Official Corporate Seal to be affixed all by order of its Board of Directors as of the day and year first above written.

Individuals or Partnerships Sign Below

Printed Legal Name of Individual or Partners:

Signature(s):

(SEAL)

(SEAL)

(SEAL)

ATTEST:

Secretary

Partnership Name (if applicable)

Corporations Sign Below

Name of Corporation: _____

ATTEST

Signature: _____

Title: _____

Corporate Secretary or Assistant Secretary

(SEAL)

Officer's Printed Name: _____

OWASA Sign Below



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ORANGE WATER AND SEWER AUTHORITY

By: _____
Todd Taylor, Executive Director

IMPORTANT: 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 Owner and Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment on the Owner's and Contractor's Affidavits which are found under Article 13 and Article 14 herein above this page.



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PROJECT: Galvanized Service Line Replacement Program
DATE: April 2, 2026

PERFORMANCE BOND AND PAYMENT BOND

Date of Contract: _____

Contract Name and Number: "Galvanized Service Line Replacement Program" CIP #275-01

Name of Principal (Name of Contractor): _____

Name of Surety: _____

Name and Address of Surety's NC Resident Agent: _____

Contracting Body: Orange Water and Sewer Authority

Amount of Performance Bond (in words and numerals): _____
_____ dollars (\$_____)

Amount of Payment Bond: same dollar amount as the dollar amount of Performance Bond.

Date of Execution of these Bonds: _____

* * * * *

KNOW ALL PERSONS BY THESE PRESENTS, that we, the PRINCIPAL AND SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, administrators, and successors, jointly and severally, by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain Contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may



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hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue. As used hereinabove, "modifications" shall include, without limitation, changes (including, without limitation, changes granting extensions of time) and additions to with respect to the Work, scope of work, and specifications.

* * * * *

KNOW ALL PERSONS BY THESE PRESENTS, that we, the PRINCIPAL AND SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain Contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the Work provided for in said Contract, and any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue. As used hereinabove, "modifications" shall include, without limitation, changes (including, without limitation, changes granting extensions of time) and additions to or with respect to the Work, scope of work, and specifications.

* * * * *

The Performance Bond and the Payment Bond are being combined here only for purposes of convenience in signing and acknowledging and the obligations of the Principal and of the Surety are the same as if the bonds were on separate documents. Each bond is in the dollar amount stated above, and the amounts of these bonds are not combined. The Surety agrees that both of these bonds are fully binding on it whether or not the Principal executes these bonds. These bonds are given pursuant to Article 3 of Chapter 44A of the NC General Statutes.

CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument (for both the Performance Bond and the Payment Bond) under their several seals on the date of execution indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST:

Principal Secretary
(SEAL)

Principal

By: _____(1)

By: _____(1)

By: _____(1)

(Address)

Witness as to Principal

(Phone Number)

(Surety)

ATTEST:

N. C. Resident Agent
(SEAL)

By: _____
Attorney-in-Fact

Witness as to Surety

(Address)

(Address)

(Phone Number)

(1) If Contractor is a Partnership, all partners should execute Bond

(Note: If you use a raised corporate seal, press hard enough to make it legible.)



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

PERFORMANCE AND PAYMENT BOND - POWER OF ATTORNEY

(Attach)

CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

**ACKNOWLEDGEMENT OF CONTRACTOR'S EXECUTION OF CONTRACT,
PERFORMANCE BOND AND PAYMENT BOND**

State of _____ County of _____

I, _____, a notary public for the aforesaid county and state, certify that personally appeared before me this day, and acknowledged that he or she is _____ Secretary of _____, a corporation, and that by authority duly given and as the act of the corporation, the foregoing (1) Contract with Orange Water and Sewer Authority and (2) Performance Bond and Payment Bond with respect to the Contract, were signed in its name by its _____ President, whose name is _____, sealed with its corporate seal, and attested by him/herself as its said Secretary or Assistant Secretary.

This the ____ day of _____ .

NOTARY PUBLIC

My commission expires: _____

**ACKNOWLEDGEMENT OF SURETY'S EXECUTION OF
PERFORMANCE BOND AND PAYMENT BOND**

State of _____ County of _____

I, _____, a Notary Public for said county and state, certify that _____, personally appeared before me this day and acknowledged that he or she is Attorney in Fact for _____, the Surety named in the foregoing Performance Bond and Payment Bond, in both of which bonds the contracting body is Orange Water and Sewer Authority, and that he or she executed said bonds, under the seal of said Surety, on behalf of said Surety.

This the ____ day of _____ .

NOTARY PUBLIC

My commission expires: _____



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

NON-DISCRIMINATION CLAUSE

It is specifically agreed as part of the consideration of the signing of this Contract that the parties hereto, their agents, officials, employees or servants will not discriminate in any manner on the basis of age, handicap, race, color, creed, sexual orientation or national origin with reference to the subject matter of this Contract, no matter how remote.

This provision being incorporated for the benefit of the Orange Water and Sewer Authority and its residents may be enforced as set out in said ordinances; enforcement of this provision shall be by action for specific performance, injunctive relief, or other remedy as by law provided.

This provision shall be binding on the successors and assigns of the parties hereto with reference to the subject matter of this Contract.

SIGNATURE FOR CORPORATION

Corporate Name	
ATTEST:	
	BY:
Secretary* / Assistant Secretary*	President* / Vice President*
(Printed Name)	(Printed Name)

(Corporate Seal)

INDIVIDUAL OR PARTNERSHIP SIGNATURE

	BY: (SEAL)
	(Printed Name)

WITNESS:

(Printed Name)

*choose one

-END OF DOCUMENT-





AIA[®] Document G706A[™] – 1994

Contractor's Affidavit of Release of Liens

OWNER	☐
ARCHITECT	☐
CONTRACTOR	☐
SURETY	☐
OTHER	☐

Lead and Copper Rule Revisions Compliance Consulting Assistance

PROJECT: *(Name and address)*

Orange Water and Sewer Authority
400 Jones Ferry Rd, Carrboro, NC 27510

TO OWNER: *(Name and address)*

ARCHITECT'S PROJECT NUMBER:

CONTRACT FOR: General Construction

CONTRACT DATED:

STATE OF: North Carolina
COUNTY OF: Orange county

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY:

(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

Instructions for AIA Document G706A™

Contractor's Affidavit of Release of Liens - 1994 Edition

A. General Information

1. Purpose

This document is intended for use as companion to AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims.

2. Related Documents

This document may be used with most of AIA's Owner-Contractor agreements and general conditions, such as A201 and its related family of documents. As noted above, this is a companion document to AIA Document G706.

3. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

4. Reproductions

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B. Changes From the Previous Edition

A cross reference to AIA Document A201 has been deleted to permit the use of G706A with other families of AIA documents, including construction management, interiors and design/build.

C. Completing the G706A Form

GENERAL: The Owner-Contractor Agreement is the usual source of required information such as the contract date and the names and addresses of the Owner, Project and Contractor.

ARCHITECT'S PROJECT NO.: This information is typically supplied by the Architect and entered on the form by the Contractor.

CONTRACT FOR: This refers to the scope of the contract, such as "General Construction" or "Mechanical Work".

AFFIDAVIT: Indicate the state and county where the Affidavit is made. This is not necessarily the same location as the Project, but should be the location where the notary is authorized to administer sworn oaths. If there are any EXCEPTIONS to the statement, these should be listed in the space provided; otherwise enter as "None". It may be a stipulation of the Contract Documents that the Owner has the right to require the Contractor to furnish a bond to cover each exception listed on the Affidavit.

SUPPORTING DOCUMENTS: The AIA does not publish a "Release or Waiver of Liens" for contractors or subcontractors because of the great diversity of releases or waivers permitted by various state mechanics lien laws. Forms for such purposes may be available from local contractors' associations or may be written with the assistance of legal counsel.

D. Execution of the Document

The Notary Public should administer a sworn oath to the Contractor in reference to the written statements appearing on G706A, and should duly sign and seal this document containing the Contractor's signature. G706A should be signed by the Contractor or the Contractor's authorized representative.

AIA[®] Document G706[™] – 1994

Contractor's Affidavit of Payment of Debts and Claims

OWNER	☐
ARCHITECT	☐
CONTRACTOR	☐
SURETY	☐
OTHER	☐

Lead and Copper Rule Revisions Compliance Consulting Assistance

PROJECT: *(Name and address)*

Orange Water and Sewer Authority
400 Jones Ferry Rd, Carrboro, NC 27510

TO OWNER: *(Name and address)*

ARCHITECT'S PROJECT NUMBER:

CONTRACT FOR: General Construction

CONTRACT DATED: 12/1/04

STATE OF: North Carolina
COUNTY OF: Orange County

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose

Indicate Attachment ☐ Yes ☐ No

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens (AIA Document G706A).

CONTRACTOR: *(Name and address)*

BY: _____
(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

Instructions for AIA Document G706™

Contractor's Affidavit of Payment of Debts and Claims - 1994 Edition

A. General Information

1. Purpose

This document is intended for use when the Contractor is required to provide a sworn statement verifying that debts and claims have been settled, except for those listed by the Contractor under "EXCEPTIONS" in the document. G706 is typically executed as a condition of final payment.

2. Related Documents

This document may be used with most of the AIA's Owner-Contractor agreements and general conditions, such as A201 and its related family of documents. G706 also requires the attachment of several supporting documents, including G706A, Contractor's Affidavit of Release of Liens, and G707, Consent of Surety to Reduction in or Release of Retainage.

3. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

4. Reproductions

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B. Changes from the Previous Edition

A cross-reference to AIA Document A201 has been deleted to permit the use of G706 with other families of AIA documents, including construction management, interiors and design/build.

C. Completing the G706 Form

GENERAL: The Owner-Contractor Agreement is the usual source of required information such as the contract date and the names and addresses of the Owner, Project and Contractor.

ARCHITECT'S PROJECT NO.: This information is typically supplied by the Architect and entered on the form by the Contractor.

CONTRACT FOR: This refers to the scope of the contract, such as General Construction or Mechanical Work.

AFFIDAVIT: Indicate the state and county where the Affidavit is made. This is not necessarily the same location as the Project, but should be the location where the notary is authorized to administer sworn oaths. If there are any **EXCEPTIONS** to the statement, these should be listed in the space provided; otherwise enter as "None". It may be a stipulation of the Contract Documents that the Owner has the right to require the Contractor to furnish a bond to cover each exception listed on the Affidavit.

SUPPORTING DOCUMENTS: The AIA documents listed as attachments to the G706 form should be of the same (current) edition date as G706. The AIA does not publish a "Release or Waiver of Liens" for contractors or subcontractors because of the great diversity of releases or waivers permitted by various state mechanics lien laws. Forms for such purposes may be available from local contractors' associations or may be written with the assistance of legal counsel.

D. Execution of the Document

The Notary Public should administer a sworn oath to the Contractor referencing the written statements appearing on G706, and should duly sign and seal this document containing the Contractor's signature. G706 should be signed by the Contractor or the Contractor's authorized representative.

AIA[®] Document G707[™] – 1994

Consent Of Surety to Final Payment

OWNER	☐
ARCHITECT	☐
CONTRACTOR	☐
SURETY	☐
OTHER	☐

Lead and Copper Rule Revisions Compliance Consulting Assistance

PROJECT: *(Name and address)*

Orange Water and Sewer Authority
400 Jones Ferry Rd, Carrboro, NC 27510

TO OWNER: *(Name and address)*

ARCHITECT'S PROJECT NUMBER:

CONTRACT FOR: General Construction

CONTRACT DATED:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

on bond of
(Insert name and address of Contractor)

, SURETY,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of
any of its obligations to
(Insert name and address of Owner)

, CONTRACTOR,

as set forth in said Surety's bond.

, OWNER,

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

Attest:
(Seal):

(Printed name and title)

Instructions for AIA Document G707™

Consent of Surety to Final Payment - 1994 Edition

A. General Information

1. Purpose

This document is intended for use as a companion to AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims, on construction projects where the Contractor is required to furnish a bond. By obtaining the Surety's approval of final payment to the Contractor and its agreement that final payment will not relieve the Surety of any of its obligations, the Owner may preserve its rights under the bond.

2. Related Documents

This document may be used with most of the AIA's Owner-Contractor agreements and general conditions, such as A201 and its related family of documents. As noted above, this is a companion document to AIA Document G706.

3. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

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B. Changes from the Previous Edition

Changes in the location of various items of information were made, without revision to the substance of the document.

C. Completing the G707 Form

GENERAL: The bond form is the usual source of required information such as the contract date and the names and addresses of the Surety, Owner, Contractor and Project.

ARCHITECT'S PROJECT NO.: This information is typically supplied by the Architect and entered on the form by the Contractor.

CONTRACT FOR: This refers to the scope of the contract, such as "General Construction" or "Mechanical Work".

D. Execution of the Document

The G707 form requires both the Surety's seal and the signature of the Surety's authorized representative.

CIP NO.: **275-01**

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

DOCUMENT 00 52 16

FORM OF SUBMITTALS

The forms listed below and included in this Section are to be used in accordance with the requirements noted in other Sections and included herein. The first five digits of the form number generally refers to the Section number which would provide the most information or instruction regarding that form. Forms such as the Bid Form are included in the Section to which it pertains.

Any form referred to in the Contract Documents but not contained in the Project Manual should be requested from Orange Water and Sewer Authority and the failure to include a required form herein does not excuse the Contractor from the requirement to use that form.

Form #	Title
00300-A	Notice of Award
00500-A	Notice to Proceed
00700-A	Certificate of Substantial Completion
00700-B	MBE Documentation for Contract Payments
00700-F	Application and Certification for Progress Payment
00700-G	Work Change Directive
00700-H	Field Order
00700-I	Change Order
00700-C	AIA Document G706 Contractor's Affidavit of Payments of Debts & Claims
00700-D	AIA Document G706A Contractor's Affidavit or Release of Liens
00700-E	AIA Document G707 Consent of Surety Company to Final Payment
	NC Sales & Use Tax Affidavit



CIP NO.: **275-01**

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

NOTICE OF AWARD

CIP # 275-01

To: _____

From: Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

Project: Galvanized Service Line Replacement Program

Contract Amount: \$ _____

You are hereby notified that Orange Water and Sewer Authority has accepted your Bid dated _____ for the above named project in response to its Advertisement for Bids.

You are required by the Instructions to Bidders to execute the formal Contract with Orange Water and Sewer Authority and to furnish Performance and Payment Bonds and evidence of insurance (per Article 6 of the General Conditions and Agreement Section 10.07) within 10 calendar days from the date of delivery of this Notice.

If you fail to execute said Contract and to furnish said bonds and insurance within 10 calendar days from the date of delivery of this Notice, Orange Water and Sewer Authority shall be entitled to consider all of your rights arising out of its acceptance of your Bid as abandoned and to award the Work covered by the Advertisement to Bids to another, to re-advertise the Work, or otherwise dispose thereof as Orange Water and Sewer Authority sees fit.

Dated this ____ day of Month, YYYY

By: _____

By: _____

Date: _____

Date: _____

Title: Finance Officer

Title: Director of Engineering

This Instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act

Orange Water and Sewer Authority

ACCEPTANCE OF NOTICE BY CONTRACTOR

Receipt of this Notice of Award is hereby acknowledged.

By: _____

Date: _____

Title: _____



Orange Water & Sewer Authority

CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

NOTICE TO PROCEED

PO # _____

CIP # 275-01 _____

To: _____

From: Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

Project: Galvanized Service Line Replacement Program

Contract Amount: _____

You are hereby notified that the Contract Time(s) for the above Project will commence to run on _____. You are directed to commence work on the referenced Project by that date. You are to complete the Work on or before the completion dates noted below.

The Contract Time(s) based on the durations set forth in Article 4 of the Agreement are:

Substantial Completion of Milestone Number 1: _____

Substantial Completion of Milestone Number 2: _____

Substantial Completion of All Work: _____

Final Completion of All Work: _____

Article 4 of the Agreement provides for the assessment of Liquidated Damages for each consecutive calendar day the Work remains incomplete after the above completion dates.

By: _____

Title: Director of Engineering

Date: _____

Contractor:

By: _____

Title: _____

Date: _____

CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 2, 2026

**CERTIFICATE OF
SUBSTANTIAL COMPLETION**

CIP # 275-01

To: _____

From: Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

Project: Galvanized Service Line Replacement Program

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor and Engineer and the Work is hereby declared to be substantially complete in accordance with the Contract Documents on [INSERT DATE].

A tentative list of items to be completed or corrected will be issued as the punch list. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of Contractor to complete all the Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities and warranties shall be as follows:

Owner _____

Contractor _____

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

RECOMMENDATION OF ENGINEER

By: _____ Title: _____
Firm: _____ Date: _____

ACCEPTANCE BY CONTRACTOR

By: _____ Title: _____
Firm: _____ Date: _____

APPROVAL BY OWNER

By: _____ Title: _____
Firm: Orange Water and Sewer Authority Date: _____



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

MBE FIRM NAME	* INDICATE TYPE OF MBE	AMOUNT PAID THIS MONTH	TOTAL PAYMENTS TO DATE	TOTAL AMOUNT COMMITTED

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: _____ Approved/Certified By: _____
Name

Title

Signature

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT



Orange Water & Sewer Authority

Line CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: April 2, 2026

APPLICATION AND CERTIFICATION FOR PROGRESS PAYMENT

PO # _____

To: Orange Water & Sewer Authority (Owner) Application #: _____

Project: _____

Period Covered: From: _____ To: _____

Application for Payment:

This Application for Progress Payment is submitted in accordance with the General Conditions of the Contract Documents. Application is hereby made for the progress payment in the amount indicated below:

	<u>PROGRESS PAYMENT CALCULATION</u>	
A.	Original Contract Price (Schedule of Values)	\$ 0.00
B.	Net Total Value of Executed Change Orders to Date	0.00
C.	<u>CONTRACT VALUE TO DATE (A+B)</u>	0.00
D.	Value of Completed Change Order Work to Date	0.00
E.	Value of Completed Original Contract Work and Stored Materials to Date	0.00
F.	<u>TOTAL VALUE OF COMPLETED WORK AND STORED MATERIALS TO DATE (D+E)</u>	0.00
G.	<u>REMAINING CONTRACT BALANCE (C-F)</u>	0.00
	<u>CURRENT PERIOD & RETAINAGE</u>	
H.	<u>VALUE OF WORK COMPLETED THIS PERIOD (not cumulative)</u>	0.00
I.	Retainage Held This Period (5% of Line H)	0.00
J.	Cumulative Retainage Held to Date (including this period)	0.00
K.	Retainage Released This Period (partial or final)	0.00
L.	<u>REMAINING RETAINAGE BALANCE (J - K)</u>	0.00
	<u>OTHER ADJUSTMENTS</u>	
M.	Other Withholding (if any)	0.00
N.	Total Value of Previous Progress Payments (excluding current retainage release)	0.00
	<u>FINAL CALCULATION</u>	
O.	<u>TOTAL DEDUCTIONS (L + M + N)</u>	0.00
P.	<u>AMOUNT DUE THIS APPLICATION (F - O)</u>	\$ 0.00
Q.	<u>ACTUAL PAYMENT APPROVED BY OWASA (IF DIFFERENT FROM P)</u>	\$ 0.00

Final Retainage Payment Declaration

☐ This is the final payment request. All remaining retainage of \$ _____ is being released to the Contractor.

CONTRACTOR CERTIFICATION:

The undersigned Contractor certifies that (1) all previous payments received from Owner on account of Work done under the Contract referred to above have been applied to discharge, in full, obligations of Contractor incurred in connection with Work covered by prior Applications for Payment numbered 1 through ____ inclusive and (2) title to



Orange Water & Sewer Authority

Line CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

all materials and equipment incorporated in said Work or otherwise listed in, or covered by, this Application for Progress Payment will pass to Owner at time of payment free and clear of all liens, claims, security interests and encumbrances (except such as covered by Bond acceptable to Owner).

Firm: _____ **By:** _____

Title: _____ **Date:** _____

ENGINEER CERTIFICATION:

Payment of the above AMOUNT DUE THIS APPLICATION is hereby recommended.

Firm: _____ **By:** _____

Title: _____ **Date:** _____

OWASA APPROVAL:

Payment of the above AMOUNT DUE THIS APPLICATION is hereby approved.

OWASA Account #: 6000

PO #: _____

By: _____

Date: _____



CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

WORK CHANGE DIRECTIVE

PO # _____

WCD # _____

Project: Galvanized Service Line Replacement Program Date: _____

Owner: Orange Water and Sewer Authority Engineer: _____

Contractor: _____

Title: _____

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

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

Method of determining change in Contract Price:

_____ Time and materials
_____ Unit Prices
_____ Cost plus fixed fee
_____ Other: _____

Method of determining change in Contract Time:

_____ Contractor's records
_____ Inspector's records
_____ Other: _____

Estimated change in Contract Price:

\$ _____. This estimated change in Contract Price is not to be exceeded without further authorization.

Estimated change in Contract Time:

_____ days. This estimated change in Contract Time is not to be exceeded without further authorization.

RECOMMENDATION OF WORK CHANGE DIRECTIVE

By: _____
Firm: _____
Date: _____

By: _____
Firm: _____
Date: _____

OWASA APPROVAL OF WORK CHANGE DIRECTIVE

By: _____

Date: _____



Orange Water & Sewer Authority

CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

FIELD ORDER

PO # _____

FO # _____

Project: Galvanized Service Line Replacement Program **Date:** _____

Owner: Orange Water and Sewer Authority **Engineer:** _____

Contractor: _____

This Field Order is issued to interpret/clarify the Contractor Documents, order minor changes in the Work, and/or to documents trade-off agreements. Owner and Contractor hereby agree that the work described in this Field Order is to be accomplished without changes in Contract Price, Contract Time, claim or other costs. Contractor is to execute this Field Order and return it to Owner for execution within 48 hours.

Title: _____

Description:

Attachments:

Owner: _____

Contractor: _____

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____



Orange Water & Sewer Authority

CIP NO.: 275-01

PROJECT: Galvanized Service Line Replacement Program

DATE: April 2, 2026

CHANGE ORDER

PO # _____

CO # _____

To: _____

From: Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

PROJECT: Galvanized Service Line Replacement Program

You are hereby notified that OWASA is issuing **Change Order #** _____ for the above referenced contract under the provisions of Article 10 of the General Conditions. This change is subject to all the terms, conditions and provisions of the original contract.

Item #	Description Of Changes (Increases)	Amount
a.	Insert descriptions here	\$0,000.00
b.	Insert descriptions here	\$0,000.00
c.	Insert descriptions here	\$0,000.00
Subtotal of these changes		\$000,000.00
Contract Amount before modified		\$000,000.00
Contract Amount as modified		\$000,000.00

Description of Change: Description of each increase and associated cost breakdowns are attached, along with all related project communications.

Contract performance period changes: _____ (Unchanged / Increased / Decreased)

RECOMMENDATION OF CHANGE ORDER (BY CONSULTANT)

The change described above is hereby recommended:

By: _____

Title: _____

Firm: _____

Date: _____

ACCEPTANCE OF CHANGE ORDER (BY CONTRACTOR)

The change described above is accepted and hereby acknowledged:

By: _____

Title: _____

Firm: _____

Date: _____

APPROVAL OF CHANGE ORDER (BY OWNER)

By: _____

By: _____

By: _____

Date: _____

Date: _____

Date: _____

Title: Finance Officer

Title: Executive Director

Title: Director of Engineering

This Instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act

Orange Water and Sewer Authority

Orange Water and Sewer Authority



Orange Water & Sewer Authority

CIP NO.: 275-01
PROJECT: Galvanized Service Line Replacement Program
DATE: March 4, 2026

DOCUMENT 00 91 13

ADDENDA

ADDENDUM NUMBER [_____]

DATE: _____

PROJECT: Galvanized Service Line Replacement Program

OWASA CIP NUMBER: 275-01

OWNER: ORANGE WATER AND SEWER AUTHORITY

ENGINEER: _____

TO: _____

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated _____, Addendum Number _____ issued _____, with amendments and additions noted herein below.

Acknowledge receipt of this Addendum in the space provided in the Bid form. Failure to do so may disqualify the Bidder.

This Addendum consists of _____ pages:

CHANGES TO THE SPECIFICATIONS:

1. _____.

CHANGES TO THE DRAWINGS:

1. DRAWING ____ - _____

-END OF DOCUMENT-



*****THIS DOCUMENT HAS BEEN EDITED AND REVISED BY ORANGE WATER AND SEWER
AUTHORITY UNDER PERMISSION FROM THE ENGINEERS JOINT CONTRACT DOCUMENTS
COMMITTEE, MAY 5, 2014*****

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC's Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition). The full EJCDC Construction series of documents is discussed in the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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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 form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *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, or both; 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, or both; 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; or (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. 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), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree 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 the 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. ***Document* – A specific section of the Project Manual or a reference to a specific section of the Project Manual as noted with the accompanying numeric reference.**
20. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
21. *Engineer*—The individual or entity named as such in the Agreement.
22. *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.
23. ***Geotechnical Data Report (GDR)* — The factual report that collects and presents data regarding actual subsurface conditions at or adjacent to the Site, including Technical Data and other geotechnical data, prepared by or for Owner in support of the Geotechnical Baseline Report. The GDR’s content may include logs of borings, trenches, and other site investigations, recorded measurements of subsurface water levels, the results of field and laboratory testing, and descriptions of the investigative and testing programs. The GDR does not include an interpretation of the data. If opinions, or interpretive or speculative non-factual comments or statements appear in a document that is labeled a GDR, such opinions, comments, or statements are not**

operative parts of the GDR and do not have contractual standing. Subject to that exception, the GDR is a Contract Document.

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. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, 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 the 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. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, ~~Supplementary Conditions~~, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
34. **Property Owner – The individual, partnership, co-partnership, limited liability corporation firm, company, corporation, unincorporated association, organization, joint stock company, trust, estate, institution, governmental entity, or any other entity that owns the property, or controls management or activities of the property where Work or a portion of the Work is performed.**
35. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site, **or any part thereof to make any and all observations of the Work performed, acting under direct supervision of the Engineer.** As used herein,

the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.

36. *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.
37. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
38. *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.
39. *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.
40. *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 furnished by Owner which are designated for the use of Contractor.
41. *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.
42. *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.
43. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, **and approved by the 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. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
44. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
45. **Superintendent – The authorized representative of the Contractor who is assigned to oversee the work forces responsible for performing the Work in accordance with the Contract Documents.**
46. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions. **[Supplementary Conditions have been inserted in the EJCDC General Conditions. Any deletions to the standard C-700 language are noted by having a line drawn through them (i.e. interlining; ex. Supplementary. Any added (supplementary) language is noted by the text being in bold font and underlined (this sentence being an example).]**
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

48. *Technical Data*—Those items expressly identified as Technical Data in the ~~Supplementary~~ **General** Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
49. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
50. *Unit Price Work*—Work to be paid for on the basis of unit prices.
51. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; 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.
52. *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 the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the 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:*

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

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. 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. 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.

G. **Include:**

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

H. **Persistently Fails:**

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

G. **Pronouns, Numbers, and Titles:**

1. **Unless the context otherwise requires all personal pronouns used in the Contract Documents shall include all other genders, and the singular shall include the plural**

and vice versa. Titles and headings of articles, paragraphs, subparagraphs, sections, subsections, parts, subparts, etc., in the Contract Documents are for convenience only, and neither limit nor amplify the provisions.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. ~~*Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.~~

***Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies of insurance (including all endorsements, and identification of applicable self-insured retentions and deductibles) required to be provided by Contractor in Article 6. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.**

- C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the ~~Supplementary~~ **General** Conditions or otherwise), 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~~ **free of charge, 10 copies of the Contract Documents** (including one fully executed 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 specifically 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.

- B. **Priority List of Sites: The priority list of Sites for the Project shall be approved by the Engineer or the Resident Project Representative. Orange Water and Sewer Authority reserves the right to alter the priority list of Sites. The Contractor will be given notice in writing of any change in the priority list of Sites.**

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 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items 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 items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall 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.

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, shall mean 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, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 Documents issued pursuant to Paragraph 11.01.

- a. The accuracy or exactness of grades, elevations, dimensions, or locations given or any Drawings or the Work installed by other contractors, is not guaranteed by Owner.
- b. Included under Contractor's duty under the first sentence of Paragraph 3.03.A.1 are:
 - 1) to satisfy itself as to the accuracy of all grades, elevations, dimensions, and locations, and
 - 2) in all cases of interconnection of the Work to be done by Contractor with the rest of the Project, it shall verify at the Site all dimensions needed to make proper interconnections.
- c. Contractor shall promptly rectify all errors due to its failure to so verify all such grades, elevations, locations, or dimensions without additional cost to Owner. No extra charges or compensation shall be allowed on account of differences between actual dimensions and the dimensions indicated on the Drawings.
- d. Contractor acknowledges:
 - 1) the Contract Documents are sufficient to determine the cost of the Work;
 - 2) it has had sufficient opportunity to visit the Site and to examine all conditions, including subsurface and physical conditions affecting the Work;
 - 3) it has had sufficient opportunity to examine the Contract Documents for errors, inconsistencies, and omissions;
 - 4) the Contract Documents are complete and unambiguous;
 - 5) the Contract Times are reasonable and sufficient to complete the Work.
- e. If the statements in Paragraph 3.03.A.1.d are not accurate, Contractor accepts any risk in connection with making them.
- f. Contractor shall evaluate and satisfy itself as to the conditions and limitations under which the Work is to be performed, including (to the extent they are pertinent):
 - 1) the location, condition, layout, and nature of the Site and surrounding area;
 - 2) generally prevailing climatic conditions;
 - 3) anticipated labor supply costs;
 - 4) availability and cost of materials, tools, and equipment, and
 - 5) other similar issues.
- g. To the extent that it may be appropriate for the proper execution of its subcontract, Contractor shall cause each Subcontractor to do the evaluation described in Paragraph 3.03.A.1.f.

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

- 2. *Contractor's Review of Contract Documents:* 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 Documents 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, **unless otherwise provided in the Contract Documents, or by Laws or Regulations, or common law.**

B. *Resolving Discrepancies:*

- 1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall 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).
- 2. **Owner and Contractor shall do all acts, and shall make, execute, and deliver such written instruments, as shall from time to time be reasonably required to carry out the provisions of the Contract Documents, or between the Contract Documents and applicable standards, specifications, manuals, or Laws or Regulations cannot be resolved by use of provisions of the Contract Documents as described in Paragraph 3.03.B.1, Contractor shall:**
 - a. **provide the better quality or greater quantity of Work or**
 - b. **comply with the more stringent requirement**
- 3. **Paragraph 3.03.B.2 shall not relieve the Contractor of any obligations otherwise imposed on it.**

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer 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 thereunder.

- 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 give written notice to Owner and Contractor 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 editions, 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 shall preclude 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 thirtieth 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 sixtieth day after the day of Bid opening or the thirtieth 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 shall be done at the Site prior to such date.
- B. The Contractor shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, gas, cable, fiber optic, sewers, etc.) in accordance with the North Carolina Underground Utility Safety and Damage Prevention Act. This includes notification to the North Carolina 811 at least three (3) days but not more than twelve (12) full working days (excluding Saturdays, Sundays, and legal holidays) before work is to be performed with significantly detailed information to allow for ease of locating by all utilities. The University of North Carolina Chapel Hill must be contacted

ten (10) working days in advance of any work taking place on campus so that campus staff can identify locations of existing services.

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 shall 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 shall 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 the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- 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. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall 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 utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 4. acts of war or terrorism.
- D. 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.
 - E. Paragraph 8.03 governs 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.
 - F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times 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.
 - G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- 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.
- D. **The Owner will obtain a right-of-entry for each Site located on private property. No Work shall commence on a private property Site until the Contractor has been given a copy of the executed right-of-entry for that Site and the Contractor has been given permission to begin Work on the Site from the Engineer or Resident Project Representative. The Owner is solely responsible for obtaining rights-of-entry.**
- E. **The Contractor shall have no more than one (1) uncompleted Site ongoing at any time, unless authorized by the Engineer or Resident Project Representative. Prior to moving to the next Site, the Contractor shall receive permission from the Engineer or Resident Project Representative.**
- F. **The Owner will obtain all encroachment agreements necessary for the completion of the Work. The Contractor shall become familiarized with all the provisions of the encroachment agreements, if any, required for the Contract. The Engineer or Resident**

Project Representative will provide copies of the encroachment agreements. The Owner is solely responsible for obtaining encroachment agreements.

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

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

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

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; 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 7.12, 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 at law; 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 shall conform to applicable Laws and Regulations.

- C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site 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~~ **General** Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); 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~~ **General** 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 Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

C. Reliance by Contractor on Technical Data Authorized:

Contractor may rely upon the accuracy of the Technical Data contained in such reports and drawings, but such reports and drawings are not Contract 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; or**
- 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or**

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

- D. The Contractor shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, gas, cable, fiber optic, sewers, etc.) in accordance with the North Carolina Underground Utility Safety and Damage Prevention Act. This includes notification to the North Carolina 811 at least three (3) days but not more than twelve (12) full working days (excluding Saturdays, Sundays, and legal holidays) before work is to be performed with significantly detailed information to allow for ease of locating by all utilities. The University of North Carolina Chapel Hill must be contacted ten (10) working days in advance of any work taking place on campus so that campus staff can identify locations of existing services.

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 either:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
 2. is of such a nature as to require a change in the Drawings or Specifications; or
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 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 the necessity of Owner's obtaining 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 above; 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. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, 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 conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
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; or
 - 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 as 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, or both, then any such adjustment shall 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, or both, 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.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the ~~Supplementary~~ **General** Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

- c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. 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 in the Contract Documents, or was not shown or indicated 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), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; 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 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. *Possible Price and Times Adjustments:*
 - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, 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. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - 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;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. 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, or both, then any such adjustment shall 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, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

A. ~~Reports and Drawings:~~ The ~~Supplementary~~ General Conditions identify:

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

No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

~~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 Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. 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; or~~
- ~~2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or~~
- ~~3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.~~

C. Contractor shall not be responsible for 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, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, 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.
- 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 or 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.H shall obligate 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 shall obligate 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 all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, ~~the Supplementary Conditions~~, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the ~~Supplementary~~ **General** Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, 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 shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within ~~20~~ **five (5)** days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. 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.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

- A. ~~Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.~~ **Wherever in this Article the terms "The Insured" and Owner occurs with respect to coverage in a policy, it shall mean the Owner and its agent and agencies, all municipalities where Work is being performed under the Contract, the Engineer, and any other parties specifically designated herein, who shall be named as**

insured in each policy issued. The insurance policies required herein shall not contain any Third Party Beneficiary Exclusion.

- 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 **of North Carolina**, 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~~ **General** Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
1. **Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.**
 2. **Both the certificates of insurance and additional insured endorsement shall be originals and shall be approved by the Owner's Finance Director before Contractor can begin Work under this Contract.**
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, ~~in the Supplementary Conditions~~, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- ~~D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements 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 and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.~~
- E. Failure of Owner ~~or Contractor~~ to demand such certificates or other evidence of the ~~other party's~~ **Contractor's** full compliance with these insurance requirements, or failure of Owner ~~or Contractor~~ to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the **Contractor's** ~~other party's~~ obligation to obtain and maintain such insurance.
- F. If ~~either party~~ **Contractor** does not purchase or maintain all of the insurance required ~~of such party by~~ the Contract, ~~such party~~ **Contractor** shall notify the ~~other party~~ **Owner** 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.

- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect 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 shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.
- K. The Contractor shall not commence Work under the Contract until it has obtained all insurance required under this Article and the Owner has approved such insurance, nor shall the Contractor allow any Subcontractor to commence Work on its Subcontract until all similar insurance required of the Subcontractor has been so obtained and approved. Evidence of the required coverage shall be submitted not later than fifteen (15) days from delivery of the Notice of Award to Contractor.
- L. Provision of some types of insurance by a Subcontractor may be waived, at the option of the Owner, where it is deemed that adequate coverage is provided by the Contractor's insurance.
- M. Subcontractors must, in all cases, provide Workers' Compensation and Employer's Liability Insurance and Motor Vehicle Liability Insurance.
- N. One (1) copy of each such insurance policy and certificates indicating each type of coverage mentioned, and the correlation between the insurance furnished and that required, shall be filed with each of The Insured.
- O. All policies relating to this Contract shall be so written that each of The Insured shall be notified by the carrier of cancellation or change at least thirty (30) days prior to the effective date of such cancellation or change. Renewal certificates covering the renewal of all policies expiring during the life of the Contract shall be filed with each of The Insured not less than sixty days before the expiration of such policies.
- P. Contractor shall notify Owner of the filing of any claim arising from Work under the Contract within thirty (30) days of the filing of such claim.

6.03 Contractor's Insurance

- A. *Workers' Compensation:* 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. *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:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 2. claims for damages insured by reasonably available personal injury liability coverage.
 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
 - a. ~~Such insurance shall be maintained for three years after final payment.~~
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary General Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Broad form property damage coverage.
 4. Severability of interest.
 5. Underground, explosion, and collapse coverage.
 6. Personal injury coverage.
 7. ~~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); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.~~
 8. ~~For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.~~
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *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. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

- F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the ~~Supplementary~~ **General Conditions**; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *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. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
 2. be written for not less than the limits of liability provided in this Article ~~and in the Supplementary Conditions~~, or required by Laws or Regulations, whichever is greater.
 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 4. remain in effect at least until final payment (and longer if expressly required in this Article) 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 Documents.
 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

<u>State:</u>	<u>Statutory</u>
<u>Federal, if applicable (e.g., Longshoreman's):</u>	<u>Statutory</u>
<u>Jones Act coverage, if applicable:</u>	
<u>Bodily injury by accident, each accident</u>	<u>\$ XXXXXXXXXXXXN/A</u>
<u>Bodily injury by disease, aggregate</u>	<u>\$ XXXXXXXXXXXXN/A</u>
<u>Employer's Liability:</u>	
<u>Bodily injury, each accident</u>	<u>\$ 1,000,000</u>
<u>Bodily injury by disease, each employee</u>	<u>\$ 1,000,000</u>
<u>Bodily injury/disease aggregate</u>	<u>\$ 1,000,000</u>
<u>For Work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:</u>	<u>\$ XXXXXXXXXXXXN/A</u>
<u>Foreign voluntary worker compensation</u>	<u>Statutory</u>

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

<u>General Aggregate</u>	<u>\$ 2,000,000</u>
<u>Products - Completed Operations Aggregate</u>	<u>\$ 2,000,000</u>
<u>Personal and Advertising Injury</u>	<u>\$ 1,000,000</u>
<u>Each Occurrence (Bodily Injury and Property Damage)</u>	<u>\$ 1,000,000</u>

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

<u>Bodily Injury:</u>	
<u>Each person</u>	<u>\$ 1,000,000</u>
<u>Each accident</u>	<u>\$ 1,000,000</u>

Property Damage:

Each accident \$ 1,000,000

Combined Single Limit of \$ 2,000,000

4. Excess or Umbrella Liability:

Per Occurrence \$ 4,000,000

General Aggregate \$ 4,000,000

5. Contractor's Pollution Liability:

Each Occurrence \$ 1,000,000

General Aggregate \$ 1,000,000

☐

If box is checked, Contractor is not required to provide
Contractor's Pollution Liability insurance under this Contract

**6. Additional Insureds: In addition to Owner and Engineer, include as additional insured
the following: [INSERT ADDITIONAL NAMES]**

7. Contractor's Professional Liability:

Each Claim \$ 500,000

Annual Aggregate \$ 500,000

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. 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.

6.05 *Property Insurance*

- A. *Builder's Risk:* Unless otherwise provided in the ~~Supplementary~~ **General** Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the ~~Supplementary~~ **General** Conditions or required by Laws and Regulations). This insurance shall:
 - 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the ~~Supplementary~~ **General** Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, ~~and any corresponding Supplementary Conditions,~~ the parties required to be insured shall collectively be referred to as "insureds."
 - 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; ~~earthquake; volcanic activity, and other earth movement; flood;~~ collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the ~~Supplementary~~ **General** Conditions. 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 may be provided through other insurance policies acceptable to Owner and Contractor.
 - 3. 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.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
 5. 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).
 6. extend to cover damage or loss to insured property while in transit.
 7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 8. allow for the waiver of the insurer's subrogation rights, as set forth below.
 9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 10. not include a co-insurance clause.
 11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 - ~~12. include performance/hot testing and start-up.~~
 13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
 14. **include for the benefit of Owner loss of profits and soft cost coverage including, without limitation, fixed expenses and debt service for a minimum of 12 months with a maximum deductible of 30 days, plus attorney's fees and engineering or other consultants' fees, if not otherwise covered.**
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least **thirty (30)** ~~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.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- 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 notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

- E. *Additional Insurance*: 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 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. ~~All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. 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 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 Subcontractors, all individuals or entities identified in the Supplementary Conditions as 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. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.~~
- B. 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:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial 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.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the ~~Supplementary~~

General 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 any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 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 6.05 shall 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, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.
- C. **Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized, Owner and Contractor shall communicate through Engineer. Communications by and with Engineer's consultants shall be through Engineer.**

7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, 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.

1. Regular working hours will be Regular working hours shall not exceed 40 hours per week, 8 hours per day (between 7:00 a.m. and 7:00 p.m.), Monday through Friday. No Work shall be done between 7:00 p.m. and 7:00 a.m. without prior written permission from the Owner. Requests to Work during other than regular working hours or on legal holidays must be submitted to the Owner at least 48 hours in advance of the period proposed for such Work and shall set forth the proposed schedule for such Work to give the Owner ample time to arrange for appropriate personnel to be at the site of the Work.
 2. Owner's legal holidays are New Year's Day, Martin Luther King, Jr. Day, Good Friday, Memorial Day, Juneteenth, Independence Day, Labor Day, Thanksgiving (2 days) and Christmas (3 days) for a total of 12 holidays. However, emergency work may be done without prior permission.
- C. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.
1. For purposes of administering the foregoing requirement, additional overtime costs are defined as charges calculated in accordance with the terms of Engineer's Agreements with Owner.

7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. Engineer may reject any material and equipment delivered to the Site without the approval of satisfactory evidence required by the Contract Documents.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the 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 material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an “or equal” item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- 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 shall result in any change in Contract Price. The Engineer’s denial of an “or-equal” request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item, Contractor may request that Engineer consider the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 Substitutes

- A. Unless the specification or description of an item of material or equipment 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 material or equipment under the circumstances described below. To the extent possible such requests shall 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 material or equipment from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.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 material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall 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 that specified, and
 - 3) be suited to the same use as that 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 that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall 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 shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.
- G. **Any materials and equipment required to be approved by the Engineer that is installed on the Project without such approval is subject to removal, disposal, and replacement by the Contractor as Contractor's expense.**

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity 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 five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. 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, Suppliers, or other individuals or entities 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, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an

acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, 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, Supplier, or other individual or entity, whether initially or as a replacement, shall 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 fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate **written** contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 - 2. shall create 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.

7.07 *Patent Fees and Royalties*

- ~~A.~~ Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights, **trade secrets, proprietary**

information, or copyrights held by others, whether or not particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work, and whether or not Engineer, or Owner, or consultants, contractors, agents, and employees of either of them are aware of such patent rights, trade secrets, proprietary information, and copyrights. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

- ~~B. To the fullest extent permitted by Laws and Regulations, 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.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of 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.

7.09 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.
- B. **Owner must comply with the "Procedures for Reporting North Carolina Sales Tax Expenditures. The following procedure in handling the North Carolina Sales Tax is applicable to this Project.**
- 1. It shall be the Contractor's responsibility to furnish the Owner documentary evidence showing the materials used and sales tax paid by the Contractor and each of its Subcontractors with each payment request in a format approved by the Owner.**

2. The documentary evidence shall consist of a certified statement, by the Contractor and each of its Subcontractors individually, showing total purchases of materials from each separate vendor and total sales taxes paid each vendor. Certified statements must show the invoice number or numbers, covered and inclusive dates of such invoices.
3. Materials used from the Contractor's or Subcontractor's warehouse stock shall be shown in a certified statement at warehouse stock prices.
4. The Contractor shall not be required to certify the Subcontractor's statements.
5. The documentary evidence to be furnished to Owners eligible for sales or use tax refunds covers sales and/or use taxes paid on building materials used by Contractor(s) and Subcontractors in the performance of Contracts with churches, orphanages, hospitals 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(2) and (3) of the 1961 Statute, and is to include the purchases of building materials, supplies, fixtures, and equipment which become a part of or annex to buildings or structures being erected, altered or repaired under Contracts with such institutions, organizations or governmental units.

7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work 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 shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.~~
- C. Owner or Contractor may give 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 notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *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.

7.12 *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. 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.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing Work at or adjacent to the Site, when 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.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The ~~Supplementary~~ **General** Conditions identify any Owner's safety programs that are applicable to the Work. **The Owner shall be contacted for information on safety programs are applicable to the Work.**
- D. 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.
- E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor 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).

- F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- G. Contractor's duties and responsibilities for safety and protection shall 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.
- H. **Existing Utilities**
 - 1. **The Owner and Engineer have, to the best of their ability, shown the existing utilities and obstructions (water, sewer, electrical, gas, telephone, cable TV, storm drainage, etc.) that may be affected by the Work. Contractor shall, at Contractor's expense, locate all existing utilities that may be encountered during the Work. Contractor shall make every effort to avoid damage or disruption of services during the Work.**
 - 2. **Contractor shall contact the North Carolina One-Call Center to coordinate existing utility location prior to commencement of any Work. North Carolina On-Call Center (800) 632-4949. www.ncocc.org**

7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

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 threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.
- B. **Contractor shall promptly report in writing to Owner and Engineer all accidents or incidents arising out of or in connection with the Work which cause death, personal injury, or property damage, giving full details and statements of any witnessed. In addition, if death, serious personal injury, or serious property damage is caused, Contractor shall report the accident or incident immediately by telephone or messenger to Owner and Engineer. Contractor shall give Owner and Engineer reasonable advanced notice before using or placing explosives or other hazardous materials or equipment on Site.**
- C. **Notwithstanding anything else in this Contract, while federal, state, or local state(s) of emergency are in effect, or when a public health emergency has been declared, Contractor shall comply with all guidance and recommendations of the Centers for Disease Control, the**

State of North Carolina, Town of Carrboro, Town of Chapel Hill, or Orange County, unless mutually agreed to by Owner and Contractor.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified 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
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

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.D.

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. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction 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 shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 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.
 5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 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, shall 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, Sample, or other submittal shall 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.D.4.
- E. *Resubmittal Procedures:*
1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
 2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will

record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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 and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.
- D. 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 shall 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 and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other~~

~~dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.~~

To the maximum extent allowed by Laws and regulations, Contractor shall defend, indemnify, and save harmless Indemnitees from and against all Charges that arise in any manner from, in connection with, or out of, performance of the Work as a result of acts or omissions of Contractor, any Subcontractor, any Supplier, or any person or organization directly or indirectly employed by any of them or any entity for whose acts any of them may be liable. In performing its duties under Paragraph 7.18.A, Contractor shall at its sole expense defend Indemnitees with legal counsel reasonably acceptable to Owner.

- ~~B. In any and all claims against Owner or Engineer or any of their 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 shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.~~

Definitions: As used in Paragraph 7.18.A above and Paragraphs 7.18.C and 7.18.D below:

1. **'Charges' means claims, judgments, costs, damages, losses, demands, liabilities, obligations, fines, penalties, royalties, settlements, and expenses. Included within 'Charges' are:**
 - a. **interest and reasonable attorney's fees assessed as part of any such item;**
 - b. **amounts for alleged violations of sedimentation pollution or other environmental or pollution laws or regulations – including any such alleged violations that arises out of the handling, transportation, deposit, or delivery of the items or materials that are involved in performance of the Work.**
 - c. **amounts related to Hazardous Environmental Conditions; and**
 - d. **amounts related to alleged infringement of patent rights, trade secrets, proprietary information, or copyrights.**
2. **'Indemnitees' means Owner and Engineer and officers, officials, independent contractors, agents, and employees of Owner and Engineer, but does not include Contractor.**

- ~~C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:~~
- ~~1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or~~
 - ~~2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.~~

Limitations of Contractor's Obligation: Neither Paragraph 7.18.A nor any other provision of the Contract Documents shall be construed to require Contractor to indemnify or hold harmless Indemnitees against liability for damages arising out of bodily injury to persons or damage to property proximately caused by or resulting from the negligence, in whole or in part, of Indemnitees.

- D. **Nothing in Paragraphs 7.18.A, 7.18.B, or 7.18.C shall affect any warranties in favor of the Owner. This Paragraph 7.18.D is in addition to, and Paragraphs 7.18.A and 7.18.B above shall be construed separately from, any other indemnification provisions that may be in the Contract Documents. This Paragraph 7.18 shall remain in force despite termination of this Agreement (whether by expiration of the term or otherwise) and termination of the services of the Contractor under this Contract, but this sentence does not imply that other provisions in the Contract Documents do not survive termination.**

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

7.20 **NSF Requirements**

- A. **The following materials which will be in contact with water before or during the treatment process, water to be added, or returned to the treatment process, or potable water, shall have been tested and certified to meet the requirements of ANSI/NSF 60 or ANSI/NSF 61. The materials shall be guaranteed by the manufacturer to have the required certification and to be suitable for the intended service. Evidence of the certification shall be submitted to the Engineer with the appropriate drawings and data. Any materials which cannot be so**

guaranteed, whether or not specified by manufacturer and product designation, shall not be used.

1. Chemical treatment additives.
2. Pipes and related products (including coated and uncoated pipe, fittings, small storage devices, tubing, and screens).
3. Protective (barrier) materials (including paints, coatings, linings, and diaphragms).
4. Joints and sealing materials (including gaskets, sealing materials, and lubricants).
5. Process media (including media used in ion exchange, aeration, adsorption, oxidation, and filter operations).
6. Mechanical devices (including chemical feeders, pumps, valves, aeration equipment, clarifiers, mixers, strainers, and other water treatment process devices).
7. Mechanical plumbing products.

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 utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. 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.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, 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.

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~~ Article 8, 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 Article 8, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner 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, or both. 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 shall 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. When applicable, any such equitable adjustment in Contract Price shall 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 is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- 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. 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 to 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.
- C. 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 to Contractor.

- D. 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 shall be that of the former Engineer.~~

If Owner appoints a substitute Engineer, the substitute Engineer shall have the same status under the Contract Documents as 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 Documents (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.

9.13 **Owner will furnish an "Owner's Site Representative" to represent Owner at the Site and assist Owner in observing the progress and quality of the Work**

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. **The action of the Engineer in performance of these duties shall not be construed to make the Engineer the agent for the Owner with respect to changes in the Cost of Work or changes in the Contract Documents.**

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 10.08. 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 *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 General Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the General Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *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.

10.07 *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.

10.08 *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, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 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 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *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 (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not 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, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 - 2. *Work Change Directives:* 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 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the

completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: 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. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *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. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes 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 shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate 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.
- B. **The Owner reserves the right to add to the original scope of Unit Price Work of the Contract upon the same terms and at the same unit prices included in the Agreement for all unit item additions, provided that such additions will not result in an increase of more than fifty percent (50%) of the Original Contract Price. The Contractor may be entitled to an extension in the Contract Times with the addition of Unit Price Work.**
- C. **The Contractor shall perform emergency Work as required by the Owner. In such instances, the Engineer or Resident Project Representative will give written notice to the Contractor for each instance of emergency Work. The Contractor shall perform all emergency Work within seventy-two (72) hours of the written notice. The Owner may perform (or engage another Contractor to perform) emergency Work, at the Contractor's expense, if the Contractor fails to perform emergency Work within the time limit. If the Owner performs (or engages another Contractor to perform) the following conditions apply:**
 1. **if emergency Work is not a Unit Price Work item, the Owner shall charge all costs and expenses of the emergency Work, plus the Owner's then-current overhead charge to the Contractor and deduct those amounts from any monies due to Contractor on the then-current or then-future Application for Payment; and**
 2. **if emergency Work is a Unit Price Work item, the Owner will charge all applicable emergency Work unit costs, plus an administrative and overhead charge of one hundred dollars (\$100.00) per instance to the Contractor and deduct those amounts from any monies due the Contractor on the then-current or then-future Application for Payment.**

11.03 *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.

11.04 *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 shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall 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); or
 - 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 11.04.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 11.04.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
 - 1. a mutually acceptable fixed fee; or
 - 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be ~~15 percent~~ ten percent (10%) and shall not be applied to payroll taxes, social security contributions, or unemployment taxes;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent **(5%)**;
 - 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 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of ~~15 percent~~ **ten percent (10%)** of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 **(excluding payroll taxes, security contributions, or unemployment taxes)** 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 five percent **(5%)** 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 shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;~~
 - d. no fee shall 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 will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *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 shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
 - 1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. 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. The supporting data shall 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. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 - 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall 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.
 - 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *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 that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change

Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 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 11.02, (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 in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *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 shall be submitted 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; and
 - 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.
- 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 shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or

Contract Price, or both, 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 shall 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 shall 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 shall 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 shall 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 shall 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 shall 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 shall be incorporated in a Change Order 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. 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 shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall 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. 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, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. ~~Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.~~
 5. Supplemental costs including the following:
 - a. ~~The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.~~
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- c. ~~Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.~~

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) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the current edition of the 'Compilation' of Rental Rates for Construction Equipment as published by the Associated Equipment Distributors. An hourly rate will be computed by dividing the monthly rates by 176. These 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.**
- 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 property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.~~
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. ~~Minor expenses such as 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 shall not include any of the following items:
1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 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. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.
- E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting, **and in accordance with Owner's and Engineer's instructions**, practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data. **The Owner and Engineer may specify additional or different requirements in accordance with the preceding sentence, but unless they so specify, the following is required in order to support a determination of cost of Work pursuant to Paragraph 13.01:**
1. **for costs under Paragraph 13.01.B.1, for each person who worked on the additional Work: a statement showing their job title, hourly rate paid or other method of compensation, other amounts described under Paragraph 13.01.B.1 that were paid, and the net change in the number of hours worked attributable to the change in the Work;**
 2. **for costs under Paragraph 13.01.B.2, dated receipts from the Subcontractors and/or Sub-subcontractors. The receipts must acknowledge the Contractor's payment, identify the materials, supplies, equipment, and show the name of the Owner's Project.**

3. for costs under Paragraph 13.01.B.5.c, dated receipts from the rental the Subcontractors and/or Sub-subcontractors. The receipts must acknowledge the Contractor's payment, identify the machinery and equipment, and show the name of the Owner's Project, the rental rate, and the number of hours, days, miles, or other basis of the charge. If the Contractor supplies the machinery or equipment, the statement must show the rental rate and the number of hours, days, miles, or other basis of the charge, and the rental rate must not exceed the market rental rate.
4. for costs under Paragraph 13.01.B.5.i, written proof of a net change in the amount paid by the Contractor attributable to the change in the Work. For bonds, the proof must include the invoice or statement for the surety or its agent showing that it is attributable to the change in the Work.

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 on account of any of the foregoing will be valid.
- C. *Contingency Allowance:* Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

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. **If Owner changes any estimate of quantity before the Agreement is executed, it may substitute the new estimated quantity in those calculations.** 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, **and cost for coordinating the Work with the Owner** 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, subject to the provisions of the following paragraph.

- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.
- F. Each unit price shall be deemed to include an amount considered by the Contractor to be adequate to cover all construction surveying and existing utility location required to complete the Work as specified, or as directed by the Engineer, for each separately identified item.
- G. This Paragraph 13.03.G applies except to the extent if any that the Contract Documents specify otherwise:
 - 1. Unit prices, if any, shall apply to Work done pursuant to Change Orders and to Work Change Directives.
 - 2. In addition to Paragraph 13.03.G.1, it is agreed:
 - a. If unit price items are included in the Contract Documents for Work other than Work done pursuant to Change Orders and to Work Change Directives, it is also agreed that the Contract Price was calculated on the assumption that certain estimated quantities of unit price items will be used in the Work. Those estimated quantities are stated in the Contract Documents. The unit price multiplied by the quantity is referred to as the 'extension';
 - b. If the actual extension of a unit price item is less than the estimated extension, the Contract Price shall be reduced accordingly;
 - c. The actual extension of each unit price item shall not exceed the estimated extension for that item unless the Contractor has received advance written approval from the Engineer to exceed the estimated quantity for that item. That approval may be limited in the Engineer's discretion. If that approval is given, the Contract Price shall be adjusted as follows:
 - 1. If the actual quantity of a unit price item is more than the estimated quantity, the Contract Price shall be increased to reflect the difference between the actual and the estimated quantities.
 - 2. If approval is not given, the Contractor shall not be obligated to use the quantity of that unit price item that exceeds the approved quantity, and a Change Order or Work Change Directive shall be executed to reflect the changes in the Work resulting from the actual quantity of the item that is used.

3. If the Contract Documents explicitly and clearly state that no further approval from the Engineer or the Owner is required for the Contractor to exceed the estimated quantity of specified unit price items, then it is agreed that the Contract Price shall be adjusted to reflect the actual quantities of those items without the necessity of further approval.

ARTICLE 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 will 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 therewith 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~~ **the** 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 shall 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 shall 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 shall 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.
- G. **The Owner may engage an independent consultant for the direct inspection and administration of any or all of the Work to be performed in the Contract. This consultant shall act on the behalf of the Owner.**

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 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, **but in any event commencing within thirty (30) days after receipt of said instruction and proceeding promptly to completion,** 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. **Engineer and Owner may reject any defective Work, even if inspected and paid for, except to the extent accepted under Paragraph 14.04. A failure to disapprove or reject such defective Work does not constitute an acceptance.**
- 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 shall 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.

- B. **An acceptance of defective Work is not effective as an acceptance unless it specifically describes the condition that is defective and contains substantially the following statement: 'The Owner accepts [such condition] despite its being defective.'**

14.05 *Uncovering Work*

- A. Engineer has the authority to require special 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, **or contrary to the Contract Documents, or before required inspections, test, or approvals,** 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 Contractor shall not be entitled to any increase in Contract Times because of the time involved in such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction;** and 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, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective. **However, if such Work had been prematurely covered, the preceding sentence shall not apply, and Contractor shall have no such rights.**

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, **or persistently fails to carry out the Work in accordance with the Contract Documents, or if Work interferes with the operation of the existing facility,** 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 shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

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 rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 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 and provide Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site and storage locations referred to in the preceding sentence to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages 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 on account of 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. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate

property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, including the transportation to the Work Site, all of which must be satisfactory to Owner.

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

C. *Review of Applications:*

1. Engineer will, within **ten (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, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

- c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 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~~ **any of the Work, whether or not paid for, is defective, except to the extent acceptable under Paragraph 14.04, or completed Work has been damaged**, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work 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 **or reasonable grounds to believe in** the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.
 - f. **there are reasonable grounds to believe that the Work cannot be completed for the unpaid balance of the Contract Price; or**
 - g. **Contractor anticipates to owe damages or other amounts to Owner.**
- D. *Payment Becomes Due:*
- 1. ~~Ten~~ **Thirty (30)** 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 on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of 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 that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated 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;
 - l. there are other items entitling 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 shall 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, **as determined in a competent jurisdiction having binding authority**, shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.
 4. **Failure of Owner to refuse to make payment does not waive Owner's rights under the Contract Documents.**

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 seven days after the time of payment by Owner.
- B. **The Application of Payment shall be accompanied by such data, satisfactory to Owner, as will establish Owner's title to the material and equipment and protect its interest therein, including applicable insurance. Each subsequent Application for Payment shall include an Affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied to discharge in full all of Contractor's obligations reflected in prior Applications for Payment.**

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.
 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, shall 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 Article 15.
 2. "Substantial Completion" means that the Work is complete to the point that the facility can properly operate, to the satisfaction of Owner, and Engineer. All process equipment shall be installed and operational. All work such as architectural, painting, final cleaning, rough site grading, sidewalks, etc. shall also be complete. Manufacturer's field services and performance testing shall have been provided in accordance with the contract requirements. The intent of "Substantial Completion" is for all contract work to be complete except for minor punch list work.
 3. Punch list work includes minor portions of the Work not essential to operation of the facility. Completion of this work can be accomplished without interruption to facility operations. Any such Work will be listed on an attachment to the certificate of Substantial Completion and could include such items as permanent fencing, finish grading, seeding and the removal of temporary access roads and contractor's mobilization areas.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall 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 seven 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), **including the time within each of those items shall 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 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 6.05 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 7.11), and other documents, Contractor may make application for final payment.
2. The final Application for Payment shall 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 disputes that Contractor believes are unsettled; 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 Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall 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. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

2. **Without extra charge to Contractor, Engineer will make only two (2) such inspections to determine final completion. If Engineer is not able to make the representation and findings required to recommend final payment, successive inspections requested by Contractor shall be charged to Contractor.**
- C. *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.
- D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- 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 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 terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then 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 other adjacent areas;
 2. correct such defective Work;
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If 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 claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. 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.
- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not 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, **or the event after 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, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.
- B. **No adjustment shall be made to the extent that performance is, was, or would have been suspended, delayed, or interrupted directly or indirectly by Contractor or any Entity for which Contractor is responsible. The Contract Price shall not be adjusted except to the extent that the total of such suspensions exceed thirty (30) days and after excluding such thirty (30) day period.**

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) ten 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) 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 seven 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 shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, ~~including fair and reasonable sums for overhead and profit on such Work;~~ **as determined in Article 13;**
 - 2. expenses sustained prior to the effective date of termination in ~~performing services and furnishing labor,~~ **ordering** materials, ~~or equipment~~ as required by the Contract Documents in connection with uncompleted Work, ~~plus fair and reasonable sums for overhead and profit on such expenses;~~ and, **the Owner shall have the options detailed in Paragraphs 16.03.A.2.a through 16.03.A.2.d;**
 - a. **Upon seven (7) days of receipt of the notice of termination for convenience Contractor shall provide evidence of materials ordered as described in Paragraph 16.03.A.2, including an itemized list, cost, order, and delivery dates, and all terms or conditions (including ordering, canceling, or restocking charges).**
 - b. **Owner may direct Contractor to cancel any one or more orders, in which case the Owner shall be liable for cancellation and restocking charges and other charges properly attributable to the cancellation: or**

- c. Owner may direct the Contractor to keep any one or more orders in effect and/or to assign any one or more orders to the Owner, in which case the Owner shall be responsible for bearing the costs of the order.
 - d. Within ten (10) days of the Owner's receiving the evidence described in Paragraph 16.03.A.2.a, the Owner shall give the Contractor notice of which options it exercises under Paragraphs 16.03.A.2.b or 16.03.A.2.c.
3. ~~other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.~~

The Owner shall pay the Contractor a termination fee of one hundred dollars (\$100.00) in addition to other amounts due pursuant to this Paragraph 16.03.

- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, 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 seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 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, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph 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.

16.05 **Protection and Preservation of the Work**

- A. **Upon suspension (Paragraph 16.01), termination (Paragraphs 16.02, 16.03 and 16.04), or stopping Work (Paragraph 16.04):**
 - 1. **Contractor shall take actions necessary for the protection and preservation of the Work, and Site, including those actions required by the Contract, except to the extent otherwise directed by the Engineer; and**
 - 2. **Contractor shall erect and leave in place barricades, lights, and other safety devices as are appropriate for the protection of the public, including those devices required by the Contract, except to the extent otherwise directed by the Engineer.**
- B. **If the Contractor performs Work pursuant to directions given by the Engineer as described in Paragraph 16.05.A for the protection and preservation of the Work or of the public, Owner shall pay the Contractor for such protection and preservation of Work to the extent that it is greater than the Contractor would have done during or at the end of a workday had the Contract not been suspended or terminated or the Work stopped.**

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; and
 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising 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; or~~
 - ~~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.~~
 4. **Any party allowed to use the dispute resolution process adopted by the State Building Commission pursuant to G.S. 143-135.26(11) and G.S. 143-128(F1) may participate in mediation pursuant to the dispute resolution process as a precondition to initiating litigation concerning the dispute. The amount of \$15,000 or more must be at issue before a party may require other parties to participate in the dispute resolution process. The costs of the dispute resolution process shall be divided between the parties to the dispute with at least one-third of the cost to be paid by the Owner, if Owner is a party to the dispute.**

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
1. delivered **by email**, in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.
- B. **If a party is notified of a replacement person for purpose of getting notice, then notices afterwards shall be directed to the replacement person. Written notices shall be deemed to have been duly served, made, and received, and receipt thereof completed, if:**
1. **delivered in person to the individual or to that individual's receptionist; or**
 2. **mailed by registered or certified mail to the last business address known to the party giving notice; or**

3. emailed to the last email address known to the party giving notice, provided that the email transmission must be completed.
- C. Written notices to the Owner must be directed to the Owner's representative, provided that if no individual is designated as the Owner's representative, then written notices must be directed to the Executive Director. As used in this Paragraph 18.01, the word 'notice' includes 'request'.
- D. The notice will be deemed served, made, and received, and receipt thereof completed, on the earlier of:
 1. the date delivered in person; or
 2. three (3) days after placing in the custody of the U.S. Postal Service; or
 3. the date of the email transmission was completed.
- E. Address of Surety: Unless the surety provides a different address as provided in Paragraph 18.01, notice to a surety may be sent to the address shown on the performance bond; if no address for the surety's address provided by the N. C. Department of Insurance shall suffice; and if the Department of Insurance lacks an address, the last-known address of the attorney-in-fact who signed the performance bond shall suffice.

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.
- B. As used in the preceding sentence, a 'legal holiday by law of the appropriate jurisdiction' is a holiday observed by the Owner.

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 shall not constitute a waiver of that provision, nor shall 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 or completion of the Contract or termination 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 *Headings*

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

18.09 **Effect on Other Rights**

- A. **The Contract Documents shall not be construed to create a cause of action against Owner and in favor of any person, firm, or corporation, other than Contractor. The Contract Documents shall not be construed to create a cause of action against Engineer and in favor or any person, firm or corporation, other than Owner. The Contract Documents are not intended to create a defense, except by Contractor, to any cause of action that may be brought by Owner. The recitation of duties, or limitations of duties, in the Contract Documents of Engineer or Engineer's consultants, representatives, and assistants, shall not be construed to reduce Owner's rights against Engineer, or to reduce Engineer's duties to Owner. No action or failure to act by Owner shall constitute a waiver of a right except to the extent specifically agreed in writing. If Owner waives a right, that waiver shall not imply other waivers of that right. If liquidated damages are assessable against the Contractor, Owner may, in its discretion, waive the imposition of some or all of the liquidated damages against the Contractor. That waiver shall be valid only if done by a writing signed by the Executive Director, and the waiver must refer specifically to 'liquidated damages'. That waiver shall not constitute an extension of the Contract Times.**
- B. **The agreement represents the entire and integrated agreement between the parties hereto and superseded prior negotiations and representations. Except as specifically otherwise provided, the Agreement is not intended to benefit, or to create a cause of action in favor of, any person, firm, or corporation, other than Owner and Contractor. Oral statements by anyone, including Owner's employees, agents, and Engineer, whether made before or after the execution of the Agreement, shall not be binding on Owner and shall not reduce Owner's rights under the Contract Documents.**

18.10 **Place of Project**

- A. **Choice of Law and Forum: The place of the Project is North Carolina. This Contract shall be deemed made in Carrboro, North Carolina. This Contract shall be governed by and construed in accordance with the laws of North Carolina. The exclusive forum and venue for all actions arising out of this Contract shall be the North Carolina General Court of Justice, in Orange County. Such actions shall neither be commenced in nor removed to federal court. This Paragraph shall not apply to subsequent actions to enforce a judgment entered in actions heard pursuant to this Paragraph.**

END OF DOCUMENT

SECTION 01010 SUMMARY OF WORK

PART 1 GENERAL

1.01 LOCATION OF WORK

- A. The work of this Contract is located within the Orange Water and Sewer Authority (OWASA) service territory, which includes the towns of Chapel Hill, Carrboro and a neighborhood of Rangewood and Heritage Hills, North Carolina. The Work Area is defined as the area shown in the Map in Appendix A of the Project Manual. A list of addresses for galvanized service lines that require replacement is also included in Appendix A of the Project Manual and contains 100 property addresses to be completed by the contractor. Additional/alternate property addresses may be added to the list as needed, up to at least three months prior to the end of the contract.
- B. The Galvanized Service Line Replacement Program will target replacements of galvanized requiring replacement (GRR) service lines within the OWASA service territory, as included in Appendix A. Addresses may be added to and removed from the lists in Appendix A by the Engineer or Owner within the defined Work Area shown in Appendix A up to three (3) months prior to project duration for a total of approximately 92 service line replacements. Replacements will be for the private service only, typically from the water meter to the first fitting in the building using PEX or PVC pipe. Service lines that are two inches in diameter will be replaced using copper pipe. A limited number of these replacements will be at locations designated as “disadvantaged”. These replacements should be prioritized in the project schedule.

1.02 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required to replace 92 GRR service lines, and construct the Galvanized Service Line Replacement Program in its entirety as specified herein and as shown in the details in Appendix B.
- B. Provide adequate workforce including service replacement crews, restoration crews, plumbers, and subcontractors as needed to execute the work within the Contract Duration.
- C. The Work includes, but is not necessarily limited to, the following:
 - 1. Furnishing and installing new PEX or PVC service tubing for service lines up to 1.5 inches in diameter and copper for services two inches in diameter, tracer wire, ball valves, core drilling and adapters and fittings of the necessary size required to reinstate water service to the customer, and disposal of existing domestic GRR water service lines in accordance with all local, state, and federal requirements including boxes, valves, and adapters. Existing service lines shall be replaced with the new service lines in kind or of diameter closest (and rounded up) to the next incremental size of minimum 3/4-inch, up to a maximum of 2-inch diameter. All work required for GRR service line replacements, including but not limited to:
 - a. Coordination with the Owner

- b. Coordination and scheduling of work on private property with Customer (which shall include property owners, residents, tenants, and businesses) including the completion of the Site Plan Consent Checklist
- c. Coordination with other contractors working on other projects within the Work Area
- d. Test pitting in the event that during replacement excavation at the meter or water main reveals the material is not galvanized and doesn't need replacement
- e. Pavement and concrete removal, including saw cutting, as required
- f. Excavation and backfilling
- g. Removal and proper legal disposal of galvanized service lines, concrete, asphalt, vegetation, excess soil, and other surplus waste and materials in accordance with all local, state, and federal requirements
- h. Dewatering and shoring, if needed
- i. Trenchless installation, and open-cut installation when needed
- j. Coordination with Owner in the event that a property has a barrier to completing the service line installation into the first connection within the building
- k. Leakage testing and flushing of new service lines in accordance with AWWA Standard C650 and C810, respectively
- l. Installation of a new ball valve between service line and existing premise plumbing during replacement.
- m. Replacing all Ford Yokes with new meter setters when encountered.
- n. Replacing, furnishing, and installing all required ball valves in a valve box within five feet of the exterior of the building or inside the crawlspace within three feet of the door, adapters, reducers, fittings, flare adapters, and appurtenances of the necessary size required and as required by North Carolina Plumbing Code.
- o. Temporary water service (as required)
- p. Photographic documentation of pre- and post-construction activities and interior and exterior conditions for each property.
- q. Documentation of contractor's work and photographs.
- r. All temporary surface restoration work in accordance with local municipality permit conditions.

- s. All final surface restoration work to restore all areas disturbed by construction to conditions equal to or better than pre-construction conditions in accordance with local municipality permit conditions.
- t. Providing water filters with replacement cartridges and flushing instructions to residents at each replacement property.
- u. Furnishing a Soil Technician from an Independent Test Laboratory as needed to confirm a 95% backfill compaction is achieved
- v. Permits, all required supporting documentation, and all associated permit fees including but not limited to plumbing, sidewalk opening, and all other permits required to complete work.
- w. Contractor to prepare and provide all required traffic management and detour plans to obtain any required road opening permits.
- x. Contractor shall prepare and submit the plumbing permit on behalf of the Customer and coordinate inspection with the municipality.

2. All other work required for successful completion of the Work as specified.

1.03 WORK TO BE PERFORMED BY AN ELECTRICIAN

- A. If the Contractor determines that the current service line is being used for grounding, an electrician shall install two (2) grounding rods and move the grounding to the grounding rods prior to performing the service line replacement. See Section 02663, Water Service Connections, for full instructions for assessing need for new grounding.

1.04 CONTRACTOR'S USE OF PREMISES

- A. Coordinate all work with Owner, Engineer, and Customer to facilitate the usage of water services lines, with minimal conflicts and interruptions to the water service.
- B. Coordinate work to allow full, uninterrupted access to all residences and businesses, and allow for pedestrian access around work zones and closed sidewalks. Contractor shall limit the use of the premises for his/her Work and storage to allow for:
 - 1. Work by other contractors or by Owner.
 - 2. Access of public to homes and businesses.
 - 3. Public use and safety.
 - 4. Fire Protection.
- C. Coordinate use of premises with Owner, Engineer, and Customer prior to the start of Contractor's work thereon.

- D. Contractor shall assume full responsibility for the security of all his/her personnel, materials, and equipment stored on the project including all subcontractors.
- E. If directed by the Owner or Engineer, move any stored items or containers that interfere with operations of Owner, other contractors, Customer or public.
- F. Obtain and pay for the use of additional storage or work areas if needed to perform the Work.

1.05 OWNER AND CUSTOMER OCCUPANCY

- A. Customer (Private property owners, tenants, businesses and residents) will occupy premises during the performance of the work. Coordinate all construction operations with Customer, Owner, and Engineer to minimize conflict and to facilitate usage and occupancy during construction.
- B. Contractor will provide residents with point-of-use pitcher filters, replacement cartridges, and instructions for the filters, and flushing and lead education materials. The content of the flushing and educational materials will be provided by Owner but printed and distributed by the Contractor.

1.06 ROAD WORK

- A. Road work shall conform to City, County, or NCDOT requirements where applicable. Contractor shall obtain all permits necessary.
- B. All traffic control devices shall be in accordance with the Manual on Uniform Traffic Control Devices, published by U.S.D.O.T., Federal Highway Administration latest revision, and local police and government requirements.
- C. Traffic Control Officers and flaggers if needed, will be paid from the Traffic Control Allowance.

END OF SECTION

SECTION 01014 CONSTRUCTION SEQUENCE AND SCHEDULE REQUIREMENTS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

- A. Provide adequate workforce including service replacement crews, restoration crews, plumbers, and subcontractors to execute the work within the Contract Duration.
- B. The water distribution system must provide continuous service to all customers during the construction period and meet all demands required under normal service conditions with the exceptions permitted herein when directly replacing a Customer's water service line.
- C. Submit a proposed construction sequence with a detailed sequence of work for the work area. Contractor shall submit the following for Engineer and Owner review:
 - 1. Provide a GRR service line replacement plan that outlines how the Contractor will meet the contract requirements including:
 - a. Detailed activities at each location (i.e., contacting the Customer, providing all required notifications, verifying pipe materials, installing the new water service line, removing or abandoning the existing water service line, flushing, and testing, placing into service, restoring, etc.).
 - b. Number of replacement construction crews by month
 - c. Number of restoration crews by month
 - d. Estimated construction duration for each crew in each area
 - e. Estimated service downtime for each Customer
 - 2. Traffic management and detour plans.
 - 3. Regular two-week look aheads for construction and restoration activities.
- D. In general, no work which affects or could affect system operations shall be performed without a specific detailed plan by the Contractor approved in advance by the Engineer and the Owner. All requests shall be in writing to the Owner and Engineer.
- E. Construction progress schedules required shall reflect the conditions presented in Section 01310 Construction Scheduling.

1.02 DEFINITIONS AND TERMS

- A. System Operational Constraints: The constraints to the performance of the work required because of system operations which must be maintained at all times are identified in this section. These constraints shall be included in the Contractor's progress schedule and plans.
- B. Construction Scheduling Constraints: The constraints to the performance of the work required because of special sequencing with other parts of the work, calendar time constraints and

special testing, commissioning and work procedures are identified in this Section. These constraints are in addition to the standard procedural constraints such as shop drawings, testing, commissioning, training, etc. These constraints shall be included in the Contractor's progress schedule.

- C. Special Conditions: Certain special conditions, if any, related to performance or scheduling of the work. Special conditions are identified in this section and Section 01170 Special Provisions. If they affect the scheduling of the work, they shall be included in the Contractor's progress schedule.
- D. Owner: Orange County Water and Sewer Authority, 400 Jones Ferry Rd, Carrboro, NC 27510.
- E. Engineer: CDM Smith Inc., 5400 Glenwood Ave, Suite 400, Raleigh, NC 27612.
- F. Customer: The property owners, homeowners, residents, tenants and businesses that will be impacted by the replacement of water service lines and the Contractor's activities occurring as part of this project.
- G. Work Area: As shown in Appendix A. Addresses may be added throughout the contract duration to complete the required number of replacements listed in Section 01010 Summary of Work.

1.03 SUBMITTALS

- A. Submit proposed construction sequence with a detailed sequence of work in accordance with the requirements herein and of Section 01300 Submittals for Engineer and Owner review and approval prior to starting construction.

1.04 NOTIFICATION REQUIREMENT

- A. Notify property owners at least 30 days in advance where private side work is required as listed in Appendix A to schedule replacement work.
- B. Give a minimum of 72 hours reminder via door hanger, telephone call, and email to the Customers of any service line to be replaced or water service disrupted. In addition, notify the Customer via a 24-hour notice within 24 hours of private side replacement to remind them to provide access and to remind them of the hours they should anticipate being without water.
- C. "No parking" signs shall be posted between 2 and 5 days in advance of work commencing at that address and removed within 24 hours of completion of work.
- D. Prior to any work commencing the Contractor must hold an initial planning meeting with the Customer to complete the Site Plan Consent Checklist and provide the completed checklist to the Engineer for approval.
- E. All work, including customer scheduling, color printing (double-sided full color on white paper) and distributing door hangers, shall be included as part of the replacement bid item corresponding with the replacement scheduled at the property and shall be the responsibility of the Contractor.

- F. If the property owner refuses entry or does not grant the Contractor access to perform a pre-scheduled replacement, Contractor shall document rejection. Contractor shall be compensated for denial of access in accordance with conditions in Section 01025 Measurement and Payment if replacement or test pit needs to be rescheduled to a different day than originally scheduled.

1.05 CONNECTION PREPARATIONS

- A. Where new service piping shall be tied-into existing piping, the new piping installed by Contractor shall be fully prepared in anticipation of the final connection in order to minimize downtime. Coordinate all work as required with Engineer and Owner so that the final connections can be made to the meter and premise plumbing. If a new pressure reducing valve installation is necessary, the Contractor should notify the Owner immediately. See Section 02663 Water Service Connections for requirements related to connection to new pressure reducing valves.
- B. Perform a flush as specified in Section 02663 Water Service Connections after any type of replacement is conducted. Flushing shall be of the entire service line.

1.06 SITE CONDITIONS

- A. Locations for GRR service line replacement as part of this Contract and typical details for water service connection replacement are included in the appendices of these Specifications. Each location will vary and have unique site conditions.
- B. Locations identified as “Disadvantaged” in Appendix A should be prioritized for replacement.
- C. Coordinate all work and work activities with the Owner, Engineer, and Customers as specified.
- D. Coordinate the activities with other contractors, if any, to allow the orderly and timely completion of all the work.

1.07 OPERATIONAL CONSTRAINTS

- A. The following is a list of operational constraints to consider in developing the overall plan of construction. This list is not intended to release the Contractor from the responsibility to coordinate the work in any manner which will ensure project completion within the time allowed or to complete the work while maintaining the safety and integrity of the water system. These requirements are such that the Owner can maintain proper flow, pressures and fire flows to the water system at all times. The safety and integrity of the water system are of prime importance.
 - 1. Water service lines to be replaced in the Owner’s distribution system have operating pressures that can exceed 80 psi. The Contractor is responsible for verifying and documenting the operating pressure at all locations prior to performing any work. The Plumber shall be responsible for determining if pressures require installation of a new pressure reducing valve or if an existing pressure reducing valve should be replaced during service line connection to premise plumbing.

2. The water distribution system must provide continuous service to all customers during the construction period and meet all demands required under normal service conditions except as permitted herein.
3. All work for GRR service line replacements at each location must be completed in a maximum time not to exceed 8 hours from arrival on-site. One (1) temporary shutdown of service line per location will be allowed to facilitate replacement of the GRR service line with the shutdown not exceeding 8 hours. In no case shall any customer or location be without potable water service for longer than 8 hours. Provide temporary service, in accordance with Section 01046 Control of Work, if the shutdown will be longer than 8 hours, at Contractor's expense.
4. Unless otherwise approved by the Engineer and Owner, all work shall be performed with water mains live and in service as specified in Section 02663 Water Service Connections.

1.08 CONSTRUCTION SCHEDULING CONSTRAINTS

- A. The following is a list of scheduling constraints to consider in developing the overall plan of construction. This list is not intended to release the Contractor from the responsibility to coordinate the work in any manner which will ensure project completion within the time allowed. The following items are not necessarily listed in their order of priority or required sequence of construction.
 1. Coordinate all work activities with the Owner, Engineer, and Customer as specified to allow orderly and timely completion of all required work.
 - A. Contractor shall submit a two-week look ahead on a weekly basis to the Owner and Engineer listing anticipated work and work sites for the following two-weeks.
 2. Contractor shall be aware of elections, school schedules, certain festivals and activities that occur in the work areas which may restrict work at certain times. These activities may cause changes in traffic patterns and road closures. Contractor is responsible for being aware of the dates, times and locations of all festivals and activities that may be located in work areas and require adjustments to the construction schedule. Coordinate all work with Owner and Engineer.
 3. Restrictions for placement of final, permanent paving is as specified in Section 02576 Pavement Repair and Resurfacing. All work should be timed to avoid the need to place initial pavement during cold temperatures, as defined in Section 02576.
 4. All initial pavement over trenches and excavations including sidewalks, in the form of hot patch, shall be completed by the end of each workday. No trench or excavated area shall be left past the end of the day without initial pavement placed and installed.
 5. Final road restoration shall be completed within 60 to 90 days unless a different period is specified in the municipal roadway restoration specifications or roadway opening permit.
 6. Final sidewalk restoration shall be completed within 60 days unless a different period is specified in the municipal sidewalk restoration specifications or sidewalk opening permit. The only acceptable extension of this time period is for weather or temperature requirements in accordance with Section 03301 Concrete and Reinforcing Steel.

7. The Contractor shall be capable of providing multiple crews as needed to complete the work without undue delay.
8. All documentation of service line materials (pre and post-construction) and work performed shall be made by the end of each workday for the day on which the work is performed.

1.09 HOURS OF CONSTRUCTION

- A. The Contractor's hours of operation will be limited to between the hours of 7:00 AM to 7:00 PM on Mondays through Fridays only. There shall be no work performed on Saturdays, Sundays, holidays, or outside the hours of operation unless prior written approval is obtained by the Contractor from the Engineer and Owner.
- B. Road lane and sidewalk closures are limited to 9:00 AM to 4:00 PM on Monday through Fridays only.
- C. Work hours shall be as indicated above with the exception of the local requirements for the relevant municipality or for the type of roadway or location. The Contractor is responsible for following all local codes, ordinances and permit conditions where the work is taking place.

1.10 ADVERSE WEATHER

- A. The schedule submittal to the Engineer must include planning for typical adverse weather in the project area over the duration of the contract.
- B. The Contractor must provide the Engineer evidence of excessive weather conditions in excess of the adverse weather typically expected by the National Oceanic Atmospheric Administration (NOAA) (<https://www.ncei.noaa.gov/>, 828-271-4800) for the project area, in order to justify a delay due to excess adverse weather (i.e., unusually severe weather).
- C. Time Extension for unusually severe weather:
 1. This provision specifies the requirements for the consideration of time extensions for unusually severe weather. In order for the Engineer to grant a time extension, the following conditions must be satisfied.
 - a. The weather experienced at the project site during the Contract period must be found to be unusually severe, that is, more severe than the adverse weather determined to be typical for the project area according to the NOAA website.
 - b. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.
- D. Upon acknowledgement of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor shall record on the project schedule, the occurrence of adverse weather and resultant impact to normally scheduled Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE

- A. This Section includes descriptions of the measurement and payment of the various elements of the Work, with provisions applicable to lump sum prices, unit prices, and allowances, if applicable.
- B. In the case of conflict between this Section and the measurement methods specified in the individual technical Sections, the measurement methods in the technical specifications shall govern.
- C. The Contractor shall receive no payment for any portion of the work until it is installed and accepted by the Engineer. The only exception to this is payment for stored materials on-site if the Contract provides for the payment of stored materials. A partial payment may be requested for items partially installed.

1.02 RELATED WORK

- A. Bid Form is included in the Contract Documents.
- B. General Provisions are included in the Contract Documents.
- C. Applications for Payment are included in Section 01026.
- D. Schedule of Values is included in Section 01370.

1.03 LUMP SUM ITEMS

- A. Lump Sum measurement will be for the entire item, unit of work, structure, or combination thereof, as specified and as indicated in the Bid Form. Measurement and payment for all bid items indicated as Lump Sums shall include the cost of all labor, materials, and equipment necessary to furnish, install, clean, test, and place each bid item into operation, including general provisions, overhead and profit.
- B. Progress payments will be based on the Schedule of Values prepared by the Contractor and approved by the Engineer and Owner before acceptance of the first Application for Payment.
- C. In order for the Contractor to request progress payments against Lump Sum items, Contractor shall provide a disaggregation or breakdown in sufficient measurable detail that is acceptable to the Engineer.
- D. Measurement
 - 1. Measurement shall be based on the estimated percent complete of each item of the Schedule of Values, as determined by the Engineer.
- E. Payment

1. Payment will be made at the unit price proportional to the completion percentages approved by the Engineer.
2. Contactor must track and maintain copies of all necessary permits submitted. Retainage as specified in the Contract Procedures Section of the Contract Documents. will be held until all permits are approved, paid for and received by Engineer and Owner.

1.04 UNIT PRICE ITEMS

- A. Quantity and measurement estimates stated in the Bid Proposal Form are estimates for bidding purposes only. Actual payments shall be based on actual quantities installed, in-place, as measured and/or verified by the Engineer.
- B. Unless otherwise provided in the General Provisions, the bid unit prices shall be in effect throughout the contract duration, regardless of variances between the estimated quantities and the actual quantities.
- C. The Contractor shall make no claim, nor receive any compensation, for anticipated profits, loss of profit, damages, or any extra payment due to any difference between the amounts of work completed, or materials or equipment furnished, and the estimated quantities.
- D. Assist Engineer by providing necessary equipment, workers, and survey personnel as required to measure quantities.
- E. Measurement
 1. Measurement for progress payment shall be made by, or approved by, the Engineer based on the estimated effective quantity installed. The effective quantity installed represents the actual units or quantities installed, adjusted for incomplete elements or components.
 2. Unless otherwise provided for in the Bid Form, unit price items are all-inclusive of all related work, direct and indirect, to provide a complete and functional item.
 3. The final measurement shall be based on actual quantities, jointly measured by Contractor and Engineer, complete, fully, tested and placed into service.
- F. Payment
 1. Progress payments shall be in accordance with the contract documents based on estimated effective quantities installed, paid at the bid unit price.
 2. The final payment shall be based on actual quantities, fully installed, tested, and placed into service, paid at the bid unit price.

1.05 ALLOWANCES

- A. Allowances, if any, specified in the Contract Documents and indicated in the Bid Form are considered provisional amounts to be used only as needed.

- B. Allowances are exclusive of work indicated in the Contract Documents for which payment is included under other items in the Bid Form. No work may be performed under an allowance without the prior written approval of the Owner.
- C. Any unused balance of the allowances shall revert to the Owner upon completion of the project. Prior to final payment, the original amount provided for allowances shall be adjusted to actual costs by deductive Change Order, adjusting the contract price, accordingly.
- D. The Contractor shall make no claim, nor receive any compensation, for anticipated profits, loss of profit, damages, or any extra payment due to any unexpended portion of the allowances.
- E. Include time for allowance work in the construction schedule. No adjustment of Contract Time will be allowed for any work performed under allowance items.
- F. Allowance items shall be included in the Schedule of Values.
- G. Unless otherwise indicated in the specific measurement and payment provisions under allowance items, the measurable and allowable costs for work performed under an Allowance item shall be limited to the actual, demonstrable, and direct costs associated with that Allowance item. Shipping and sales taxes (if applicable) are allowable costs.
 - 1. No markup for overhead or profit (including cost for bonds) shall be included for payment under an Allowance item. Overhead and profit (including cost for bonds) shall be included in the contract base bid or allocated across other bid items.
 - 2. Work authorized by the Owner under an allowance may be performed as a lump sum (negotiated before the fact), unit prices (when applicable), or time and material. For work performed under time and material, submit detailed verification (break-down) of all costs, subject to the approval of the Engineer or Owner. Time and material records shall be submitted to the Engineer on a daily basis and in no case later than 48 hours after the work is performed.

1.06 DEFECT ASSESSMENT

- A. Replace defective Work, or portions of defective Work, not conforming to specified requirements.
- B. If in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct a remedy in accordance with the requirements of the General Provisions.

1.07 NON-PAYMENT FOR REJECTED PRODUCTS

- A. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from the transporting vehicle.
 - 4. Products placed beyond the lines and levels of the required Work.

5. Products remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected products.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 REPLACEMENT BID ITEMS (ITEMS 1 - 2)

A. Item Descriptions

1. Replacement of Private Side Service Line (Item 1A – 1D)

- a. Trenchless or other approved means of galvanized water service line replacement which may include replacement of the private side service line between the water meter and the building (Items 1A – 1D), and replacement of all necessary appurtenances. For locations with an exterior valve box the valve must be within five (5) feet of the building in a valve box or inside the crawlspace within three (3) feet of the door. Work includes installing grounding rods where existing service line was used for grounding. All replacements shall include mobilization, (sanitary facilities, insurance, temporary construction facilities, construction vehicle parking and storage, bonds, labor, project coordination, control of work, project signs, coordination with homeowner and inspectors, scheduling, notifications, printing, water meters (as deemed necessary), all data and record document management, and preparation of contract required submittals); electrical continuity testing; removal and disposal of excess soil, spoil, rubble, galvanized pipes and construction debris, vegetation and similar items; stockpiling, all labor, materials, temporary roadway patching, temporary and permanent/final sidewalk restoration and/or yard restoration, equipment required for erosion and sediment control, any necessary trench dewatering, and protection of existing trees as approved by the Engineer; all work required for or incidental to the satisfactory completion of the Work.
- b. Item 1A, 1B, and 1C includes PVC or PEX piping up to 58 linear feet during replacement. Item 1D includes up to 47 linear feet of copper pipe.
- c. Each property listed by the Owner in Appendix A or provided at a later date by the Owner at least three (3) months prior to construction completion must have a replacement completed (Item 1A through 1D) or, if no galvanized is found at two points on the private side, a test pit (Item 1I). Services added within three months of the end of the construction contract by the Owner will require a change to project schedule.

2. Additional PVC or PEX Piping (Item 1E)

- a. Locations included in items 1A, 1B, and 1C include up to 58 linear feet of PVC or PEX pipe. Services longer than 58 linear feet will have the additional length paid under Item 1E. This includes the labor and materials associated with pipe installation beyond 58 feet.

3. Additional Copper Piping (Item 1F)

- a. Locations included in items 1A, 1B, and 1C include up to 47 linear feet of copper pipe. Services longer than 47 linear feet will have the additional length paid under Item 1F. This includes the labor and materials associated with pipe installation beyond 47 feet.
4. Pressure Reducing Valve (Item 1G)
 - a. Payment for a Pressure Reducing Valve shall be full compensation for when a licensed plumber has identified a pressure reading over 80 psi at a location therefore requiring a new pressure reducing valve or the replacement of an existing valve that is not properly reducing pressure in according with the North Caroling Plumbing Code.
5. Access Not Provided (Item 1H)
 - a. Payment for Access Not Provided shall be full compensation for when private side work has been scheduled and confirmed with the resident as described in Bid Item 1, the contractor has mobilized to the replacement location, and the resident is not present to allow the contractor into the home or there is another reason that the work area inside the home or building cannot be accessed, as confirmed by the Owner or Engineer, and work cannot be rescheduled for the same day. Access inside the home or building shall be determined prior to any excavation being performed for private side replacements (any Item 1 item). If any excavation occurs prior to access being determined, no additional payment for backfilling and restoration will be provided. If work can be rescheduled within the same day of the original appointment, Contractor shall submit payment only for the appropriate replacement Bid Item 1. Contractor must attempt to reschedule the work with the resident with at least 3 outreach attempts.
6. Test Pit at Water Meter (Item 1I)
 - a. A test pit is defined as a planned service line replacement that is found not to be galvanized at two points on the property side of the service line where the Owner or Engineer specifically directs the Contractor to perform a test pit. A test pit includes revealing service line at least 3 horizontal feet on the downstream side of the water meter and at another point between the meter and the building to confirm the materials and surface restoration of the site.
 - b. If there is more than one service in the same excavation, Contractor must notify the Owner of observed materials at all service lines. Contractor must make every effort to inspect and photograph all service lines within the excavation. If more than one service line is present in a single test pit, the contractor will only be paid for one test pit.
 - c. Obtain GPS location of water meter at inspection and replacement using Arrow Gold® RTK GNSS Receiver - Eos or approved equal.
 - d. Only test pits at locations in Appendix A or as added or directed by the Owner or Engineer, will be paid for under Item 1I.

7. Traffic/Street Permit Fee Allowance (Item 1J) is for the actual right of way, road opening, sidewalk opening or other permit application and/or inspection fees associated with the work of this Contract. Documentation must be provided.
8. Plumbing Permit Allowance (Item 1K) is for the actual cost of permit application and inspection fees charged by the local municipality. When a municipality waives this fee, there is no charge against this allowance.
9. Soil Testing Allowance (Item 1L) will apply to the direct charges for an independent testing laboratory technician, as directed by the Owner or Engineer.
10. Service Line Excavation Depth Greater than Five (5) Feet (Item 1M)
 - a. Galvanized water service trenching to a depth of greater than 5-feet and non-hazardous waste disposal; shoring; dewatering; installation, backfill; compaction; including all labor, materials, and equipment necessary. All excavation to a depth of 5-feet is included in the replacement bid items. One Item 1I is payable per excavation. Only those excavations greater than 5-feet will be payable.
11. Final Trench Pavement Restoration (Milling and Paving) (Item 1N); Final Pavement (Curb-to-curb) (Item 1O); Miscellaneous Concrete (Item S-2)
 - a. When a service line replacement or test pit must disturb sidewalk, driveway, or other hardscaping, the final restoration of that work will be paid under Item 1M, 1N, S-2. Item 1M includes final restoration of the hardscaping. Repair work for curbs damaged during replacement will not be paid under any Item as it is considered inherent to Items 1A through 1D.
 - b. Only one Item 1N will be paid per Service Line or Test Pit excavation regardless of the number of excavation pits. In addition, if replacement or observation of two or more service lines disturbs the same sidewalk, driveway, or other hardscaping, only one Item 1O will be paid.
 - c. The installation of miscellaneous concrete will be performed on an as-needed basis as directed by the Engineer throughout the course of the project. Miscellaneous concrete shall contain no wire or steel reinforcement. In general, the installation of miscellaneous concrete will be undertaken whenever any construction work is required as a result of service line replacement, water meter installation, or otherwise deemed necessary in the field.
 - d. In general, final pavement restoration is required where any construction work is performed within the roadways as a result of service line replacement or otherwise deemed necessary in the field. Final pavement will be required to be restored by either mill and pave (patch paving at excavation locations) or curb to curb (full width or half-width paving) methods, based on the paving requirements of the relevant Road Opening permit issued. Payment of restoration does not relieve the contractor of responding to complaints by Customers and returning, for the period of the 1-year warranty, to make necessary repairs.

- e. If the final restoration area is less than the bid quantity, Contractor shall have no claim to modify the price of the unit price item.
- f. Final Pavement (Curb-to-curb, half or full width paving of a block or street) will be used at the direction of the Engineer when initial paving areas encompass a majority of the pavement surface and as required by the Owner or governing roadway agency's standards for road repair due to utility work.
- g. Only one of the paving items (Items 1N or 1O) will be applied per address.

12. Traffic Control Allowance (Item 1P)

- a. The Traffic Control Allowance will apply only to the direct charges for traffic control Police officers or traffic control flaggers for the direction of traffic, as below:
 - i. Uniformed Traffic Control Officers are provided by the municipality in which work is being conducted for the direction of traffic for this Contract per local municipal ordinance.
 - ii. Certified Traffic Control Flaggers are hired for the direction of traffic for this Contract per local municipal ordinance or permit condition when permitted.

13. Pitcher Filters and Replacement Cartridges (Item 2)

- a. Pitcher filters and replacement cartridges that will last for a period of 6 months shall be distributed at each location where a replacement is conducted or where a service line that is galvanized requiring replacement is disturbed through construction processes (i.e. excavation that does not result in a replacement).
- b. Pitchers and replacement cartridges will not be required at locations where a test pit is performed and the material is found to be non-galvanized.

B. Measurement

- 1. **Replacement of Private Side Service Line (Item 1A – 1D)** - Measurement will be based on the number of installations completed of the type described in 3.01A. Item Descriptions within the Work Area and shall be contingent on the submission of comparable pre-construction and post-construction photographs of each installation and complete record documents, including all permits, for each service line. Replacement includes mobilization, all piping, and appurtenances to make all connections, procurement and placement of warning tape, flushing at an outside spigot if meter, leak testing, equipment required for erosion and sediment control, any necessary trench dewatering, protection of existing trees, and temporary paving, temporary sidewalk restoration, and permanent yard restoration.
- 2. **(Item 1E) Additional PVC or PEX Piping** – Measurement will be based on the linear feet of PVC or PEX pipe installed that is beyond the lengths specified for Items 1A.
- 3. **(Item 1F) Additional Copper Piping** – Measurement will be based on the linear feet of two inch copper pipe installed beyond 47 feet as specified in Item 1A.

4. **(Item 1G) Pressure Reducing Valve** – Measurement will be based on the number of locations where the licensed plumber installs or replaces an existing pressure reducing valve.
5. **(Item 1H) Access Not Provided** - Measurement will be based on the number of locations where contractor cannot complete the scheduled replacement work due to the reasons and following the activities provided in the description of this Item in 3.01A.
6. **(Item 1I) Test Pit** - Measurement will be based on the number of test pits completed under the conditions listed in 3.01A. Item Descriptions within the Work Area and shall be contingent on the submission of comparable pre-construction and post-construction photographs of each test pit area and complete record documents for each service line. Submit comparable pre-construction and post-construction photographs of each test pit, and Owner and Engineer shall accept the surface restoration of the test pit prior to payment. Temporary sidewalk restoration, if applicable, and/or permanent yard restoration shall be included in this item.
7. **(Item 1J) – Traffic/Street Permit Fee Allowance** – Measurement is not applicable. This item is for direct repayment of actual permit fees paid by the contractor.
8. **(Item 1K) Plumbing Permit Allowance** – Measurement is not applicable. This item is for direct repayment of actual permit fees paid by the contractor.
9. **(Item 1L) – Soil Testing Allowance** – Measurement is not applicable. This item is for direct repayment of actual testing technician fees paid by the contractor when a testing technician is required by the Owner.
10. **(Item 1M) Service Line Excavation Depth Greater than 5 Feet** - Measurement will be based on the cubic yards of excavation where the depth of the water service line is beyond a 5-foot depth within the excavation.
11. **(Item 1N) Final Patch Pavement Restoration (Milling and Paving)** – Measurement will be based on the square yard(s) of patch paving installed at each excavation as measured by the Engineer, within the specified widths and completed between 30 and 90 days of placing the temporary paving.
12. **(Item 1O) Final Pavement (Curb-to-curb)** - Measurement will be based on square yard(s) of full width, half-width, curb-to-curb, entire block, or street paving installed as measured by the Engineer, if and when directed or required by the Road Opening Permit.
13. **(Item 1P) – Traffic Control Allowance** – Measurement is not applicable. This item is for direct repayment of actual fees paid by the contractor for Uniform Police Traffic Control or Certified Traffic Control Flaggers when either are required by the Road Opening Permit or municipal ordinance.
14. **(Item 2) – Pitcher Filters and Replacement Cartridges** – Measurement will be based on the number of filter pitchers and cartridges distributed to properties.

C. Payment (Items 1 – 12)

1. Full payment for Items **1A through 1D - Replacement of Private Side Service Line** shall be provided once the following components are completed:
 - a. **Administration:** Price and payment shall include, but not be limited to customer coordination, printing and distributing door hangers for notifications of service disturbance, procurement and posting of no parking signs, local agency coordination for permits, inspections and scheduling; private side pipe material validation by excavation at meter box; underground utility mark outs and coordination, construction photographs; and all other documentation as required by the Contract.
 - b. **Site Preparation:** Price and payment shall include, but not be limited to temporary traffic control including traffic signage; erosion and sediment control; mobilization (sanitary facilities, insurance, temporary construction facilities, construction vehicle parking and storage, bonds, project coordination, control of work, project signs, scheduling, and preparation and submittal of contract required work plans); cutting existing sidewalk; temporarily support and protection of all existing utilities and structures; all trench excavation up to depth of 5 feet (including hand, vacuum, rock and boulders and concrete road base excavation); excavation support and protection (as required); dewatering and drainage.
 - c. **Service Replacement:** Price and payment shall include, but not be limited to: temporary water for customer (as required); furnishing and installation of water service line to limits defined in individual bid items by trenchless methods or by open-cut methods when approved by the Engineer, including pipe, new ball valves and valve box as needed, all the necessary adapters, reducers, fittings and appurtenances of the necessary size required to connect to existing piping; flushing, testing of the new service line, placing the service line into service; delivery of pitcher filter and post-replacement materials; existing galvanized water service line and appurtenances removal, disposal, demolition or abandonment; backfill materials shown in Appendix B; compaction and compaction testing; restoring the trench surface to grade or the limits of roadway base course; restoring the existing curb to grade; stockpiling, sampling and laboratory testing of excess excavated material including, but not limited to, spoil, rubble, concrete, asphalt, vegetation, etc. Payment for these items shall include all work required for or incidental to the satisfactory completion of the Items for which payment is not provided under other items in the Bid Form. Replacement of service line includes replacement of the full length of the private side of the service line from meter box to interior premise plumbing transition.
 - d. **Restoration on Private Side:** Price and payment shall include, but not be limited to temporary traffic control; GPS coordinates of the water meter, and where the service line enters the house, service application records, closeout documentation including photographs; repairs and cleaning of interior work spaces; procurement and placement of warning tape; restoring interior physical features; temporary paving restoration; temporary sidewalk and/or permanent yard restoration; forming and pouring concrete curbs to match sidewalk elevation, concrete testing and all other testing required to complete the project as specified herein; transportation and disposal of excess excavated material, spoil, rubble, concrete, asphalt, vegetation, galvanized pipes and construction debris, etc. in accordance with all Federal, State and local regulations; including all labor, materials and necessary equipment;

removal of erosion and sediment control devices; all work required for or incidental to the satisfactory completion of the Items for which payment is not provided under other items in the Bid Form.

2. Payment for **Item 1E and 1F – Additional Piping** shall be full compensation for the linear feet of additional piping necessary to complete the replacement beyond the limits established for Item 1A.
3. Payment **Item 1G – Pressure Reducing Valve** shall be full compensation for the completion of the installation of a pressure reducing valve at a location that did not have a previously existing valve and required one based on existing pressures or a location that had a faulty valve that needed to be replaced. The pressure at each location shall be documented to confirm the necessity of the installation.
4. Payment for **Item 1H - Access Not Provided** shall be full compensation for partial work described in Bid Item 1. Access shall be determined prior to any excavation being performed for private side replacements (Item 1A, 1B, 1C, or 1D). If any excavation occurs prior to access being determined, no additional payment for backfilling and restoration will be provided.
5. Payment for **Item 1I - Test Pit at Water Meter**, shall be provided once the following components are completed:
 - a. **Administration:** Price and payment shall include, but not be limited to customer coordination, printing and distributing door hangers for notifications of service disturbance, procurement and posting of no parking signs, local agency coordination for permits, visual pipe material inspection at two points on the private service service line; underground utility mark outs and coordination, construction photographs; and all other documentation as required by the Contract.
 - b. **Site Preparation:** Price and payment shall include, but not be limited to temporary traffic control including traffic signage; erosion and sediment control; mobilization (sanitary facilities, insurance, temporary construction facilities, construction vehicle parking and storage, bonds, project coordination, control of work, project signs, scheduling, and preparation and submittal of contract required work plans); cutting existing sidewalk; temporarily support and protection of all existing utilities and structures; all trench excavation up to depth of 5 feet (including hand, vacuum, rock and boulders and concrete road base excavation); excavation support and protection (as required); dewatering and drainage.
 - c. **Restoration:** Price and payment shall include, but not be limited to temporary traffic control; GPS coordinates of the corporation stop, water meter, and where the service line enters the house (for full service), closeout documentation including photographs; temporary paving restoration; temporary sidewalk and/or permanent yard restoration; forming and pouring concrete curbs to match sidewalk elevation, concrete testing and all other testing required to complete the project as specified herein; transportation and disposal of excess excavated material, spoil, rubble, concrete, asphalt, vegetation, and construction debris, etc. in accordance with all Federal, State and local regulations; including all labor, materials and necessary equipment; removal of erosion and sediment control devices; all work required for

or incidental to the satisfactory completion of the Items for which payment is not provided under other items in the Bid Form.

6. Payment for **Item 1J – Traffic/Street Permit Allowance**, will be made based on the actual permit-related fees for application and inspection with written receipt of payment from applicable agency. No mark-up will be paid. The allowance price established in the Bid Form Proposal is only for bidding purposes only, and the amount paid for Permit Fees may differ from this amount. All other costs associated with permits and inspections are included as incidentals to other Bid Items.
7. Payment for **Item 1K – Plumbing Permit Allowance**, will be made based on the actual permit-related fees for application and inspection with written receipt of payment from applicable agency. No mark-up will be paid. The allowance price established in the Bid Form Proposal is only for bidding purposes only, and the amount paid for Permit Fees may differ from this amount. All other costs associated with permits and inspections are included as incidentals to other Bid Items.
8. Payment for **Item 1L – Soil Testing Allowance** will be made based on the invoices for this service from the independent laboratory supplying the applicable testing technician. No markup will be allowed by the Contractor. The allowance price established in the Bid Form is for bidding purposes only, and the amount paid for Testing Technician may differ from this amount.
 - a. All other costs associated with testing for this Contract, including compaction testing to ensure compliance with municipal ordinances and/or permit conditions and soil testing are included with other Bid Items and not under any allowance item.
 - b. This Item will be paid when Testing is required by the Owner or Engineer beyond the normal testing inherent to completion of the work.
9. Payment for **Item 1M – Service Line Excavation Depth Greater than 5 Feet** shall be as follows: All work associated with excavation beyond 5-feet in depth shall be included under this bid item unless otherwise stated. Price and payment shall be full compensation for, but not limited to, protection of all existing utilities and structures; excavation (including hand excavation); loading; hauling; excavation support and protection; dewatering and drainage; temporarily support of utilities; backfilling with native soil; compaction, testing by technician from the Soils Testing Laboratory; removal of debris, spoils, pipe, tubing, rubble, vegetation, and similar items removed and legally disposed, including all labor, materials and necessary equipment; all work required for or incidental to the satisfactory completion of the Items for which payment is not provided under other items in the Bid Form. Payment for excavation 5 feet or shallower is included in Items 1A, 1B, 1C, or 1D as applicable.
10. Items **1N and 1O – Final Pavement Restoration** shall be as follows: Price and payment shall be full compensation for, but not limited to: sweeping, cleaning and preparing the base course surface; traffic control, traffic signage; cutting back existing pavement, furnishing, hauling, heating, raking mixing and placing the final pavement, compacting, testing, pavement marking restoration, including all labor, materials and necessary equipment; all work required for or incidental to the satisfactory completion of the Items for which payment is not provided under other items in the Bid Form.

11. **Payment for Item 1P – Traffic Control Allowance** will be made based on the invoices for this service from the municipality or outside agency supplying the Uniform Police Officers or Traffic Control Flaggers required by permit condition or ordinance. No markup will be allowed by the Contractor. The allowance price established in the Bid Form is for bidding purposes only, and the amount paid for Traffic Control may differ from this amount.

- a. All other costs associated with traffic control for this Contract, including traffic control devices, barriers, signage, flaggers, vehicles, equipment, personnel, and administrative costs, shall be paid under the respective replacement bid items and not under any allowance item.

12. Payment for **Item 2 – Pitcher Filters and Replacement Cartridges** shall be as follows: shall be full compensation for all pitcher filters and cartridges documented as distributed as part of replacement work or due to physical disturbance of a galvanized service line.

3.02 SUPPLEMENTAL ITEMS: FILL MATERIALS (ITEMS S-1A - S-1C)

A. Item Description

1. **Imported Common Fill (Item S-1A)** - will be utilized for backfill of miscellaneous work at the direction of the Owner or Engineer. This item shall include handling, transportation placing of common fill where the native hazardous material or unsuitable material is being replaced by common fill.
2. **Crushed Stone (Item S-1B) and Flowable Fill (Item S-1C)** - will be installed on an as-needed basis for miscellaneous work at the direction of the Owner or Engineer throughout the course of the project.

B. Measurement

1. **(Item S-1A) Common Fill and (Item S-1B) Crushed Stone** - Measurement will be based on cubic yards installed as measured in place by the Engineer and as allowable per the maximum trench payment width for trenches as indicated in the Contract Documents or the actual amount placed, whichever is less, if and when directed. Under no circumstances will measurement for payment under this item be made unless specifically approved by the Engineer to replace unsuitable soil.
2. **(Item S-1C) Flowable Fill** - Measurement will be based on cubic yards installed in place as measured by the Engineer, if and when directed. Under no circumstances will measurement for payment under this item be made unless specifically approved by the Engineer. If used in trenches, the payment limits shall not exceed the trench widths as indicated in the Contract Documents or the actual amount placed, whichever is less.

C. Payment

1. Payment for **Item S-1A Imported Common Fill** and **Item S-1B Crushed Stone** shall be as follows - Price and payment shall be full compensation for, but not limited to: purchasing, transporting, testing, washing, placement, compaction, loading, unloading, reloading; including all labor, materials and necessary equipment; all work required for or incidental to the satisfactory completion of the Items for which payment is not provided

under other items in the Bid Form. Backfill materials related to service line replacements shall be paid for under the respective replacement items.

2. Payment of **Item S-1C Flowable Fill** shall be as follows- Price and payment shall be full compensation for, but not limited to: purchasing, transporting, testing, pumping, placement, finishing, including all labor, materials and necessary equipment; all work required for or incidental to the satisfactory completion of the Items for which payment is not provided under other items in the Bid Form.

3.03 SUPPLEMENTAL ITEM: MISCELLANEOUS CONCRETE (ITEM S-2)

A. General

1. The installation of miscellaneous concrete will be performed on an as-needed basis as directed by the Contractor throughout the course of the project. Miscellaneous concrete shall contain no wire or steel reinforcement. In general, the installation of miscellaneous concrete will be undertaken whenever any construction work is required as a result of service line replacement, water meter replacement, or otherwise deemed necessary in the field.

B. Measurement

1. Measurement will be based on cubic yards installed as measured by the Contractor, if and when directed and as not included in any other bid item.

C. Payment

1. Price and payment shall be full compensation for, but not limited to: formwork, purchasing and transporting all concrete used for the Work; all labor, material (including expansion joints) and testing; and all other incidentals to the Work for which separate payment is not provided under other items in the Bid Form.

3.04 SUPPLEMENTAL ITEM: CONTINGENCY (ITEM S-3)

A. General

1. This item is intended to pay the Contractor for performing emergency repairs of water, sewer utilities and services for correction of any unforeseen conditions as discovered during the performance of the work as directed and approved by the Engineer or Owner. Utility repairs resulting from activities related to the Contractor's convenience or negligence will not be paid for under this item and will be paid for by the Contractor at no additional cost to the Owner.

B. Measurement

1. **(Item S-3) Contingency** - Measurement shall be based on the Contractor's time and material costs for performing emergency repairs of water and sewer utilities, as approved by Engineer. Contractor shall notify the Engineer's representative prior to proceeding with time and material work and shall provide time and material ticket to the Engineer's representative the day the work is performed. No time and material tickets will be accepted if not provided within 48 hours of work being performed.

C. Payment

1. Payment for **Item S-3 Contingency** will be made on the actual amount of work done approved and measured by the Engineer. Emergency repairs of water and sewer utilities shall include but not be limited labor, materials and equipment required for repair and replacement of water and sewer utilities and services utilizing the methods allowed herein and shall be full compensation for all work related to cutting existing pavement and excavation; excavation support and protection (as required); dewatering and drainage; repair of utility pipelines as directed by the Engineer; backfilling with native soil; compaction; restoring the trench surface to grade; restoring all physical features to grade including furnishing, installing, placing, compacting and sweeping; dense-graded base course, formwork, curing, concrete sidewalks, driveway aprons, concrete curb, initial paving, roadway concrete subbase, resetting or replacing of existing slate sidewalks and granite curbs, asphalt or concrete stamping, resetting or replacement of brick or rock pavers, pavement markings; painting, patching; cleaning, chlorinating; and all other incidentals to the satisfactory completion of this Item.
2. Services shall be based on the Contractor's time and material costs for performing the work as approved by Engineer.
3. Only work authorized in writing by the Engineer will be allowed to be reimbursed under this item.

END OF SECTION

SECTION 01026
APPLICATION FOR PAYMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit Applications for Payment to the Engineer in accordance with the schedule established by Conditions of the Contract and Agreement between Owner and Contractor.
- B. The accepted Schedule of Values, Section 01370, shall be used as the basis for the Contractor's Application for Payment.

1.02 RELATED WORK

- A. Standard General Provisions of the Construction Contract are included in the Contract Documents.
- B. Schedule of Values are included in Section 01370.
- C. Contract Closeout is included in Section 01700.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300 Submittals, applications typed on forms provided by the Owner, Application for Payment, with itemized data typed on 8-1/2-in by 11-in or 8-1/2-in by 14-in white paper continuation sheets.
- B. Provide itemized data on a continuation sheet.
 - 1. Format, schedules, line items, and values: Those of the Schedule of Values accepted by the Engineer.

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Application Form
 - 1. Fill in the required information, including that for Change Orders executed prior to the date of submittal of application.
 - 2. Fill in the summary of dollar values to agree with respective totals indicated on continuation sheets.
 - 3. Execute certification with the signature of a responsible officer of Contract firm.
- B. Continuation Sheets
 - 1. Fill in the total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.
 - 2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.

- a. Round off values to the nearest dollar, or as specified for Schedule of Values.
3. List each Change Order executed prior to the date of submission, at the end of the continuation sheets.
 - a. List by Change Order Number and description, as for an original component item of work.
4. To receive approval for payment on component material stored on site, submit copies of the original paid invoices with the application for payment.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. The following must be provided before the property location is listed on the pay application. Full payment will not be provided until these items are submitted in accordance with Section 01720 Project Record Documents.
 1. Water service applications
 2. Traffic engineering permits
 3. Road opening permits
 4. Plumbing permits
 5. Pre-/Post-construction photographic documentation
- B. Submit suitable information, with a cover letter identifying.
 1. Project name and location.
 2. Application number and date
 3. Certified payroll
 4. Detailed list of enclosures with property addresses and type of work performed
 5. For stored products:
 - a. Item number and identification as shown on the application
 - b. Description of specific material
- C. Submit one copy of data and cover letter for each copy of the application.
- D. As a prerequisite for payment, submit a "Surety Acknowledgement of Payment Request" letter showing the amount of progress payment which the Contractor is requesting.
- E. Quantities in pay applications will be checked with the information stored in the project data management system. No payment will be made to Contractor unless all record information for

every installed service line matches between the project data management system database, the Contractor's pay application, and the Engineer's measured quantities.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in the Application form as specified for progress payments.
- B. Use a continuation sheet for presenting the final statement of accounting as specified in Section 01700 Contract Closeout.
- C. Submit all Project Record Documents in accordance with Section 01720 Project Record Documents.

1.07 SUBMITTAL PROCEDURE

- A. Submit Applications for Payment to the Engineer at times stipulated in the Agreement.
- B. Number: Five copies of each Application.
- C. When the Engineer finds Application properly completed and correct, he/she will transmit certificate for payment to Owner, with a copy to Contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01038 REQUESTS FOR INFORMATION

PART 1 GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

- A. This Section specifies the general methods and requirements of Requests for Information (RFIs).

1.02 RELATED WORK

- A. Additional requirements may be specified in the General Conditions.
- B. Submittals are included in Section 01300 Submittals.
- C. Special Provisions are included in Section 01170 Special Provisions.
- D. Project Record Documents are included in Section 01720 Project Record Documents.

1.03 REQUESTS FOR INFORMATION

- A. When the Contractor believes that additional information or clarification of a contract requirement is needed, Contractor may initiate a Request for Information via the procedure provided by the Owner.
- B. The RFI process shall be limited to the clarification of technical and/or administrative matters. While the response to an RFI might lead to a change in the contract scope, cost or time, RFIs are not a substitute for the notification requirements stipulated in the General Conditions.
- C. A response to an RFI may authorize minor changes to the contract consistent with the terms of the contract related to the responsibilities and limitations of authority of the Engineer.
- D. A response to an RFI is not an authorization to perform any additional work that would require a change order or written amendment to the contract. If the Contractor believes the response to an RFI requires a change to the contract, Contractor shall promptly provide written notice to the Owner and Engineer in accordance with the General Conditions.
- E. RFIs are not a substitute for the Submittals process specified elsewhere.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 ORIGINATION

- A. Originate RFIs using the form appended to this Section.
 - 1. RFIs shall be numbered consecutively. In the event that an answered RFI results in a follow-up inquiry, the follow-up shall maintain the same number as the original, appended with a suffix.

2. Include Specification Section(s), Contract Maps(s), or detail(s) for which information is requested.
 3. Attach drawings, sketches, photographs or other relevant information.
 4. If the question concerns an interpretation of the Contract Documents, enter the Contractor's interpretation.
 5. Indicate the date by which the Contractor requests a reply.
 6. Sign the upper portion of the form.
- B. RFIs may not be submitted by subcontractors or suppliers. When a subcontractor or supplier generates a request for information or clarification to the Contractor, incorporate such requests into the required format, assign the next number, and sign.
- C. Maintain a log of all RFIs including the date originated, date delivered, and date answered.

3.02 PROCESSING

- A. Submit all RFIs to the Engineer for processing.
- B. Technical RFIs will generally be reviewed and answered by the respective discipline engineer or architect.
- C. Administrative RFIs will generally be reviewed and answered by the Engineer in consultation with the Owner.
- D. The Engineer will generally respond to RFIs within fourteen calendar days of receipt – depending on the complexity of the inquiry.

3.03 RESPONSES

- A. If the RFI contains sufficient clarity, the Engineer will insert a response in the lower portion of the RFI form, sign and date the response; and return the completed form to the Contractor.
- B. If the RFI does not contain sufficient clarity, the Engineer may request additional information from the Contractor.
- C. The Engineer will distribute copies to the Owner and project files.
- D. The Engineer will maintain a log of all RFIs including the date received, and date returned to Contractor.

3.04 RECORD INFORMATION

- A. Include all clarifications obtained through the RFI process into the record information in accordance with Section 01720 Project Record Documents.

END OF SECTION
(Standard RFI Form Follows)

Request for Information

Project Name:		
Contract Number.:		
Contractor:		RFI No.:
		Date:
Subject:		
Spec Section:	Drawing/Map:	Detail:

QUESTION:	
If the above question concerns an interpretation of the Contract Documents, the Contractor's interpretation is:	
Please Respond by This Date:	
Submitted by Contractor:	Date:
Received by (CDM Smith):	Date:

RESPONSE:	
By:	Date:
Distribution: Contractor, Owner, File, Field, RFI Notebook	

SECTION 01045 CUTTING, CORING AND PATCHING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section covers the cutting, coring, rough and finished patching of holes and openings. Holes and opening made in existing construction, or in parts of new construction. Procedures for cutting and patching will be the same for either condition.
- B. All cutting, coring, and rough patching shall be performed by the Contractor. Finish patching shall be the responsibility of the Contractor.
- C. Provide all cutting, fitting and patching, including attendant excavation and backfill, required to complete the work or to:
 - 1. Make its several parts fit together properly.
 - 2. Uncover portions of the work to provide for installation of ill-timed or improperly scheduled work.
 - 3. Remove and replace defective work.
 - 4. Remove and replace work not conforming to requirements of Contract Documents.
 - 5. Provide penetrations of structural surfaces and materials for installation of piping.
 - 6. Provide penetrations of non-structural surfaces for installation of piping. The determination of what is a nonstructural surface or material shall be made by the Engineer.
 - 7. Remove, install, or relocate materials.

1.02 RELATED WORK

- A. Summary of Work is included in Section 01010 Summary of Work.
- B. Pipe penetrations and assemblies are included in Section 01180 Pipe Penetrations.
- C. Site work is included in Division 02.
- D. Concrete is included in Division 03.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Comply with specifications and standards for each specific product involved. Where there is no equivalent specification, notify the Engineer who will provide a specification for the materials to be used.
- B. Grout for patching shall be as specified in Section 01180 Pipe Penetrations.

- C. Materials for finish patching shall be equal to those of adjacent construction. Where existing materials are no longer available, use materials with equivalent properties and that will provide the same appearance. The materials are to be approved by the Engineer prior to their use.

PART 3 EXECUTION

3.01 INSPECTION

- A. Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- B. After uncovering work, inspect conditions affecting installation of products, or performance of work.
- C. Report unsatisfactory or questionable conditions to the Engineer; do not proceed with work until the Engineer has provided further instructions.

3.02 PREPARATION

- A. Provide adequate temporary support as necessary to assure structural value or integrity of the affected portion of work.
- B. Protect surrounding materials and equipment prior to starting work.
- C. Contain and control cooling liquids and slurry produced by the cutting and coring operations.
- D. When the cutting or coring results in the structure or equipment being exposed to the environment, the Contractor shall provide adequate weather protection.
- E. Provide dewatering for excavation work in accordance with Section 02140 Dewatering and Drainage.

3.03 PERFORMANCE

- A. Execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to receive installation.
- B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work. When excavating in close proximity to piping or other items subject to damage, use hand excavation.
- C. All equipment and workplace safety shall conform to OSHA standards and specifications pertaining to plugs, noise and fume pollution, wiring and maintenance.
- D. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
- E. Restore work which has been cut or removed; install new products to provide completed work in accordance with the requirements of Contract Documents.
- F. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes.

- G. Remove rubble and excess patching materials from the premises.

3.04 CORING

- A. All coring shall be performed in such a manner as to limit the extent of patching. Locate the rebar before coring to minimize cut-throughs.
- B. Coring shall be performed with an approved non-impact rotary tool with diamond core drills.
- C. Size of holes shall be suitable for pipe, packing, patching, waterproofing or mechanical seals to be installed.
- D. All holes cut through concrete, masonry and rock walls, slabs or arches shall be core drilled unless otherwise approved. All work shall be performed by personnel skilled in this type of work.
- E. If holes are cored through floor slabs, they shall be drilled from below where possible. If holes are drilled from above, provide protection and containment below the area being drilled to catch the plug and contain liquid and slurry.

3.05 CUTTING

- A. All cutting shall be performed in such a manner as to limit the extent of patching.
- B. Cutting shall be performed with a concrete saw, and diamond saw blades of the proper size.
- C. Provide for control of slurry generated by sawing operation on both sides of the wall and from below if cutting a floor.
- D. When cutting a reinforced concrete wall or floor, the cutting shall be done so as not to damage the bond between the concrete and reinforcing steel left in structure. Cut shall be made so that steel neither protrudes or is recessed from the face of the cut.
- E. Adequate bracing of the area to be cut shall be installed prior to the start of cutting. Check area during sawing operations for partial cracking and provide additional bracing as required to prevent a partial release of the cut area during sawing operations.
- F. Provide equipment of adequate size to remove cut panel.
- G. Saw cut concrete and masonry prior to breaking out sections.
- H. Install work at such time as to require the minimum amount of cutting and patching.

3.06 PROTECTION

- A. Provide devices and methods to protect other portions of the project from damage.
- B. Provide protection from elements for that portion of the project which may be exposed by cutting and patching work.
- C. Maintain excavations free from water.

3.07 PATCHING

- A. Rough patching shall be such as to bring the cut or cored area flush with existing construction unless otherwise shown.
- B. Finish patching shall match existing surfaces as approved.
- C. Patching shall be of the same kind and quality of material as was removed.
- D. The completed patching work shall restore the surface to its original appearance or better.
- E. Patching of waterproofed surfaces shall render the area of the patching completely waterproofed to include the joint between the existing material and the patch.
- F. Slurry or tailings resulting from coring or cutting operations shall be contained and vacuumed or otherwise removed from the area following drilling or cut.
- G. Equipment shall be protected against mechanical and water damage during cutting and patching. Provide protective covers or use other means to protect equipment that is at risk of damage from the cutting and patching.
- H. Provide protection for existing equipment, utilities and critical areas against water or other damage caused by drilling operation.

END OF SECTION

SECTION 01046 CONTROL OF WORK

PART 1 GENERAL

1.01 CONSTRUCTION EQUIPMENT

- A. Furnish equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the Contract Time. If at any time such plan appears to the Engineer to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he/she may order the Contractor to increase the efficiency, change the character or increase the equipment and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his/her obligations to secure the quality of the work and rate of progress required.

1.02 PRIVATE LAND

- A. Do not enter or occupy private land outside of easements, except by written permission of the Customer. See requirements for Lead Service Line Replacement Agreement in Section 01170 Special Provisions.

1.03 EXISTING WATER DISTRIBUTION SYSTEM

- A. If approved by Engineer and Owner, Notify the Owner, Engineer and fire department 72 hours in advance of any requirement for isolating a section of water mains, so that water customers may be notified, and the necessary arrangements may be made, which may include a fire watch by the fire department.
- B. The Owner will perform all shutdowns. The Contractor shall not turn any valves in the system unless approved by the Owner in writing.
- C. If water or fire services for a single Customer or several customers are to be interrupted for an extended period (i.e., longer than 8 hours), provide temporary water service to all water users as required through new temporary piping and hoses. Temporary piping and hoses shall meet NSF 61 standards for potable water; hoses shall be connected to the water meter at every impacted location, providing potable water. The inconvenience to water users shall be kept at a minimum.
- D. The Owner and Engineer reserve the right to review and approve the Contractor's proposed use of any temporary bypass piping and hoses. If for any reason an existing fire hydrant is taken out of service, a temporary hydrant must be provided and the relevant municipality Fire Department must be notified immediately. The safety and integrity of the water system are of prime importance. All work shall be completed with all water mains live and in service as specified in Section 02663, Water Service Connections, unless necessitated by special circumstances that are reviewed and approved by the Engineer.
- E. If temporary hoses are needed and only if approved by the Engineer, the Contractor is required to submit a daily log of all addresses where temporary services have been installed or removed. All temporary hoses shall be ¾-inch minimum diameter and shall be capable of withstanding at least 1.5 times the normal working pressure. All hoses that are to supply potable water to

buildings are to be NSF 61 and/or FDA approved for contact with drinking water. Hoses shall be installed in a safe location, shall not be considered a tripping hazard by the Owner or Engineer and shall not block any walkways, driveways, or access to homes. During the winter months, freeze protection shall be provided.

- F. Construction Sequence and Special Work Requirements are as specified in Section 01014 Construction Sequence and Schedule Requirements.

1.04 WATER SERVICE LINE LOCATIONS

- A. The Contractor shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, gas, cable, fiber optic, sewers, etc.) in accordance with the North Carolina Underground Utility Safety and Damage Prevention Act. This includes notification to the North Carolina 811 at least three (3) days but not more than twelve (12) full working days (excluding Saturdays, Sundays, and legal holidays) before work is to be performed with significantly detailed information to allow for ease of locating by all utilities. The University of North Carolina Chapel Hill must be contacted ten (10) working days in advance of any work taking place on campus so that campus staff can identify locations of existing services.
- B. All mark outs of utilities shall be considered by the Contractor as the approximate location for the purpose of damage prevention. The Contractor shall be solely responsible for employing prudent techniques to determine the precise position of the water distribution system underground facility for connection purposes. The cost for this work shall be included in Bid Items , where applicable. The Contractor will not be compensated for any additional costs to locate the water line if the water department markout/records are not accurate.
- C. New service line replacement piping shall follow the existing locations of the water service lines wherever possible; however, the Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or utilities or for other reasons. Where fittings or connections are noted in details, such notation is for the Contractor's convenience and does not relieve him/her from laying and jointing different or additional items where required.

1.05 TRENCHLESS

- A. All new water service lines shall be constructed via trenchless methods to minimize private property restoration unless otherwise approved by the Engineer for specific properties.
- B. Trenchless installation shall include but not be limited to Utility Impact Moling or Pipe Pulling.
 - 1. All trenchless work shall be done at a minimum of 3-feet below surface unless the existing water service line is shallower.
 - 2. Make every effort to minimize impact to existing underground utilities. Contractor shall immediately report any utilities struck or damaged to Owner, Engineer, and relevant Utility, as well as provide notice to the Notification Center.

3. Launch pits shall be large enough to accommodate the operator and tools for alignment. All excavation specifications shall be followed in the construction of the launch and recovery pits.
 4. If a “tool” is lost, it shall be recovered as soon as possible at the Contractor’s expense.
- C. Obtain approval from the Engineer to install portions of the new line, utilizing a method other than a trenchless method. If a portion of the new service line is installed via open-cut trench due to site conditions, failure of trenchless methods, or other approved reasons, payment shall be under the same bid item as if the service line was installed via trenchless methods, including all restoration requirements as specified.

1.06 OPEN EXCAVATION

- A. If open excavations are used, adequate safeguarding shall include but not limited to temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. The Contractor shall, at his/her own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workers. Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street and requiring that the trench shall not remain open overnight.
- B. Take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night. Accordingly, unattended trenches must be covered, barricaded or backfilled.
- C. The use of road plates is prohibited. No excavations shall remain open over night.

1.07 TEST PITS

- A. If the private side of the service line is found to be a material other than lead or galvanized requiring replacement, backfill the excavation and perform the surface restoration in accordance with Section 02221 Trenching, Backfilling, and Compaction. All restoration shall be completed to the satisfaction of the Engineer. All work associated with the excavation, backfill, and restoration for a service line that is found to not be lead on either side shall be considered a test pit and paid for as part of that work. See Section 01170, Special Provisions, for minimum test pit dimensions.
- B. If a test pit is performed at a location not indicated in Appendix A or without the direction of the Owner and Engineer, the test pit will be for the convenience of the Contractor and the Contractor will not be compensated.

1.08 MAINTENANCE OF TRAFFIC

- A. Traffic on the affected roads and streets shall be maintained at all times under responsibility of the Contractor. Maintenance of traffic provisions shall be approved in writing by the Engineer, Owner, Municipality, and the jurisdiction Police Department. All maintenance of traffic and

road closures shall be in accordance with the applicable Department of Public Works permits. Work on State roads also shall be approved in writing by NCDOT. All traffic control devices shall be in accordance with the Manual on Uniform Traffic Control Devices, latest issue.

- B. Unless permission to close a street is received in writing from the Police Department, Engineer and Owner, all construction equipment and excavated material shall be placed so that vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, he/she shall repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the Engineer.
- C. Detours around construction will be subject to permit approval, and approval of the Engineer and Owner. Where detours are permitted, provide all necessary barricades and signs as required to divert the flow of traffic. Provide expedited construction when traffic is detoured.
- D. The Contractor shall be fully responsible for damage or injuries whether or not traffic control officers have been provided.
- E. See Section 01576 Traffic Control for additional requirements for traffic control.

1.09 CARE AND PROTECTION OF PROPERTY

- A. The Contractor shall be responsible for the preservation of all public and private property and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his/her expense, to a condition similar or equal to that existing before the damage was done, or he/she shall make good the damage in another manner acceptable to the Engineer.

1.10 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

- A. Assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables. Carefully support and protect all such structures and utilities from injury of any kind. All damage resulting from the Contractor's operations shall be repaired at the Contractor's expense. Establish the location and extent of all existing utilities before the commencement of excavation by calling North Carolina 811 and obtaining a dig ticket. Notify all utility companies and North Carolina 811 Notification Center in writing at least 72 hours (excluding Saturdays, Sundays and Legal holidays) and no more than 12 full working days before excavating or otherwise affecting utilities in any public way or easement. Work on University of North Carolina Chapel Hill must be coordinated with University staff a minimum of ten (10) business days in advance so that service line locations and locations of other utilities can be determined prior to replacement work. Only Orange County Water and Sewer Authority (OWASA) staff may operate OWASA valves, with the exception of the curb stop and water meter valves needed for service line replacement.
- B. Utility services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor at no additional cost to the Owner.

- C. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract at no additional cost to the Owner.
- D. Service line installation shall be worked around existing underground utilities. Make every effort to install service line in such manner as to avoid utility conflicts. If in the opinion of the Engineer, permanent relocation of a utility is required, the Engineer may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for at the Contract unit prices, if applicable, or as extra work under Contract Procedures, Differing Site Conditions section of the Contract Documents. If relocation of a privately-owned utility is required, the Owner will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Owner and Utility and shall have no claim for the delay due to such relocation.
- E. The Contractor shall bear full responsibility, for obtaining all locations of underground structures and utilities (including existing water services, drain lines, gas, electric, telecommunication, and sewers). All utilities are considered unknown and shall not be considered as differing site conditions.

1.11 WATER FOR CONSTRUCTION PURPOSES

- A. In locations where public water is available, the Contractor may be allowed to use water for construction purposes without charge.
- B. The express approval of the Owner shall be obtained before water is used. Waste of water shall be sufficient cause for withdrawing the privilege of unrestricted use. Hydrants or valves shall only be operated under the supervision of the Owner's personnel.
- C. If water restrictions are in force, the Contractor shall supply his/her own source of water which shall be acceptable to the Engineer.
- D. When drawing water for construction purposes, use caution at all times to prevent potential contamination of the Owner's water distribution system. Hydrant connections will require a backflow preventer and meter suitably installed to the satisfaction of the Engineer and Owner.
- E. Coordinate with the Owner for the opening and closing of hydrants. Hydrants shall be operated under the supervision of the Owner. All hydrants must be opened and closed SLOWLY to prevent damage.
- F. Supply a working reduced pressure backflow preventer and flow meter on each hydrant utilized during construction. The Contractor shall be responsible for providing all hoses and special fittings needed for utilizing the Owner's water supply. During the shop drawing process, submit information on the hydrant meters and backflow preventer intended for use for construction purposes.
- G. At the end of construction, furnish a tabulation of the total gallons of water utilized during the course of the contract.

- H. The Contractor will be responsible for all damage caused by water which passes through the hydrant meter, whether it is used or wasted. If damage does occur, Contractor shall incur all responsibility and costs for repair of any damage and returning the site to its original condition.

1.12 MAINTENANCE OF FLOW

- A. The Contractor shall at his/her own cost, provide for the flow of drains and watercourses interrupted during the progress of the work, and shall immediately cart away and remove all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Engineer well in advance of the interruption of any flow.

1.13 COOPERATION WITHIN THIS CONTRACT

- A. All firms or persons authorized to perform any work under this Contract shall cooperate with the Contractor and his/her Subcontractors or trades and shall assist in incorporating the work of other trades where necessary or required.

1.14 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

- A. During the course of the work, keep the site of Contractor operations in as clean and neat a condition as is possible. Contractor shall dispose of all residue resulting from the construction work and, at the conclusion of the work, Contractor shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures and any other refuse remaining from the construction operations and shall leave the entire site of the work in a neat and orderly condition.
- B. Immediately remove from the site and legally dispose of all service lines and appurtenances replaced under this Contract. At no time shall these materials be stacked along the trench.
- C. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his/her subcontractors shall comply with all applicable Federal, State and local laws and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and elsewhere in the Specifications.
- D. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and floodplains is strictly prohibited even if the permission of the Owner is obtained. Any violation of this restriction by the Contractor or any person employed by him/her will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action is taken against the offending parties. Therefore, the Contractor will be required to remove the fill at his/her own expense and restore the area impacted.
- E. Dispose of all surplus excavated soil material, including construction debris, boulders, broken pavement, demolished pipe, and other non-soil material.

1.15 RESTORATION

- A. Restore all areas to conditions that existed prior to construction. Restoration outside of the pipe trench limits required as a result of the construction activities shall be at the Contractor's own expense. Restoration within the pipe trench limits shall be included in the appropriate bid items as required in Section 01025 (Measurement and Payment). Restoration, including restoration on

private property, as specified in Sections 01025 (Measurement and Payment), Section 02576 (Pavement Repair and Resurfacing), and Section 02930 (Topsoiling and Seeding).

- B. Existing public and private driveways and sidewalks disturbed by the construction shall be replaced to the limits and thicknesses existing prior to construction and as specified in Section 02576 (Pavement Repair and Resurfacing), and Section 02930 (Topsoiling and Seeding).
- C. Existing signs, lampposts and mailboxes which are damaged by the Contractor or removed by the Contractor during the course of the work shall be reinstalled in a vertical position at the same location from which they were removed. Damaged items shall be replaced with an item equal to or better than the damaged items. A concrete anchor shall be provided as necessary, at no additional cost, to ensure rigid alignment. Care shall be exercised in the reinstallation of all items to prevent damage to the newly installed pipelines.
- D. Existing concrete, bituminous, timber, granite or other material curbing shall be protected. If necessary, curbing shall be removed and replaced after backfilling. Curbing which is damaged during construction shall be replaced with curbing of equal quality and dimension. Granite curbing removed and reset shall conform to the local municipality's standards. Joints between sections shall be expansion type as required. Bituminous berms shall conform to the Owner's Standards.
- E. Restoration of any areas on private property disturbed by construction is as specified in Sections 02576 Pavement Repair and Resurfacing, and 02930 Topsoiling and Seeding.

1.16 PIPE TRENCH WIDTHS

- A. Pipe trench widths referred to herein are the distances separating the vertical planes between which the pipe is to be laid. Maximum trench payment widths for open cut installations are provided in the Details included in Appendix B.
- B. Where trenchless installation methods are used, the excavation area shall be only what is needed for workers and equipment to perform the installation. Maximum access pit payment sizes for trenchless installations shall be 4 ft by 6 ft in the roadway and 4 ft by 4 ft at the water meter or anywhere on private property.
- C. Trench and excavation limits are applicable for determining additional payment related to excavation, backfill, and restoration outside of the items included in the replacement bid items.

1.17 SERVICE LINE TRENCH DEPTHS

- A. The top of the trench shall be the ground elevation. The bottom of the trench shall be the invert elevation of the pipe and minimum 4-inches of bedding material as specified in Section 02230, Granular Fill Materials, Paragraph 2.01.C.
- B. In computing the amount of excavation below 5-feet for payment under Item 1K, trench depth shall be depth below 5-feet of excavation and trench width shall be as described in Paragraph 1.16.

END OF SECTION

SECTION 01110
ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Furnish all labor, materials and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.
- B. The control of environmental pollution requires consideration of air, water and land, and involves management of noise and solid waste, as well as other pollutants.
- C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, seeding, mulching or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area. Specific requirements for erosion and sedimentation controls are specified in Section 02270 "Sedimentation and Erosion Controls".
- D. This Section is intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.
- E. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the Engineer and Owner.
- F. Section includes:
 - 1. Prohibited Activities.
 - 2. Erosion control.
 - 3. Protection of streams and surface waters.
 - 4. Protection of land resources.

5. Protection of air quality.
 6. Noise control.
 7. Maintenance of Pollution Control Facilities During Construction.
- G. The project excavation areas are located within the public right of way and private property. All excess soils for disposal are assumed to be non-hazardous contaminated soil exceeding NCDEQ Unrestricted Property Use Residential Soil Remediation Standards (N.C.G.S. 130A-310.65-310.77). If grossly contaminated material, visible as free product, soil staining, oil sheen or noxious vapors, are encountered during excavation work performed under this Contract, the Contractor shall notify the Owner and Engineer, and the North Carolina Department of Environmental Quality (NCDEQ) by contacting the main reporting line at 1-800-858-0368, where and as required by applicable laws and regulations. The Contractor shall be responsible for sampling and analysis, handling, temporary storage, removal, tracking, and disposal of contaminated and hazardous fluids and solids encountered in accordance with the Contract Specifications. All work shall be performed in accordance with all applicable Federal, State, and local regulations, laws, codes, and ordinances governing the handling, transportation, and disposal of contaminated materials.

1.3 QUALITY CONTROL

- A. Comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement.
- B. Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or local requirements. After receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.
- C. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.4 PREINSTALLATION MEETINGS

- A. Prior to commencement of the work, meet with the Engineer and Owner to develop mutual understandings relative to compliance with these provisions and administration of the environmental pollution control program.

1.5 IMPLEMENTATION

- A. Remove temporary environmental control features, when approved by the Engineer and incorporate permanent control features into the project at the earliest practicable time.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PROHIBITED ACTIVITIES

- A. Do not use procedures, activities, or operations that may adversely impact the natural environment or the public health and safety. Prohibited construction procedures, activities, or operations include but are not limited to:
 - 1. Dumping or disposal of spoil materials, discharging of solid waste deleterious to any stream corridors, any wetlands, any surface waters, or on any public or private property not specified for said purpose.
 - 2. Disposal of debris in any stream corridors, any wetlands, any surface water, or at unspecified locations.
 - 3. Storing construction equipment and vehicles and/or stockpiling construction materials at locations not previously specified and approved by the Owner for said purposes.
 - 4. Dumping, disposing, or stockpiling of any material at any location within the boroughs of Chapel Hill or Carrboro without prior written approval.
 - 5. Dumping of spoil material into any stream corridor, any wetlands, any vernal habitats, any surface waters, any sites listed or eligible for listing on the National Registers of Historic Places, or at unspecified locations;
 - 6. Indiscriminate, arbitrary or capricious operation of equipment in any stream corridors, wetlands, or surface waters;
 - 7. Pumping of silt-laden water from trenches or other excavations into any surface waters, stream corridors, wetlands, or vernal habitats;
 - 8. Damaging vegetation adjacent to or outside of the access road or the right of way;
 - 9. Disposal of trees, brush, and other debris in any stream corridors, wetlands, vernal habitats, surface waters, or at unspecified locations;

10. Permanent or unspecified alteration of the flow line of any stream.
11. Open burning of project debris.
12. Use of calcium chloride, petroleum products or other chemicals for dust control; and
13. Use of asphaltic mulch binders; and
14. Any unpermitted discharge of sewage.

3.2 EROSION CONTROL

- A. Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures, such as siltation basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Offsite surface water shall be diverted around the site, to a downstream channel ahead of siltation barriers. Flow of surface water into excavated areas shall be prevented. Ditches around construction area shall also be used to carry away water resulting from dewatering of excavated areas. All erosion control measures shall be in place in an area prior to construction activity in that area. Specific requirements for erosion and sedimentation controls are specified in Section 02270 "Sedimentation and Erosion Controls". At the completion of the work, ditches shall be backfilled and the ground surface restored to original condition.
- B. Clearing of vegetation shall be limited to what is necessary for equipment to access the work area. Roots shall not be removed.

3.3 PROTECTION OF STREAMS AND SURFACE WATERS

- A. Take all precautions to prevent, or reduce to a minimum, any damage to any stream or surface water from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, that contains oils or sediments that will reduce the quality of the water in the stream, shall not be directly returned to the stream. Divert such waters through a filter bag before being directed into streams or surface waters.
- B. Do not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.
- C. Take all preventative measures to avoid spillage of petroleum products and other pollutants. Maintenance and refueling of vehicles will take place outside of the 100-foot buffer zone to any resource areas. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the North Carolina Department of Environmental Quality. A supply of "Speedy Dry", oil absorbent pads, or an approved equivalent, shall be maintained with the construction equipment at all times which shall be used to contain any accidental release of oil or other petroleum products during the field work. Submit two copies of approved contingency plans to the Engineer.

3.4 DEWATERING

- A. When dewatering will occur, and a dewatering permit is not required, the Contractor shall monitor for adverse effects to structures or wells due to dewatering and shall be responsible for remedying same to the satisfaction of the Owner and the North Carolina Department of Environmental Quality. Discharges from dewatering activities which contain silt are subject to the following controls:
- B. All discharges from dewatering activities to surface waters, wetlands, vernal habitats, or storm sewers shall be free of sediment. Care shall be taken not to damage or kill vegetation by excessive watering or by damaging silt accumulation in the discharge area. If discharges are sediment-laden, techniques shall be employed to remove sediment prior to discharge. A sedimentation basin shall be constructed and used as specified, where necessary, to protect vegetation and to achieve environmental objectives.
- C. All sewer and storm inlets within construction areas shall be provided with perimeter hay bales or other appropriate siltation control measures.

3.5 PROTECTION OF LAND RESOURCES

- A. Restore land resources within the project boundaries and outside the limits of permanent work to a condition, after completion of construction that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.
- B. Do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.
- C. Before beginning operations near them, protect trees that may possibly be defaced, bruised, injured, or otherwise damaged by the construction equipment, dumping or other operations, by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly.
- D. Trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to their original condition. The local Tree Warden will decide the method of restoration to be used and whether damaged trees shall be treated and healed or removed and disposed of.
 - 1. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-in in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.

2. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer or local Tree Warden, shall be immediately removed and replaced.
- E. The locations of the Contractor's storage and other construction buildings required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be cleared as shown on the Drawings and approved by the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings.
- F. If the Contractor proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he shall submit the following for approval at least ten days prior to scheduled start of such temporary work.
 1. A layout of all temporary roads, excavations, embankments and drainage to be constructed within the work area.
 2. Details of temporary road construction.
 3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.
 4. A landscaping drawing showing the proposed restoration of the area. Indicate the proposed removal of any trees and shrubs outside the limits of existing clearing area. Indicate locations of guard posts or barriers required to control vehicular traffic and protect trees and shrubs to be maintained undamaged. The Drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the Contractor's approved drawings shall be made only with the written approval of the Engineer. No unauthorized road construction, excavation or embankment construction including disposal areas will be permitted.
- G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. This work is only anticipated to impact roadways, the disturbed areas will be prepared as described in Section 02270 "Sedimentation and Erosion Control" and Section 02576 "Pavement Repair and Resurfacing."
- H. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.
- I. All new trees shall be maintained and guaranteed by the Contractor for not less than one full year from the time of provisional acceptance.
- J. At the end of this period, any tree that is missing, dead, not true to name or size as specified, or not in satisfactory growth, as determined by the Engineer, shall be replaced at no cost to the Owner. In case of any question regarding the condition and satisfactory establishment of a rejected plant, the Engineer may allow such a plant to remain through another complete planting

season at which time the rejected tree, if found to be dead, in an unhealthy, or badly impaired condition, shall be replaced at once at no cost to the Owner.

- K. All replacements shall be trees of the same kind and size, and the cost shall be borne by the Contractor except where it can be definitely shown that loss resulted from vandalism or the Owner's failure to maintain planting as instructed.
- L. At the end of the maintenance and guarantee period, and after all necessary corrective work has been completed, an inspection will be made by the Engineer who will certify in writing the final acceptance of the trees.

3.6 PROTECTION OF AIR QUALITY

- A. Burning - The use of burning at the project site for the disposal of refuse and debris will not be permitted.
- B. Dust Control - Maintain all excavations, embankment, stockpiles, access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.
- C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may be permitted with approval from the Engineer.
- D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor shall have sufficient competent equipment on the job to accomplish this. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer.

3.7 NOISE CONTROL

- A. Make every effort to minimize noises caused by the construction operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with Federal and State regulations.
- B. In order to limit noise impacts in the vicinity of sensitive receptors, construction operations and activities shall be limited as follows: Monday through Friday between the hours of 7:00 A.M. and 7:00 P.M. unless variances to these times are granted in times of emergency. No driving, pulling, or other operations entailing the use of vibratory hammers or compactors shall be permitted, other than between the hours of 8:00 A.M. and 5:00 P.M. The number of machines in operation at a given time shall be limited to the minimum practicable. All engine generators or pumps must have mufflers and be enclosed within a temporary structure

3.8 CULTURAL RESOURCES

- A. If a cultural resource is encountered during the course of construction, the Contractor is directed to halt all construction activities in that area. The Contractor shall immediately contact the

Engineer and the Engineer who shall contact the North Carolina Office of State Archaeology. The Office will determine the appropriate approach for the resources identified in accordance with State and Federal Regulations.

- B. The Contractor shall not dispose of excess excavated material at, stockpile construction materials at, or obtain borrow material from, properties which are listed or eligible for listing on the North Carolina or National Registers of Historic Places.
- C. When the Owner is contacted by the Contractor in accordance with the above provisions, the Owner must immediately contact the North Carolina Office of State Archaeology at (919) 814-6550. The OSA will determine the appropriate actions, in accordance with North Carolina General Statutes – Chapter 70 and the federal Advisory Council on Historic Preservation procedures.

3.9 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

- A. Maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

END OF SECTION

SECTION 01170 SPECIAL PROVISIONS

PART 1 GENERAL

1.01 GENERAL OBLIGATIONS OF THE CONTRACTOR

- A. General obligations of the Contractor shall be as set forth in the Contract Documents. Unless special payment is specifically provided in the payment paragraphs of the specifications, all incidental work and expenses in connection with the completion of work under the Contract will be considered a subsidiary obligation of the Contractor, and all such costs shall be included in the appropriate items in the Bid Form in connection with which the costs are incurred.
- B. Obtain and maintain all licenses required to complete the work, including but not limited to plumbing, contractor, municipal contractor licenses.

1.02 SITE INVESTIGATION

- A. Review and become familiar with the conditions existing within the project area, the type of equipment required to perform the work, the character, quality and quantity of the subsurface materials to be encountered insofar as this information is reasonably ascertainable from an inspection of the site(s), as well as from information presented by Contract Maps, Details and Specifications. Failure of the Contractor to become acquainted with the available information will not relieve the Contractor from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusions or interpretation made by the Contractor on the basis of the information made available by the Owner.

1.03 COORDINATION WITH LOCAL AGENCIES

- A. Coordinate with the local Police Department, public and private schools, University of North Carolina – Chapel Hill, Fire Department, Traffic Engineering Department, Public Works Department, the North Carolina Department of Transportation, the Owner, and other relevant City and local agencies as required, and supply the following information.
 - 1. A list of streets and intersections where work will be performed and the schedule (dates and work hours) for the work.
 - 2. Areas and dates where approved detours will be in effect.
 - 3. Immediate notification of any drain, sewer, gas or water main breaks or damage to any other utilities.
- B. Advise local agencies of changes in the work schedule and locations immediately and provide construction progress updates.
- C. Provide the Owner and Engineer with a list of after-hours telephone numbers by which appropriate Contractor personnel may be contacted in the event of an emergency.

- D. Maintain pavement as specified in Section 02576 Pavement Resurfacing and Repair and provide the Owner with a telephone number where the Contractor may be reached at any time of day or night. Upon notification by the Owner or the Engineer, promptly make such repairs as necessary to paved surfaces.

1.04 EMPLOYEE IDENTIFICATION AND BACKGROUND CHECKS

- A. The successful bidder is required to submit all names of all employees who will be performing work on behalf of the Owner. The successful bidder is responsible for the professional behavior of their employees and Subcontractor employees while working at the Owner's job site.
- B. The Owner reserves the right to deny access to private property to any person, as allowed by law. All of Contractor's employees, and subcontractor's staff and all other people associated with the Work that are to enter private property are required to possess and carry a valid and current Driver's License, Identification Card (issued by the North Carolina Division of Motor Vehicles), or current driver's license from another State in the United States. This identification must include a photograph and signature of the holder.
- C. Anyone entering private property will also be required to carry a Contractor ID badge provided by the Contractor. Allow 10 days for the badge to be provided.
- D. Order identification badges through the Owner for all new employees or subcontractor's employees that will be working on private property throughout the course of the project.
- E. Keep a written record of the name, employer and work telephone number of each person issued a photo identification badge. Lost or missing badges shall be reported immediately to the Engineer.
- F. If any Contractor's employee is reassigned to other sites or terminated during the construction, the Contractor shall be responsible for collecting the badges from all Contractors' staff, all subcontractor's staff and all other personnel when their particular assignment on the site is complete.
- G. It is required that all trucks and equipment shall be marked with company logo. Contractor employees and subcontractors shall wear a uniform shirt or vest with the Contractor's logo displayed at all times while working.

1.05 HOURS OF CONSTRUCTION

- A. Work outside of normal hours as specified in Section 01014, Construction Sequence and Schedule Requirements, may be done upon Customers' request. Notify Owner and Engineer of such work and Contractor shall make all accommodations to meet such Customer requests. All work performed to accommodate the Customer shall be done at no additional cost to Owner; this includes overtime and weekend work.

1.06 PUBLIC UTILITIES

- A. Comply with all state and local requirements related to excavations in public and private property. Compliance shall include the following:

1. The Contractor shall be responsible for providing the Utility Companies with a schedule of their activities in areas where their utilities exist.
 2. Immediately notify utility companies of any damage to their utilities resulting from construction operations and coordinate repair to such utilities with the utility company at no cost to the Owner.
 3. Notify NC Notification Center at 811 at a minimum of three (3) full business days (excluding Saturdays, Sundays, and legal holidays) but not more than twelve (12) days before digging, trenching, boring, test pits, backfilling, grading, landscaping, or other earthmoving operations in any public ways, rights of ways, easements, or other areas where underground utilities (pipes, cables, manholes, etc.) exist. Contractor shall also reach out to University of North Carolina Chapel Hill a minimum ten (10) business days in advance of work so that University staff can identify service line locations prior to construction.
- B. All mark outs of utilities shall be considered by the Contractor as the approximate location for the purpose of damage prevention. The cost for this work shall be included in the replacement Bid Items. No additional compensation or time extensions will be made for mis-marked utilities.

1.07 PERMITS

- A. The Contractor shall be required to obtain all necessary permits for proper execution of the project. Contractor shall prepare all forms and furnish all drawings required to obtain the permits. Where necessary Owner will sign application forms as the utility owner. Electronic copies of all approved permit shall be submitted to the Engineer. Applications and permits shall be saved individually and categorized by street address, permit type and permit number. Work shall not commence on any phase of the work requiring a permit until the permit is obtained.
- B. Submit applications for and obtain all required Traffic Engineering, Road Opening (municipal and State), Sidewalk Opening, and Street Closure Permits for excavations and work within streets or sidewalk areas.
- C. Prepare and submit the Plumbing Permit and Orange County Water and Sewer Authority water service application on behalf of the Customer and paid for under the Plumbing Permit Allowance.

1.08 DOOR HANGERS

- A. The Contractor shall be responsible for printing and distributing the following door hangers. The door hangers shall be printed 2-sided full color on white 12 pt stock with full bleed print with a cutout and slit at the top for the doorknob or handle. The Owner will provide the door hanger electronic files for printing and distribution by the Contractor.
 1. Scheduling Replacements (if needed)
 2. 72-Hour Notice to Scheduled Replacements
 3. 24-Hour Reminder of Scheduled Replacement

4. Notification About Household Flushing
5. Critical Flushing When No Access to Spigot
6. Last Chance for Properties Not Yet Signed Up

1.09 DISRUPTIONS TO THE EXISTING WATER SYSTEM

- A. If during the course of the excavation, the Contractor, for whatever reason, causes existing water mains to fail, restore service in the shortest possible time, working around the clock if necessary. Pay all costs associated with, or resulting from, all water main breaks at no additional cost to the Owner or Customer. Cooperate with the Owner in supplying emergency water.
- B. Planned or scheduled water shutdowns (only if approved by the Engineer or Owner) require the Contractor to notify the Owner in writing at least 72 hours prior to work on the existing water distribution system, including water distribution shutdown requests.
- C. Notify all affected residents and businesses along the project limits of any impending water main or water service work. It is the Contractor's responsibility to provide and distribute written notifications describing the expected water distribution system construction activities, the responsibility of the residents and/or businesses, how long the residents and/or businesses will be without service, and the estimated time of completion of the water distribution system construction activities. The notice should identify the location of the water distribution system construction activities as well as the times of any disruptions to the water system. The water distribution system shall not be taken out of service unless everyone serviced by the water main or water service has been notified at least 72 hours in advance. Notifications shall include 24-hour local or toll-free telephone numbers for the Contractor on the written notification in order to accommodate the residents' or business owners' questions or comments. Notices shall be approved in advance by the Owner and Engineer and shall be written in English and Spanish.
- D. Remind customers of the disturbance within 24 hours prior to the loss of service. This shall be either the day before the replacement is scheduled or the morning of.

1.10 TOOLS

- A. Any special tools unique to a special piece of equipment or appurtenances (including grease guns or other lubricating devices) which may be necessary for the adjustment, operation, and maintenance of any equipment or appurtenances shall be furnished with the respective equipment.

1.11 PARTS

- A. Parts for certain appurtenances have been specified in the pertinent Sections of the Specifications. Deliver to the Owner all required parts.
- B. Parts shall be packed in original cartons, properly labeled with indelible markings with complete descriptive information including manufacturer, part number, and part name.

1.12 CONNECTIONS TO EXISTING WATER MAINS

- A. Perform all work necessary to locate, excavate and prepare for connections to the existing mains and service connections. When reusing the existing corporation stop, the cost for this work and the physical connection of new water service lines to the existing mains shall be included in the replacement bid items for the project and shall not result in any additional cost to the Owner.

1.13 EXISTING WATER SERVICE LINES

- A. Existing service lines made of galvanized steel are known to be brittle and have several bends. They may not extract in one piece if pipe pulling is used. The difficulty of pulling the existing pipe shall not result in any additional cost to the Owner.

1.14 UTILITY CROSSINGS

- A. It is intended that wherever existing utilities such as water, sewer, electrical or other service lines must be crossed, deflection of the pipe within recommended limits and cover shall be used to clear the obstruction satisfactorily. However, when in the opinion of the Owner or Engineer this procedure is not feasible the Engineer may direct the use of fittings for a utility crossing.

1.15 DAMAGE ON ACCOUNT OF HIGH WATER

- A. The Contractor will hold themselves responsible for all damage done to Contractor's work by heavy rains or floods, and Contractor shall take all reasonable precautions to provide against damages by building such temporary dikes, channels, or shoring to carry off stormwater as the nature of the work may require.

1.16 RELOCATIONS

- A. Contractor is responsible for the relocation of above-ground structures, including but not limited to light poles, signs, sign poles, fences, piping, laterals and french drains that interfere with the positioning of the work. The cost of all such relocations including labor, materials and equipment shall be included in the replacement bid items for the project and shall not result in any additional cost to the Owner. Costs imposed by the a utility to protect their infrastructure will be paid for under the appropriate allowance item.

1.17 OBSTRUCTIONS

- A. The attention of the Contractor is drawn to the fact that during excavation at the Project site, the possibility exists of the Contractor encountering various water, sewer, electrical, or other lines unknown to Engineer. Exercise extreme care before and during excavation to locate and flag these lines to avoid damage to the existing lines. Should damage occur to an existing line, repair the line at no cost to the Owner.
- B. It is the responsibility of the Contractor to ensure that all utility or other poles, the stability of which may be endangered by the close proximity of excavation, are temporarily stayed in position while work proceeds in the vicinity of the pole and that the utility or other companies concerned be given reasonable advanced notice of any such excavation by the Contractor.

1.18 WATER SERVICE LINE REPLACEMENT PROCESS

- A. Refer to the details in Appendix B for additional requirements and notes related to the water service lines.
- B. Locations for Service Line Replacement
 - 1. Contractor is required to visit the streets of the proposed replacements to become familiar with all conditions that may in any manner affect cost, progress or performance of the work, including conditions that exist prior to construction at every location for purposes of restoring conditions to at least equal to what exists prior to construction as part of the final restoration requirements of this project. Contractor's submission of a Bid for this project will constitute an incontrovertible representation that Contractor has visited all of the streets with proposed galvanized service line replacements, including for purposes of reviewing existing conditions to establish bid prices for this work for all potential final restoration as part of this work. Submission of a Bid for this project will also constitute an incontrovertible representation that Contractor is satisfied with all of the site conditions that may affect the cost, progress or performance of the work of this project.
 - a. A list of addresses for replacement of existing galvanized service lines as part of this project are provided in Appendix A of this Project Manual. The list of customers at these properties where private side replacement work is needed will have signed Galvanized Service Line Replacement Agreement forms provided by the Owner. Owner will make every effort to ensure the proposed number of replacement locations will be provided to the Contractor. However, if the final replacement number is less than the bid quantity, Contractor shall have no claim to modify the price of the unit price item.
- A. Galvanized Service Line Replacement Replacement Agreement
 - 1. Owner will provide the signed Galvanized Service Line Replacement Agreement and contact information for customers on with private side replacement work the list in Appendix A to the Contractor. Owner shall make initial contact with customers and assist Contractor in completing the agreements. No work shall commence on private property where Owner has not received a signed Galvanized Service Line Replacement Agreement authorizing permission to complete work on private property.
- B. Coordination with Owner
 - 1. Coordinate all work activities with the Owner and Engineer.
- C. Coordination with other contractors
 - 1. Coordinate all work activities with any other Contractors performing work in adjacent areas.
- D. Coordination with Customers
 - 1. Contractor shall coordinate with Customers on the list in Appendix A to schedule the replacement work.

2. If, at a property where a private side replacement was expected to take place, copper or plastic is observed at the test pit at the water meter then no replacement shall take place and Contractor will be paid for a test pit as described in Section 01025, Measurement and Payment. Only replacements of galvanized material will be paid. If the pipe is only partially made of galvanized, it will still be paid as a replacement.
3. The Contractor is responsible for scheduling and coordinating all work at each individual location with the Customers on the list in Appendix A, including approximate dates when work will begin and end. For each location, Contractor shall provide to the Customers a general description of work to be performed and contact information of the Contractor and Owner.
4. Notify and coordinate all work activities with Customers whose water service may be temporarily interrupted to facilitate work for this project. No water services shall be disconnected without alerting the customer and for a duration more than 8-hours.
5. Schedule construction activities at the convenience of the Customer. If the Customer cancels the work or is unavailable at the time of the scheduled appointment, the Contractor shall attempt to reschedule the work with the customer within 72 hours at the mutual convenience of the Customer and Contractor. If the customer refuses to reschedule within 72 hours, the Contractor shall be compensated via the unit price bid item for Access Not Provided. Submit documentation of the scheduled appointment and the customer's confirmation that the appointment was accepted and then cancelled or proof that the customer did not show up for the appointment. This shall be documented in the online platform by the Contractor.
6. Customer shall provide reasonable access and a working area for the Contractor at the service line and location inside their home to connect new service line into premise plumbing. If such access is not provided, Contractor shall request Customer provide such access within 72 hours. If no access is provided during that time, immediately inform Owner and Engineer in writing of the address and Customer name. If no access is provided by the Customer, then they shall be removed from the contract list, and the Contractor shall be compensated via the unit price bid item for Access Not Provided. No other work will be compensated at this address.
7. Any Contractor personnel that will enter private property for any work on this project are required to have background checks and badges/identification. Only personnel which have completed background checks and issued badges/identification by the Owner shall enter private property. No Contractor personnel will be allowed to attempt entry into private property or enter private property without wearing proper identification.
8. The Contractor, subcontractors and all members of the construction crew shall continuously use all courtesies when working with the residents and their property. Such practices include, but are not limited to, using foot covers when inside the home, using drop cloths to protect floors around the work area, using electric saws and performing dust control to minimize any air contamination. Contractor shall minimize property disturbance to the minimum necessary disturbance in order to complete the replacement work. Contractor shall not request to use the bathrooms of the residents.

9. Contractor will provide Customer with post-replacement flyer and pitcher filter with cartridges following any replacement.

E. Photographic Documentation

1. Photographic documentation shall be in accordance with Section 01322, Photographic Documentation, of these Specifications.
2. Upon arrival to the site, the Contractor shall first obtain pre-construction photographs of existing conditions. This requirement intends to document conditions existing prior to construction to establish documentation and visual evidence to confirm all needed final restoration that is at least equal to conditions existing prior to construction. No payment will be made to Contractor for work performed at a location unless photographic documentation is submitted for that location.
3. Provide photographic documentation of all completed work at all locations. This requirement intends to provide final visual evidence and a final record of final restoration. No payment will be made to Contractor for work performed at a location unless photographic documentation is submitted for that location.

F. Test Pits

1. A test pit is defined as a planned service line replacement that is found not to be galvanized on the private side.
2. A test pit shall be assumed to be sufficient in length or consist of one hole to verify the materials on the Private-side of the water meter is not galvanized. Test pits should observe the service line approximately eighteen (18) inches from the water meter. If the findings are inconclusive, an additional visual inspection should be conducted in the building where the service line enters the structure to confirm the material. Photograph the service line materials in accordance with Section 01322, Photographic Documentation, and record the Private-side materials.
3. Test pits shall be backfilled in accordance with Paragraph 3.05 in Section 02221, Trenching, Backfilling and Compaction, and the details in Appendix B. If a property is not on list in Appendix A or added by the Owner, any test pit performed will not be paid.
4. Water service must be turned off before any excavation near the galvanized service line. Notify the Customer prior to turning off water service in accordance with Part E above.
5. Engineer or Owner may request test pits for identifying materials at additional properties. If a test pit does not result in a replacement at that address, backfill and restore in accordance with Paragraphs 3.05 and 3.06 in Section 02221, Trenching, Backfilling, and Compaction, and the details in Appendix B only once the material information is obtained and recorded. Payment would be made under the test pit bid item for requested test pits by the Engineer or Owner. Test pits requested by Owner or Engineer shall be performed to minimize disturbance to galvanized service lines while positively identifying the service line material on the Private-side of the water meter.
6. Test pits are to be behind the curb only unless specifically directed by the Owner or Engineer. Controlled Low-Strength Material (CLSM) shall be used to ensure required

compaction and strength are achieved for test pits conducted in the street. The backfilled surface shall be maintained in a satisfactory condition for travel until resurfaced as specified.

G. Water Service Line Replacements

1. All work, including final interior connections performed by a licensed plumber in accordance with the North Carolina Plumbing Code, for galvanized service line replacements at each location must be completed in a maximum time not to exceed 8 hours. Temporary shutdowns of service lines to facilitate replacement of galvanized service lines shall not exceed 8 hours and in no case shall any customer or location be without potable water service longer than 8 hours.
2. Unless otherwise approved by the Engineer, all work shall be performed with water mains live and in service as specified in Section 02663, Water Service Connections.
3. Buildings in this area should be assumed to be grounded to the water service line. See Section 02663, Water Service Connections, for the requirements under this contract related to grounding.
4. Unless otherwise approved by the Engineer, all planned service line replacements shall begin with an excavation 18 inches behind the water meter to ensure the Private-side material is galvanized. Necessary excavation in a roadway will begin only after the material is verified to be galvanized.
5. New water service lines to replace existing galvanized services shall be as specified in Section 02663, Water Service Connections. Size of all new service lines is between 3/4-inch and 4 inches.
6. Typical water service connection details are included in Appendix B to the Specifications. These details represent typical conditions for water service line replacement. Each location will vary.
7. Final connection of new service lines between the existing water meter and the first fitting in the buildings will be made by a licensed plumber in accordance with the North Carolina Plumbing Code included in this Contract. Coordinate all work with Engineer and Owner.
8. Contractor shall be prepared and responsible for draining and handling water from building plumbing after cutting into the existing service lines to facilitate the installation of new work. All water drained from building plumbing shall be drained outside of the building not to flood the existing building basement.
9. Refer to Appendix B for the standard details for this project and additional requirements for water service line installations.

H. Existing Sewer Service Connections

1. Water and sewer services may be located in close proximity and/or the same trench at many locations. The Contractor is cautioned as to the proximity of existing sewer services to the existing water service line.
2. Any existing sewer service connection that is broken or damaged by the Contractor during construction shall be repaired with all pipe, fittings, and couplings at no additional cost to the Owner. No separate payment will be paid for the repair of existing sewer service connections damaged by the Contractor.

I. Illegal Water Service Connections

1. If during work an illegal water service tap is discovered upstream of a meter, Contractor shall document with photographs and immediately contact Owner and Engineer.
2. After inspection by Owner or Engineer, Contractor shall remove the illegal service line up to property line or to the extent in which it is exposed. If removal is not possible, the pipe shall be crimped in two locations a minimum of 1-foot apart. If a replacement of a galvanized service line occurs, payment shall be under the replacement bid items in the Bid Form. If no replacement of a galvanized service line occurs, payment shall be under the Miscellaneous Work at Direction of Owner Allowance Item S-3.
3. If during work an address is discovered to not have a water meter present, Contractor shall document with photographs and immediately contact Owner and Engineer.

J. Final Restoration

1. Before starting construction at any location, Contractor shall review features that will be impacted by construction that shall be restored to a condition at least equal to that which existed prior to construction.
2. The Contractor is required to restore all areas to a condition at least equal to that which existed prior to construction, other than the items listed in the Galvanized Service Line Replacement Agreement on the same day as the test pit or replacement, with the exception of final sidewalk restoration which may occur at a later date as provided in the project documents. Interior and lawn restoration are required to be restored on the same day as a replacement or test pit is performed. Final road restoration shall be performed on streets as identified by the Owner or Engineer at the completion of each road segment. The Engineer will inspect work and will inspect pre- and post-construction photographic and video documentation to confirm that all final restoration is acceptable, including restoration on private property as specified in Sections, 02576 Pavement Repair and Resurfacing, and 02930 Topsoiling and Seeding. Damage to private property shall be the responsibility of the Contractor.

1.19 EXCAVATED SOIL

- A. The project excavation areas are located within the public right of way and private property. All excess soils for disposal shall be excavated, stockpiled, hauled and disposed of in accordance with all local, state and federal regulations at no additional cost to the Owner.
- B. Native soil may be reused on the property it was excavated from if it meets the requirements for Common Fill in accordance with Section 02230 Granular Fill Materials.

1.20 BRICK AND PAVERS

- A. Where brick or paver surfaces must be disturbed to conduct work, the Contractor must take care to not damage and save the brick or pavers. Original brick and pavers should be reused as much as possible for restoration, or replacement with similar materials approved by the Engineer. No brick or paver areas should be restored with asphalt or concrete without written approval by the Owner.

END OF SECTION

SECTION 01180 PIPE PENETRATIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required and install pipe penetration assemblies at all floor and wall penetrations. This Section covers materials for the various pipe penetration configurations. Penetration details are provided in Appendix B. Where possible, existing pipe penetration are to be reused. Where penetrations are required the most conservative penetration detail shown on the detail sheets shall be utilized as appropriate for the piping type, the wall or floor construction and the rating of the wall or floor penetrated.
- B. Fill any voids left from removing or installing the water service lines to the satisfaction of the Engineer, Owner and any agency having jurisdiction over the work with approved sealant.

1.02 RELATED WORK

- A. Cutting, coring and patching are included in Section 01045.
- B. Interior service piping and appurtenances are included in Section 15410.

1.03 SUBMITTALS

- A. Submit manufacturers' literature, installation instructions, and where applicable, certified test results of the various components on all items including sleeve, seal, and grout materials to be furnished in accordance with Section 01300, Submittals.
- B. Submit proposed sealing methods for pipe penetrations.

1.04 WARRANTY

- A. Warrant the work against defects for one (1) year from the date of Substantial Completion at each individual property.

PART 2 PRODUCTS

2.01 PIPE SLEEVE

- A. Pipe sleeve shall be PVC, galvanized steel or as required by the local plumbing code official.
- B. Wall opening for pipe sleeve shall be cored when a new penetration is used. Annular spaces shall be repaired and sealed with a watertight seal between pipe sleeve and existing concrete.
- C. Rigid pipe sleeves are required for penetrations through the wall or floor whether new or existing and should start at least 12-inches away from the exterior of the wall.
- D. Protective sleeves are required when cross-linked polyethylene (PEX) tubing is joined to a rigid pipe of a different material that is not free to settle in the same way as PEX.

2.02 SEALING MATERIALS

- A. Install mechanical seal between the new PEX tubing and the pipe sleeve when coring a new hole. Mechanical seals shall consist of rubber links shaped to continuously fill the annular space between the pipe and the sleeve. Link pressure plates shall be molded of glass reinforced nylon. Hardware shall be mild steel with a 60,000 psi minimum tensile strength and 2-part Zinc Dichromate coating per ASTM B-633 and Organic Coating, tested in accordance with ASTM B-117 to pass a 1,470-hour salt spray test. Links shall be colored throughout elastomer for positive material identification. Each link shall have permanent identification of the size and manufacturer's name molded into the pressure plate and sealing element. The completed sealing system shall be duty pressure rated for 20 psig differential pressure. Link material shall be EPDM "M" for all services except fire-rated assemblies; fire rated seals shall use silicone link material. Modular mechanical seals shall be Link-Seal® as manufactured by Garlock Pipeline Technologies (GPT), an Enpro Industries Company (formerly Thunderline/Pipeline Seal & Insulator [PSI]), or pre-approved equal.
- B. Install sealant in remaining voids between the new PEX tubing and the pipe sleeve. Sealant shall be a two-part vulcanizing (RTV) silicone foam by The Dow Chemical Company, Product No. 3-6548 R.T.V. Silicone Foam; 3M brand fire barrier products caulk C.P. 25 and 3M brand moldable putty MP+, or Flame-Safe firestop systems FS-900 by RectorSeal. Sealant bead configuration, depth, and width shall be in accordance with manufacturer's recommendations.
- C. Petroleum-based caulks or sealants should not come in direct contact with PEX.
- D. Refer to Plastics Pipe Institute (PPI) Technical Note 39 (TN-39) for additional information on sleeving PEX tubing.
- E. Install mechanical seal between the new copper pipe and the pipe sleeve when coring a new hole. Mechanical seals shall consist of rubber links shaped to continuously fill the annular space between the pipe and the sleeve. Link pressure plates shall be molded of glass reinforced nylon. Hardware shall be mild steel with a 60,000 psi minimum tensile strength and 2-part Zinc Dichromate coating per ASTM B-633 and Organic Coating, tested in accordance with ASTM B-117 to pass a 1,470-hour salt spray test. Links shall be colored throughout elastomer for positive material identification. Each link shall have permanent identification of the size and manufacturer's name molded into the pressure plate and sealing element. The completed sealing system shall be duty pressure rated for 20 psig differential pressure. Link material shall be EPDM "M" for all services except fire-rated assemblies; fire rated seals shall use silicone link material. Modular mechanical seals shall be Link-Seal® as manufactured by Garlock Pipeline Technologies (GPT), an Enpro Industries Company (formerly Thunderline/Pipeline Seal & Insulator [PSI]), or pre-approved equal.
- F. Install sealant in remaining voids between the new copper pipe and the pipe sleeve. Sealant shall be a two-part vulcanizing (RTV) silicone foam by The Dow Chemical Company, Product No. 3-6548 R.T.V. Silicone Foam; 3M brand fire barrier products caulk C.P. 25 and 3M brand moldable putty MP+, or Flame-Safe firestop systems FS-900 by RectorSeal. Sealant bead configuration, depth, and width shall be in accordance with manufacturer's recommendations.

2.03 SLEEVE GROUT MATERIALS

- A. Epoxy bonding compound shall be Sikadur Hi-Mod epoxy by Sika Corp.; Euco 452 Epoxy System by Euclid Chemical Corp.; or pre-approved equal.

- B. Non-shrink grout shall be Masterflow 713 by Master Builders Co., 1107 Advantage Grout by Dayton Superior, or equal.
- C. Class II Non-Shrink Grout:
 - 1. Class II Non-Shrink grout shall be high precision, fluid, extended working time grout. The minimum 28-day compressive strength shall be 7500 psi when mixed at a fluid consistency.
 - 2. Grout shall have a maximum early age height change of 4.0 percent expansion and shall have no shrinkage (0.0 percent) in accordance with ASTM C827.
 - 3. Grout shall have no shrinkage (0.0 percent) and a maximum of 0.3 percent expansion in the hardened state when tested in accordance with ASTM C1090.
 - 4. Class II grout shall have an extended working time of 30 minutes minimum when mixed to a fluid consistency as defined in ASTM C827 at temperature extremes of 45 to 90 degrees F in accordance with ASTM C1107.
 - 5. Class II Non-Shrink grouts shall meet the requirements of ASTM C1107; Grade B or C when tested using the amount of water needed to achieve fluid consistency per ASTM C939.
 - 6. The grout when tested shall not bleed or segregate at the maximum allowed water.
 - 7. Provide certification that its non-shrink property is not based on gas production or gypsum expansion.
- D. Stone Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching stone.
 - 1. Products: Provide one of the following:
 - a. Cathedral Stone Products, Inc.; Jahn Restoration Mortars.
 - b. Conproco Corporation;
 - c. Edison Coatings, Inc.; Custom System 45.
 - d. Or pre-approved equal.
 - 2. Use formulation that is vapor and water permeable (equal to or more than the stone), exhibits low shrinkage, has a lower modulus of elasticity than the stone units being repaired, and develops the high bond strength to all types of stone.
 - 3. Use formulation having working qualities and retardation control to permit forming and sculpturing where necessary.
 - 4. Formulate patching compound in colors, textures, and grain to match stone being patched. Provide colors to enable matching each piece of stone, to the satisfaction of the Engineer.

PART 3 EXECUTION

3.01 PREPARATION OF SURFACE:

- A. All surfaces that will be in contact with seal shall be free of dirt, loose rust, oil, wax, grease, curing compounds, laitance, loose concrete or other deleterious and all other preparations in accordance with manufacturer's recommendations.

3.02 PROCEDURES

- A. Waterproof seal product shall be placed in such a manner, for the consistency necessary for each application, to assure that the space to be sealed is completely filled.

3.03 CURING

- A. Seals shall be cured per manufacturer's recommendations.

END OF SECTION

SECTION 01300 SUBMITTALS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies the general methods and requirements of submissions applicable to Shop Drawings, Product Data, Construction Photographs, and Construction or Submittal Schedules. Additional general submission requirements are contained under Project Implementation of the General Provisions in the Contract Documents. Detailed submittal requirements are specified in the technical Sections. A preliminary list of shop drawings is included in Part 2.
- B. All submittals shall be clearly identified by reference to Section Number, Paragraph, Contract Map number or Detail as applicable. Submittals shall be clear and legible and of sufficient size for presentation of data.
 - 1. Submittals are categorized into two types: Action Submittals and Informational Submittals
Action Submittal: Written and graphic information submitted by the Contractor that requires the Engineer's approval. The following are examples of action submittals:
 - a. Shop drawings (including working drawings, product data, and signage).
 - b. Schedule of values.
 - c. Payment application format.
 - 2. Informational Submittal: Information submitted by the Contractor that does not require the Engineer's approval. The following are examples of informational submittals:
 - a. Shop Drawing Schedule.
 - b. Construction Schedule.
 - c. Two-Week Lookahead Schedules.
 - d. Statements of Qualifications.
 - e. Health and Safety Plans (Project-Specific, including but not limited to, the following information: types of hazards onsite, procedures and measures, emergency contact information, and PPE guidelines for the specific work on this project)
 - f. Construction Photography and Videography.
 - g. Work Plans.
 - h. Maintenance of Traffic Plans.
 - i. Test Records and Reports.
 - j. Certifications.

- k. Record Information.
- l. Record Shop Drawings.
- m. Submittals required by laws, regulations and governing agencies.
- n. Submittals required by funding agencies.
- o. Other requirements found within the technical specifications.
- p. Warranties and Bonds.
- q. Contract Close-out Documents.

1.02 RELATED WORK

- A. Additional requirements may be specified in the General Provisions for the Contract.
- B. Additional submittal requirements may be specified in the respective technical Specification Sections.
- C. Requests for Information are included in Section 01038.
- D. Contract Closeout submittals are included in Section 01700.
- E. Project Record Documents are included in Section 01720.

1.03 CONTRACTOR'S RESPONSIBILITIES

- A. All submittals shall be clearly identified as follows:
 - 1. Date of Submission.
 - 2. Project Number.
 - 3. Project Name.
 - 4. Contractor Identification.
 - a. Contractor.
 - b. Supplier.
 - c. Manufacturer.
 - d. Manufacturer or supplier representative.
 - 5. Identification of the Product.
 - 6. Reference to Contract Maps and Details.
 - 7. Reference to specification section number, page and paragraph(s).

8. Reference to applicable standards, such as ASTM or Federal Standards numbers.
 9. An indication of Contractor's approval.
 10. Contractor's Certification statement.
 11. Identification of deviations from the Contract Documents, if any.
 12. Reference to previous submittal (for re-submittals).
 13. Made in America (when required by the Contract).
- B. Submittals shall be clear and legible, and of sufficient size for legibility and clarity of the presented data.
- C. Submittal Log: Maintain a log of all submittals. The submittal log shall be kept accurate and up to date. This log should include the following items (as applicable):
1. Description.
 2. Submittal Number.
 3. Date transmitted to the Engineer.
 4. Date returned to Contractor (from Engineer).
 5. Status of Submittal (Approved/Not Approved/etc.).
 6. Date of Resubmittal to Engineer and Return from Engineer (if applicable and repeat as necessary).
 7. Date material released for fabrication.
 8. Projected (or actual) delivery date.
- D. Numbering System: Utilize the following submittal identification numbering system:
1. The first character shall be a D, S, M or I which represents Shop Drawing (including working drawings and product data), Sample, Manual (Operating & Maintenance) or Informational, respectively.
 2. The next five digits shall be the applicable Section Number.
 3. The next three digits shall be the sequential number of each separate item or drawing submitted under each Specification Section, in the chronological order submitted, starting at 001.
 4. The last character shall be a letter, A to Z, indicating the submission (or resubmission) of the same submittal, i.e., "A" = 1st submission, "B" = 2nd submission, "C" = 3rd submission, etc. A typical submittal number would be as follows:
 - a. D-03300-008-B.

- b. D = Shop Drawing.
 - c. 03300 = Section for Concrete.
 - d. 008 = the eighth different submittal under this Section.
 - e. B = the second submission (first resubmission) of that particular shop drawing.
5. Submittals that are not cataloged as described in this Section will not be reviewed by the Engineer and will be immediately returned to the Contractor for resubmittal.

E. Variances

- 1. Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.
- 2. Notify the Engineer in writing, at the time of re-submittal (resubmission), of all deviations from previous submissions of that particular shop drawing, except those deviations which are the specific result of prior comments from the Engineer.

F. Submit all of the data and documents required by the Contract Documents (unless specified otherwise) to the Engineer electronically:

- 1. Facilitate exchanging information electronically.
- 2. Expedite the review process for submitted documents.
- 3. Centralize Project information.

G. Project communications shall be submitted and processed using electronic file sharing and shall be the primary communication tool for all document transfers between the Owner, the Engineer, and the Contractor.

1.04 SHOP DRAWINGS AND PRODUCT DATA

A. Shop Drawings

- 1. Shop drawings as specified in individual Sections include such items as custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shopwork manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including pump curves and certifications, as applicable to the Work.
- 2. All shop drawings submitted by subcontractors shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
- 3. Check all subcontractors' shop drawings regarding measurements, size of members, materials and details to make sure that they conform to the intent of the Details and related Sections. Return shop drawings found to be inaccurate or otherwise in error to the subcontractors for correction before submission thereof.

4. All details on shop drawings shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted.
5. Submittals for equipment or material specified here-in shall include a listing of all installations where identical or similar equipment or material has been installed and been in operation or use for a period of at least one year.
6. Delays to construction due to the untimely submission of submittals will constitute inexcusable delays, for which Contractor shall not be eligible for additional cost nor additional contract time. Inexcusable delays consist of any delay within the Contractor's control.

B. Product Data

1. Product data as specified in individual Sections include such items as, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliance and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the work.

C. Test Records and Reports

1. Provide copies of all test records and reports as specified in the various technical specifications.

D. Certifications

1. Provide all material certifications required to meet the federal and state laws as required in the applicable specification sections.

E. Record Information

1. Submit record information in accordance with Section 01720, Project Record Documents, for each property including electronic information required in the online submittal exchange platform, photographs and scanned copies of all permit applications and approvals.

F. Record Shop Drawings

1. Before final payment is made, furnish one set of record shop drawings to the Engineer. These record shop drawings shall be in conformance with the approved documents and should show any field conditions which may affect their accuracy.

2. Submittals required by laws, regulations and governing agencies.
 - a. Prepare and submit all documentation required by state or local law, regulation or government agency directly to the applicable agency. This includes, but is not limited to, notifications, reports, certifications, certified payroll (for projects subject to wage requirements) and other documentation required to satisfy all requirements. Provide to Engineer one copy of each submittal made in accordance with this paragraph.
3. Submittals required by funding agencies
 - a. Prepare and submit all documentation required by funding agencies. This includes, but is not limited to segregated pay applications and change orders when required to allocate funds to different funding sources properly; and certified payrolls for projects subject to wage requirements. Provide one copy of each submittal made in accordance with this paragraph to the Engineer.

G. Other requirements of the technical Specification Sections

1. Comply with all other requirements of the technical specifications.

1.05 CONTRACTOR'S CERTIFICATION

- A. Review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:
 1. Field measurements
 2. Field construction criteria
 3. Catalog numbers and similar data
 4. Conformance with related Sections
- B. Each shop drawing, sample and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor:
 1. "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements."
- C. Shop drawings and product data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. Submittals presented without a Certification Statement will not be reviewed by the Engineer and will be immediately returned to the Contractor for resubmittal. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Resident Project Representative a copy of each transmittal sheet for shop drawings, product data and samples at the time of submittal to the Engineer.

- D. Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.
- E. The review and approval of shop drawings, samples or product data by the Engineer shall not relieve the Contractor from the responsibility for the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefore.
- F. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.
- G. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.

1.06 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the Work or in the work of any other contractor.
- B. Each submittal, appropriately coded, will be returned within 14 working days following receipt of submittal by the Engineer.
- C. All submittals and RFI's shall be provided to the Engineer via electronic file sharing.
- D. Number of submittals required:
 - 1. Shop Drawings: One (1) PDF submission
 - 2. Product Data: One (1) PDF submission.
 - 3. Samples: Submit the number stated in the respective Sections.
- E. Submittals shall contain:
 - 1. The date of submission and the dates of any previous submissions.
 - 2. The Project title and number.
 - 3. Contractor identification.
 - 4. The names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer

5. Identification of the product, with the section number, page and paragraph(s).
 6. Field dimensions, verified prior to submission, clearly identified as such.
 7. Relation to adjacent or critical features of the work or materials.
 8. Applicable standards, such as ASTM or Federal Standards numbers.
 9. Identification of deviations from Contract Documents.
 10. Identification of revisions on re-submittals.
 11. An 8-inch by 3-inch blank space for Contractor and Engineer stamps.
 12. Where calculations are required to be submitted by the Contractor, a qualified individual other than the preparer shall have checked the calculations. The submitted calculations shall clearly show the names of the preparer and of the checker.
- F. Submittals may be transmitted by electronic means provided the following conditions are met:
1. The above-specified transmittal form is included.
 2. All other requirements specified above have been met including, but not limited to, coordination by the Contractor, review and approval by the Contractor, and the Contractor's Certification.
 3. The submittal contains no pages or sheets larger than 11 x 17 inches.
 4. The entire submittal is included in a single file.
 5. The electronic files shall be in PDF format, the file shall be indexed, bookmarked, searchable and print enabled
 6. The Engineer's review time will commence upon receipt of the transmittal with the attached PDF's in proper format.
 7. For Submittals that require certification, corporate seal, or professional embossment (i.e., P.E.s, Surveyors, etc.) transmit at least three hard-copy originals to the Engineer. In addition, provide additional photocopied or scanned copies, as specified above, showing the required certification, corporate seal, or professional seal.

1.07 REVIEW OF SHOP DRAWINGS AND PRODUCT DATA

- A. The review of shop drawings will be for general conformance with the design concept and Contract Documents. They shall not be construed:
1. As permitting any departure from the Contract requirements;
 2. As relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;

3. As approving departures from details furnished by the Engineer, except as otherwise provided herein.
- B. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
- C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or Contract Time, the Engineer may return the reviewed drawings without noting an exception.
- D. Submittals will be returned to the Contractor under one of the following codes.
 1. Code 1 - "APPROVED" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.
 2. Code 2 - "APPROVED AS NOTED" This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
 3. Code 3 - "APPROVED AS NOTED/CONFIRM" This combination of codes is assigned when a confirmation of the notations and comments IS required by the Contractor. The Contractor may, at his own risk, release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the confirmation.
 4. Code 4 - "APPROVED AS NOTED/RESUBMIT" This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the resubmittal.
 5. Code 5 - "NOT APPROVED" is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.
 6. Code 6 - "COMMENTS ATTACHED" is assigned where there are comments attached to the returned submittal which provide additional data to aid the Contractor.
 7. Codes 1 through 5 designate the status of the reviewed submittal with Code 6 showing there has been an attachment of additional data.
- E. Resubmittals will be handled in the same manner as first submittals. On re-submittals, the Contractor shall identify all revisions made to the submittals, either in writing on the letter of transmittal or on the shop drawings by use of revision triangles or other similar methods. The

resubmittal shall clearly respond to each comment made by the Engineer on the previous submission.

- F. Additionally, the Contractor shall direct specific attention to any revisions made other than the corrections requested by the Engineer on previous submissions.
- G. The Engineer will not review preliminary submittals that do not conform to the requirements of regular submittals. Any preliminary submittal will count as the first review and additional submittals will be considered resubmittals.
- H. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor and will be considered "Not Approved" until resubmitted. The Engineer may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.
- I. Repetitive Review
 - 1. Shop drawings and other submittals will be reviewed no more than twice at the Owner's expense. All subsequent reviews will be performed at times convenient to the Engineer and at the Contractor's expense, based on the Engineer's then prevailing rates. The Contractor shall reimburse the Owner for all such fees invoiced to the Owner by the Engineer. Submittals are required until approved.
 - 2. Any need for more than one resubmission, or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to an extension of the Contract Time.
- J. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least seven working days prior to release for manufacture.
- K. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

1.08 DISTRIBUTION

- A. Distribute electronic reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Engineer. The recipients of electronic copies shall be as directed by the Engineer.

1.09 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

- A. If specifically required in other related Sections, submit a P.E. Certification for each item required, in the form attached to this Section, completely filled in and sealed.

1.10 ELECTRONIC FILE SHARING REQUIREMENTS

- A. The online submittal exchange platform, will be hosted by the Engineer. The Contractor will be provided two licenses as part of this project.

- B. All data entered into the electronic file sharing site or service shall be the Owner's sole property.
- C. The Contractor shall be responsible for the validity of the information placed on the electronic file sharing site or service and their personnel's ability to use the application.
- D. The Contractor is responsible for training their personnel in the use of the electronic file sharing site or service.
- E. Any costs associated with using the electronic file sharing site or service system shall be evenly distributed in the Project overheads; a separate added cost shall not be allowed.
- F. Notify the Engineer immediately about any users who no longer are permitted access to the electronic file sharing site or service. Their user account shall be deactivated.
- G. Protect the electronic file sharing site or services security by limiting access to authorized users only and not allowing them to share usernames and passwords.
- H. Comply with the applicable laws and regulations regarding the electronic transmission of documents requiring the stamps or signatures of professional architects, professional engineers, geologists, and surveyors including any provisions to provide of hard copies of such documents as appropriate.
- I. The Contractor, their representatives, users, sub-consultants, and subcontractors shall not enter, attach, or store sensitive personal information such as Social Security numbers in the electronic file sharing site or service.
- J. Project Communications requiring an authorized person's signature shall use either of the following:
 - 1. An approved image of the official signature to be affixed to the document with the original signed hard copy/paper document to be provided as well.
 - 2. An electronic copy or electronic image of a fully executed document containing the required signatures with the original signed hard copy/paper document to be provided as well.

PART 2 PRODUCTS

2.01 PRELIMINARY SHOP DRAWING LIST

- A. The submittals below are required to be submitted as part of this project. No scheduling of replacements shall be made until the noted submittals are approved. Additional submittals throughout the specifications are conditional and are required if the conditions apply. The list is not intended to be comprehensive and final. Submittals required in other sections of the specifications are required whether or not included in this list:

Section	Submittal Topic
Procedures and Informational	
01010	Permits
01014	Proposed Notification and Construction Sequence*

01026	Applications for Payment
01045	Cutting, Coring and Patching*
01170	All names of all employees working on the project*
01170	Updated BCI screening*
01300	Contact List / Emergency Contacts*
01300	Health & Safety Plan*
01300	Schedule of submittals*
01310	Baseline construction schedule*
01310	Two week look aheads (initial)*
01322	Pre and post-construction photographs for each property
01370	Schedule of values
01410	Independent testing lab*
01576	Traffic control submittals*
02140	Dewatering and drainage
02151	General drawing for utility impact moling set up*
02151	Utility impact moling equipment to be used*
02213	Rock and boulder excavation (if needed)
02221	Trenching (if sheeting and bracing is needed)
02221	Backfilling and compaction*
02311	Excavation support and protection (if needed)
02663	Electrical grounding*
02768	General drawing for pipe pulling set up*
02768	Pipe pulling equipment to be used*
Construction Materials	
01180	Pipe sleeve*
01180	Sealant*
01180	Epoxy/ grout*
01180	Mechanical sleeve*
01580	Project sign*
02221	Warning tape*
02270	Sedimentation and erosion control products*
02230	Granular fill materials*
02576	Pavement repair*
02663	Crosslinked polyethylene pipe (PEX)*
02663	Copper fittings*
02663	Type K Copper*
02663	Corporation Stop*
02663	Electrical grounding clamps*
02663	BABA Certification (reinforcing steel)*
02930	Site restoration materials and seed mixtures*
03301	Concrete*
03301	Reinforcing steel*
15410	Interior – Crosslinked polyethylene pipe (if different from exterior pipe)*
15410	Interior – Valves*

BABAA Certification For iron and steel, manufactured products, and non-ferrous construction materials (non-ferrous metals, plastic and polymer-based products, glass, lumber, drywall; excludes cement and cementitious materials, aggregates, aggregate binding agents, flora, and non-permanent items)*

- B. Any submittal on the above list marked with “*” shall be submitted and approved prior to scheduling any work with homeowners. Allowable timeframes for submittal review stated herein shall be accounted when providing the submittals.

2.02 SOFTWARE

- A. For the duration of the project, the online submittal exchange platform will be maintained by the Engineer for submission of shop drawings, RFIs, and field data such as quantities and schedules.
- B. Access to the electronic file sharing site or service shall be provided to allow for submitting and processing documents including, but not limited to, letters, shop drawings, submittals, meeting minutes, daily reports, drawings, Specifications, quantities, schedules, memoranda, payment requisitions, change order requests, testing reports, warranties, guarantees, and correspondence. Requests for Information (RFIs) shall be directly entered into the online submittal exchange platform and generated by the application unless specified otherwise.
- C. Subcontractors and suppliers shall not have direct access to the electronic file sharing site or service unless approved otherwise by Owner and Engineer. Entering information to be exchanged and transferred between the Contractor and subcontractors and suppliers shall be the Contractor’s responsibility.

2.03 INTERNET CONNECTIVITY

- A. The electronic file sharing site or service shall be a web-based environment subject to the Contractor’s internet service provider’s speed and connectivity issues. The Contractor is responsible for their own connectivity to the internet. The electronic file sharing site or service’s response time depends on the user’s equipment including processor speed, network interface equipment, internet service provider access speed, etc., and current traffic on the internet.
- B. Owner and Engineer shall not be liable for any delays associated with the usage of the electronic file sharing site or service including, but not limited to, slow response time, down time periods, connectivity problems, or information loss on the Contractor’s equipment.
- C. Under no circumstances shall using the electronic file sharing site or service be grounds for a time extension or cost adjustment to the Contract.
- D. The Contractor shall have access to the electronic file sharing site or service, and it shall be operational on the Notice to Proceed date.

2.04 DOWN TIME

- A. If the electronic file sharing site or service system is temporarily unavailable, continue with Project Communications using an alternate secure means (e-mail) or hard copies to transmit and receive Project communications.

- B. Maintain records for all Project communications during the electronic file sharing site or service down time and upload the records to the electronic file sharing site or service when it is operational.
- C. Notify the Owner and Engineer by telephone and/or e-mail when the electronic file sharing site or service is not functional.

PART 3 EXECUTION

3.01 SUBMITTAL SCHEDULE

- A. Provide an initial submittal schedule (if different than what is provided in this Section) at the pre-construction meeting for review by Owner and Engineer. Incorporate comments from Owner or Engineer into a revised submittal schedule.
- B. Maintain the submittal schedule and provide sufficient copies for review by Owner and Engineer. An up-to-date submittal schedule shall be provided at each project progress meeting.

3.02 TRANSMITTALS

- A. Prepare separate transmittal sheets for each submittal. Each transmittal sheet shall include at least the following: the Contractor's name and address, Owner's name, project name, project number, submittal number, description of submittal and number of copies submitted.
- B. Submittals shall be transmitted or delivered directly to the Engineer, as indicated in the Contract Documents or as otherwise directed by the Engineer.

3.03 PROCEDURES

A. Action Submittals

1. Contractor's Responsibilities

- a. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work of other related Sections, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required). Coordinate with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. Extensions to the Contract Time will not be approved for the Contractor's failure to transmit submittals sufficiently in advance of the Work.
- b. The submittals of all shop drawings (including working drawings and product data) shall be sufficiently in advance of construction requirements to allow for possible need of re-submittals, including the specified review time for the Engineer.
- c. No less than 14 calendar days will be required for Engineer's review time for shop drawings and O&M manuals involving only one engineering discipline. No less than 14 calendar days will be required for Engineer's review time for shop drawings and O&M manuals that require review by more than one engineering discipline. Resubmittals will be subject to the same review time.

- d. Submittals of operation and maintenance data shall be provided within 14 days of approval of the related shop drawing(s).
- e. Before submission to the Engineer, review shop drawings as follows:
 - 1) make corrections and add field measurements, as required
 - 2) use any color for its notations except red (reserved for the Engineer's notations) and black (to be able to distinguish notations on black and white documents)
 - 3) identify and describe each and every deviation or variation from Contract documents or from previous submissions, except those specifically resulting from a comment from the Engineer on a previous submission
 - 4) include the required Contractor's Certification statement
 - 5) provide field measurements (as needed)
 - 6) coordinate with other submittals
 - 7) indicate relationships to other features of the Work
 - 8) highlight information applicable to the Work and/or delete information not applicable to the Work.

2. Engineer's Responsibilities

- a. The Engineer will not review shop drawings (including working drawings and product data) that do not include the Contractor's approval stamp and the required certification statement. Such submittals will be returned to the Contractor, without action, for correction.
- b. Partial shop drawings (including working drawings and product data) will not be reviewed. If, in the opinion of the Engineer, a submittal is incomplete, that submittal will be returned to the Contractor for completion. Such submittals may be returned with comments from Engineer indicating the deficiencies requiring correction.
- c. If shop drawings (including working drawings and product data) meet the submittal requirements, Engineer will forward copies to the appropriate reviewer(s). Otherwise, noncompliant submittals will be returned to the Contractor without action - with the Engineer retaining one copy.
- d. Submittals which are transmitted in accordance with the specified requirements will be reviewed by the Engineer within the time specified herein. The time for review will commence upon receipt of submittal by Engineer.

3. Electronic Transmission

- a. Action submittals are to be transmitted by electronic means and meet all of the following conditions:
 - 1) The above-specified transmittal form is included.

- 2) The submittal contains no pages or sheets larger than 11 x 17 inches.
 - 3) The entire submittal is included in a single file.
 - 4) The electronic files are PDF format (with printing enabled).
4. For Submittals that require certification, corporate seal, or professional embossment (i.e., P.E.s, Surveyors, etc.) transmit three hard-copy originals to the Engineer.

B. Informational Submittals

1. Contractor's Responsibilities

- a. Number of copies: Submit six copies, unless otherwise indicated in individual Specification sections
- b. Refer to individual technical Specification Sections for specific submittal requirements.

2. Engineer's Responsibilities

- a. The Engineer will review each informational submittal within 15 days. If the informational submittal complies with the Contract requirements, Engineer will file for the project record and transmit a copy to the Owner. The Engineer may elect not to respond to Contractor regarding informational submittals meeting the Contract requirements.
- b. If an informational submittal does not comply with the Contract requirements, Engineer will respond accordingly to the Contractor within 15 days. Thereafter, the Contractor shall perform the required corrective action, including retesting, if needed, until the submittal, in the opinion of the Engineer, is in conformance with the Contract Documents.

3. Electronic Transmission

- a. Informational submittals are to be transmitted by electronic means and meet all of the following conditions:
 - 1) The above-specified transmittal form is included.
 - 2) The submittal contains no pages or sheets larger than 11 x 17 inches.
 - 3) The entire submittal is included in a single file.
 - 4) The electronic files are PDF format (with printing enabled).
4. For Submittals that require certification, corporate seal, or professional embossment (i.e., P.E.s, Surveyors, etc.)) transmit three hard-copy originals to the Engineer.

END OF SECTION

SECTION 01310 CONSTRUCTION SCHEDULING

PART 1 GENERAL

1.01 PROGRAM DESCRIPTION

- A. Within ten days after the effective date of Agreement, provide and submit to the Engineer for approval, the schedule the Contractor plans to maintain in order to construct the work with the time allotted successfully. This Schedule shall be a time-scaled Bar Chart in order of early start and shall account for all the work of the Contractor. In addition to all reasonably important construction activities, the Schedule shall provide for the proper sequence of construction considering the various crafts, purchasing time, submittal approval, material delivery, equipment fabrication, and similar time-consuming factors. Failure to supply the construction schedule on time will be cause for withholding progress payments.
- B. Following receipt by the Engineer of the Schedule, a pre-construction conference will then be held between the Owner, Engineer and Contractor to review and, if necessary, revise the Schedule to afford ample time to perform the work in the proper sequence and construction operations. The Engineer shall approve the schedule in accordance with the General Provisions in the Contract Documents.
- C. The Contractor bears full responsibility for scheduling all phases and stages of the work to ensure its successful execution and completion with the time specified in accordance with all provisions of these Specifications.
- D. The Contractor shall complete service line replacements a minimum two (2) months in advance of Contract completion date to allow for required settlement durations.
- E. The Contractor shall update the Schedule monthly and submit it to the Engineer in duplicate. The monthly Schedule update shall include the following items:
 - 1. Activities that are completed or in the process are to be identified.
 - 2. Restraints imposed by material deliveries, precedent activity durations or schedule
 - 3. Actual start and completion dates are to be shown.

1.02 SUBMITTALS

- A. Submit schedules, and revisions including graphics, as specified herein.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 PROGRESS SCHEDULE

- A. Submit a progress schedule before starting any work, in accordance with General Provisions in the Contract Documents.

- B. Review the progress schedule with the Engineer periodically. Such review shall be made on a monthly basis or more frequently as required by the Engineer. If the Contractor fails to adhere to any part of the progress schedule, the progress schedule shall be updated by the Contractor to reflect the accurate progress of work.
- C. Also submit a 2-week Look Ahead Schedule as described in Paragraph 3.02 below. Adhere to the Look Ahead Schedule and provide written updates whenever the schedule changes due to weather or any other reason.

3.02 2-WEEK LOOK AHEAD

- A. 2-Week Look Ahead Schedule shall be provided weekly (but no later than 12:00 PM on Friday of each week).
 - 1. At a minimum the 2-week Look Ahead shall have the following items listed in a tabular form:
 - a. Project Name, and project number, Contractors Name
 - b. Detailed day-to-day schedule of the task identified in the overall work schedule
 - c. Identify crew and address for each task
 - d. Identify any outages, closures and control activities
 - e. Start and end dates of the week shall be clearly displayed by days of the week
 - f. Anticipated addresses for galvanized service line replacements
 - g. Anticipated work areas for traffic control and if required, encouraging new registrants
 - h. Dig safe utility mark-out number
 - i. Hour of day that work will be performed (within a 4 hour window)
 - j. Type of work (private side replacement or test pit)
 - k. Name of licensed plumber to be utilized
 - l. Proposed method of traffic control
 - m. Whether or not road is under a paving moratorium or anticipated to be under an upcoming paving moratorium
 - n. Anticipated restoration requirements (i.e. rock walls, historic pavers, sidewalks, etc.)
 - 2. Payment to be withheld if weekly updates to the 2-week look ahead are not being provided.

3.03 SCHEDULE UPDATES AND STATUS REPORTS

- A. Provide Monthly Schedule Updates with each application for payment. Unless approved otherwise by the Owner and Engineer, the Date for the Monthly Status Reports shall be the end of the respective payment period.
- B. Prior to generating each month's status report, meet with the Engineer to agree to the percent complete of each network activity.

3.04 DELIVERABLES

- A. Unless approved otherwise by the Engineer, all schedule submittals shall be in electronic format (PDF) and in color on pages no larger than 11-in by 17-in and may be divided into as many separate sheets as required.
- B. 2-Week Look Ahead: Submit one electronic copy (PDF) to the Owner and Engineer.
- C. Monthly Schedule Updates: Submit one electronic copy (PDF) to the Owner and Engineer.

3.05 PROGRESS REPORTING

- A. The Monthly Schedule Update will be discussed at each progress meeting.
- B. The two-week look ahead shall be provided via e-mail every Friday by 12:00 P.M. The Engineer shall provide the Contractor with a distribution list of who this two-week look ahead schedule should be sent to.

3.06 RESPONSIBILITY FOR SCHEDULE COMPLIANCE

- A. Whenever it becomes apparent from the current schedule that delays occurred and the contract completion date will not be met, or when so directed by Owner, submit to the Owner for approval, a written statement of the steps intended to take to remove or arrest the delay in the accepted schedule at no additional cost to the Owner, including:
 - 1. Increase construction manpower in such quantities and crafts,
 - 2. Increase the number of working hours per shift, shifts per day, working days per week,
 - 3. Increase the amount of construction equipment, and/or
 - 4. Reschedule activities to maximize the concurrence of activities and comply with the revised schedule.
- B. If when so requested by the Owner, failure to submit a written statement of the steps intended to take or should fail to take such steps as approved by the Engineer, the Engineer may direct the Contractor to increase the level of effort in manpower (trades), equipment and work schedule (overtime, weekend and holiday work, etc.) to be employed by the Contractor in order to remove or arrest the delay to the accepted schedule and the Contractor shall promptly provide such level of effort at no additional cost to the Owner.

3.07 ADJUSTMENT OF CONTRACT SCHEDULE AND COMPLETION TIME

- A. If the Contractor wants or needs to make changes in their execution of the construction schedule that would affect schedule, the Contractor shall notify the Engineer in writing stating what changes are proposed and the reasons for the changes. If the Engineer approves such changes, the Contractor shall revise and submit a revised schedule for acceptance - without additional cost to the Owner. The schedule shall be adjusted by the Contractor only after prior acceptance of their proposed changes. Adjustments may consist of changing portions of the activity sequence, activity durations, division of accepted activities, or other adjustments as may be accepted by the Engineer; however, the addition of extraneous, non-working activities and activities that add unacceptable restraints to the schedule will not be allowed.
- B. Shop drawings that are not approved on the first submittal will require the addition of network activities for the re-submittals.
- C. Equipment that does not pass the specified tests will require the addition of network activities for the retesting.
- D. The contract completion time will be adjusted only for causes specified in this Contract. In the event the Contractor requests an extension of any contract completion date, the Contractor shall furnish such justification and supporting evidence as the Owner may deem necessary to determine whether the Contractor is entitled to an extension of time under the provisions of this Contract. After receipt of such justification and supporting evidence, the Owner shall perform an assessment or evaluation of the appropriate change in contract time based upon the currently accepted schedule and on all data relevant to the extension. Inexcusable delays (attributable to the Contractor) and non-critical delays (delays to activities which, according to the schedule, do not affect any contract completion date) shall not be the basis for a change in contract time. The Owner will provide a written recommendation based on its assessment, with a copy to the Contractor. The Contractor shall not change any fixed contract milestones or required completion dates without the approval of the Owner, evidenced by the execution of a contract change order. However, the Contractor should make a note of such requests for changes in contract time in the narrative of monthly schedule status reports.
- E. Each request for a change in any contract completion date shall be submitted by the Contractor to the Owner in accordance with the notification requirements stipulated in the Contract Documents. No time extension will be granted for requests that are not submitted in accordance with the Contract requirements.
- F. Total float in the accepted schedule belongs to the project; i.e., either the Owner or Contractor may take advantage of available total float on a first-come, first-served basis. Therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the schedule, the Owner may initiate changes to the work or delay work that absorb available total float existing at the time of the change or delay. Owner-initiated changes or delays that affect the schedule shall be the sole grounds for extending (or contracting) contract completion dates or fixed milestones.

END OF SECTION

SECTION 01322
PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to provide photographic documentation of the Project as specified herein.

1.02 SUMMARY

- A. The section includes administrative and procedural requirements for the following:
 - 1. Land-based preconstruction photographs.
 - 2. Land-based final completion construction photographs.

1.03 RELATED WORK

- A. Submittal procedures are included in Section 01300.
- B. Project Record Documents are included in Section 01720.

1.04 REFERENCES

- A. Not Used.

1.05 SUBMITTALS

- A. Digital Photographs land-based: Submit image files within three days of taking photographs.
 - 1. File Format: Minimum 3,200 by 2,400 pixels, in unaltered original files, uncropped, date and time stamped, in a folder named address and date of photograph, with the following required photos by replacement type:

Replacement Type	Required Photos – Pre-construction	Required Photos – Post-construction
Private Side Only Replacement	- Existing condition upon arrival including adjacent properties, buildings on adjacent properties, existing paving, curb, and sidewalks. One photo should be taken capturing the entire width of the road and taken from across the street from where work is to take place. Additional photos as required to record pre-existing settlement or cracking of adjacent structures or pavements and improvements. - Existing materials on either side of water meter, ensuring the material on each side of the water meter is clearly visible and label which side on a white board - Existing piping at foundation - Existing interior area of work - Roadway condition, if applicable	- Materials on either side of water meter after replacement - New ball valve(s), piping, service line entering at the foundation, and appurtenances inside home - Yard restoration photo - Sidewalk restoration photo - Roadwork restoration photo, if applicable - Interior area of work post-construction - Photo of pitcher filter and educational materials distributed to occupant(s)
Test Pit	- Existing condition upon arrival including adjacent properties, buildings on adjacent properties, existing paving, curb, and sidewalks. One photo should be taken capturing the entire width of the road and taken from across the street from where work is to take place. Additional photos as required to record pre-existing settlement or cracking of adjacent structures or pavements and improvements. - Existing materials on either side of water meter, ensuring the material on each side of the water meter is clearly visible and label which side on a white board	- Yard restoration photo - Sidewalk restoration photo - Photo of educational materials distributed to occupant(s)

- The photos of the existing conditions upon arrival, yard restoration, and the street patch should include the address number on the building legible and in clear focus. For each picture, then Contractor shall provide a white board and write the address on board with minimum number height of 3-inches.
- Provide a whiteboard with the address, replacement type, date of work, materials observed on which side, and identification of private side and public side in all photos where the pipe is exposed. The service line materials should be identifiable in all photos. Remove soil such that visual identification of materials from photos is possible.
- Submit digital photographs via online platform.
- Any additional photos shall be provided on a file sharing website such as Dropbox or Google Drive with individual file folders for each address. Organize folders by city, street, and address number, in that order.
- At the completion of the project, provide all photos on two, mirrored media storage devices (including USB drives or portable solid-state drives). Package each drive, clearly and indelibly labeled using self-adhesive labels specifically designed for labeling of media

storage devices. Include on the label the project name and number, Owner and the time period covered by the photographs contained on the disc.

- B. Video Recordings: Submit video recordings within seven days of recording.

File Format: Minimum resolution of 720p (1280 x 720, progressive) in unaltered original files, in a folder named address and date of the video.

1. Submit video recordings in digital video on media storage devices in a format acceptable to Engineer (Mpg, .mov, or MP4).
2. Two, mirrored media storage devices (including USB drives or portable solid-state drives)
3. Package each media storage device, clearly and indelibly labeled using self-adhesive labels specifically designed for labeling of discs or media storage devices. Include on the label the project name program number, Owner and the time period covered by the photographs contained on the disc.

1.06 QUALITY ASSURANCE

- A. Photographs are to clearly show the Work. Exhibit correct exposure and focus, accurate color balance, maximum depth of field, minimal optical distortion, and minimal noise.

1.07 USAGE RIGHTS

- A. All photos taken for the purpose of documenting construction and project related work are to be the Owner's property for unlimited reproduction of photographic documentation.

PART 2 PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

- A. Provide digital photographs produced by a digital camera.
- B. Digital Camera: Have a minimum image resolution of twelve (12) megapixels and produce images in JPEG (.JPG) format with image dimensions of not less than 3200 by 2400 pixels.

2.02 DIGITAL VIDEO RECORDINGS:

- A. Digital Video Camera: Have a minimum resolution of 720p (1280 x 720, progressive).
- B. Provide video recordings in a common digital video format such as MP4. The minimum resolution of all video files shall be 720p (1280 x 720, progressive).

PART 3 EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

- A. General: Expose service line materials from debris and soil such that the materials can be easily identified from photographs. Photographs that, in the Engineer's opinion, do not meet these quality criteria will not be accepted and shall be re-taken at no additional cost to the Owner.

- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software except in the case of captioning the photograph with the address, replacement type, date of work, materials observed on which side, and identification of private side and public side in all photos where the water meter box interior is exposed.
- C. Pre-construction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Engineer.
 - 1. Flag excavation areas before taking construction photographs.
 - 2. Provide all photos listed in Section 1.05 above.
- D. Post-Construction Photographs: Duplicate the location of the photo taken for pre-construction or as directed by Engineer. Follow all photo requirements as listed in Section 1.05 above.

3.02 CONSTRUCTION VIDEO RECORDINGS

- A. Video Recordings:
 - 1. Produce bright, clear, sharp pictures with accurate colors and free from distortion, excessive shake, or any other form of picture imperfection. Video recordings that, in the Engineer's opinion, do not meet these quality criteria will not be accepted and shall be re-recorded at no additional cost to the Owner.
 - 2. Display continuous running time and date.
- B. Pre-construction Video Recording: Before starting excavation, demolition or construction, the Contractor is advised to record video of Project site and surrounding properties from different vantage points. Contractor is advised to record individual videos of each street in the Work Area prior to beginning work. Each video file is to be captioned with its respective street name.
- C. Post-Construction Videos: Retrace path of preconstruction video or as directed by Engineer.
- D. Additional Photographs or video: Engineer or Owner may request photographs or videos in addition to photographs specified.
 - 1. Three days' notice will be given, where feasible.
 - 2. In emergency situations, take additional photographs within 24 hours of request.
 - 3. Circumstances that could require additional photographs or videos include, but are not limited to, the following:
 - a. Immediate follow-up when on-site events result in construction damage or losses.
 - b. Substantial Completion of a major phase or component of the Work.
 - c. Extra-record photographs at the time of final acceptance.

- d. Owner's request for special publicity photographs.

END OF SECTION

SECTION 01370
SCHEDULE OF VALUES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit a Schedule of Values allocated to the various portions of the work, within ten (10) days after the effective date of the Agreement.
- B. Upon request of the Engineer or Owner provide supporting data which will substantiate the correctness of values.
- C. The accepted Schedule of Values shall be used only as the basis for the Contractor's Applications for Payment.

1.02 RELATED REQUIREMENTS

- A. Contract Agreement and General Conditions of the Construction Contract are included in Division 00.
- B. Application for Payment is included in Section 01026.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

- A. Type schedule on an 8-1/2-in by 11-in or 8-1/2-in by 14-in white paper; Contractor's standard forms and the automated printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:
 - 1. Title of Project and location.
 - 2. Owner and Project Number.
 - 3. Name and Address of Contractor.
 - 4. Contract designation.
 - 5. Date of submission.
- B. The schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.
- C. For each major line-item list sub-values of major products or operations under the item.
- D. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
- E. The sum of all values listed in the schedule shall equal the total Contract Sum.
- F. Contractor's Schedule of Values will be acceptable to the Owner as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01410
TESTING AND TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Employ and pay for services of an Independent Testing Laboratory to perform testing as directed by the Engineer.
 - 1. Perform all inspections and tests as directed by the Engineer.
 - 2. Perform all inspections and tests required by laws, ordinances, rules, regulations, or orders of public authorities.
 - 3. Cooperate with the laboratory to facilitate the execution of its required services.
 - 4. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the work of the Contract.
 - 5. Neither observations by the Engineer, nor inspections, tests, or approvals by other than the Contractor, shall relieve the Contractor from his obligation to perform the work in accordance with the requirements of the Contract Documents.
- B. It is the intent to have a technician from the Independent Testing Laboratory on-site as often and when specified by the Owner. The cost of this technician to be on-site as specified in Section 01010, Summary of Work, and all test reports shall be included in the Testing Technician Allowance. No additional payment will be made with respect to this.

1.02 RELATED REQUIREMENTS

- A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.
- B. Respective Sections: Certification of products.
- C. Each Section listed: Laboratory tests required and standards for testing.
- D. Testing Laboratory inspection, sampling, and testing may be utilized during but not limited to the following:
 - 1. Trenching, Backfilling, and Compaction are included in Section 02221.
 - 2. Granular Fill Materials is included in Section 02230.
 - 3. Concrete is included in Section 03301.

1.03 SUBMITTALS

- A. Submit to the Engineer in accordance with Section 01300, Submittals, the names, location and price list of three (3) testing laboratories that meet the following qualifications.

1. The laboratory shall meet “Recommended Requirements for Independent Laboratory Qualifications,” published by American Council of Independent Laboratories.
2. The laboratory shall be authorized to operate in the State of North Carolina.
3. The laboratory is required to maintain Professional Liability Insurance throughout the project.
4. The laboratory shall submit a copy of the report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with a memorandum of remedies of any deficiencies reported by the inspection.
5. Testing Equipment shall be calibrated at intervals recommended by the equipment manufacturer by devices of accuracy that are traceable to either the National Bureau of Standards or accepted values of natural physical constants.
6. The Engineer will select one (1) of the three (3) qualified testing firms selected by the Contractor, which the Contractor shall employ during the course of the Contract.

1.04 LABORATORY DUTIES

- A. Cooperate with Engineer and Contractor; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling, and testing of materials and methods of construction:
 1. Comply with specified standards.
 2. Ascertain compliance of materials with requirements of Contract Documents.
- C. Secure and deliver to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.
- D. Promptly notify Engineer and Contractor of observed irregularities or deficiencies of work or products.
- E. Promptly (but no longer than two (2) days after work has been completed) submit an electronic report of each test and inspection to Engineer. Each report shall include:
 1. Date Issued.
 2. Project title and number.
 3. Testing laboratory name, address, and telephone number.
 4. Name and signature of the laboratory inspector.
 5. Date and time of sampling or inspection.
 6. Record of temperature and weather conditions.
 7. Date of the test.

8. Identification of product and specification section.
 9. Location of sample or test in the Project.
 10. Type of inspection or test.
 11. Results of tests and compliance with the Contract Documents.
 12. Interpretation of test results, when requested by Engineer.
- F. Perform additional tests as required by Engineer, Owner or Third-Party Inspector.

1.05 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. The laboratory is not authorized to:
1. Release, revoke, alter or enlarge on requirements of Contract Documents.
 2. Approve or accept any portion of the work.
 3. Perform any duties of the Contractor.

1.06 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel and provide access to work.
- B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other materials mixes which require control by the testing laboratory.
- D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard requirements for quality and workmanship are indicated in the Contract Documents. The Engineer may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.
- E. Furnish incidental labor and facilities:
1. To provide access to work to be tested.
 2. To obtain and handle samples at the project site or at the source of the product to be tested.
 3. To facilitate inspections and tests.
 4. For storage and curing of test samples.

- F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
 - 1. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to the Contractor's negligence.
- G. Employ and pay for the services of the same or a separate, equally qualified independent testing laboratory to perform additional inspections, sampling, and testing required for the Contractor's convenience.
- H. Arrange for submittals of test results directly from the laboratory to the Engineer.
- I. Payment for all testing and testing laboratory services required by this Section shall be included in the bid items installing of the service line. No additional payment for testing required by this Section shall be made, and the cost shall be deemed to be included in the appropriate bid item. The Contractor shall pay for the laboratory costs directly to the testing firm for all test and subsequent retests as a result of failed tests until the test results meet the requirements of the Contract Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 CONTRACTOR'S CONVENIENCE TESTING

- A. Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

3.02 COOPERATION WITH TESTING LABORATORY

- A. Representatives of the testing laboratory shall have access to Work at all times. The Contractor shall provide facilities for such access in order that the laboratory may properly perform its functions.

3.03 SCHEDULES FOR TESTING

- A. Establishing Schedule:

- 1. By advance discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform tests and to issue each of its findings.
 - 2. Provide all required time within the construction schedule.

- B. Revising Schedule:

When changes of construction schedule are necessary during construction, coordinate all such changes in schedule with the testing laboratory as required.

- C. Adherence to Schedule:

When the testing laboratory is ready to test according to the determined schedule but is prevented from testing or taking specimens due to the incompleteness of the work, all extra

costs for testing attributable to the delay may be back-charged to the Contractor and shall not be borne by the Owner.

3.04 TAKING SPECIMENS

- A. All specimens and samples for testing, unless otherwise provided in these Contract Documents, will be taken by the testing laboratory; all sampling equipment and personnel will be provided by the testing laboratory, and all deliveries of specimens and samples to the testing laboratory will be performed by the testing laboratory.

END OF SECTION

SECTION 01500 TEMPORARY FACILITIES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall provide any temporary facilities, equipment, utilities and appurtenances specified or necessary to properly complete the work.
- B. Upon removal of any temporary facilities, equipment, or appurtenances, the Contractor shall restore the site, location, structure, etc. to its proper condition and make all necessary repairs acceptable to the Owner.
- C. Security and protection of work, materials, and equipment are the responsibility of the Contractor.
- D. The Contractor shall confine all apparatus, materials, supplies, machinery, and equipment to areas designated or approved by the Owner, and do not unreasonably encumber the premises/work site with such apparatus, materials, supplies, etc. Keep the premises/work site clean, neat and free of litter and promptly remove and dispose of all debris resulting from the operation. Confine operations to the property limits of the Owner and do not infringe upon abutting properties; save the Owner harmless from the claims of any abutting or adjacent property owners for damages resulting from operations. Upon completion of work, completely clean and restore the site to a condition acceptable to the Owner.
- E. Providing equipment and temporary facilities needed to perform and complete the work as required by the Contract Documents is the responsibility of the Contractor. Payment for such will be the sole responsibility of the Contractor.
- F. In situations where the facility is owned by Owner, the Contractor may, within reason, use power, water, and telephone available at the facility. The Owner reserves the right to restrict this use to what is necessary and reasonable.
- G. The Contractor shall provide its own office and storage facilities in the work area, as needed at no additional cost to the Owner.
- H. Contractor shall provide sanitary facilities for the construction crews. Contractor shall not use the bathroom facilities of the property owners.
- I. At the end of each day the Contractor shall remove all debris, stored material, equipment, and generally sweep the site(s), and all excavations shall be restored with temporary or final restoration in accordance with Section 02221, Trenching, Backfilling, and Compaction. Use of trench plates overnight shall not be allowed.

END OF SECTION

SECTION 01576
TRAFFIC CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Public safety and convenience require the Contractor to provide trained traffic control personnel to direct and control traffic within the location of work under this Contract when working in the roadway or when parking construction vehicles on a busy roadway as required by the agency having jurisdiction over the road. Uniformed Police officers shall be used for traffic control. If police officers are not available, flaggers may be used when approved by the agency having jurisdiction over the road.
- B. Arrange with the relevant municipal Police Department for traffic direction services whenever work is conducted within a roadway or whenever traffic flow is restricted as a result of work performed under this Contract. The Contractor shall also be responsible for coordinating and scheduling with the Police Department whenever work is to be conducted within a roadway or whenever traffic flow is restricted as a result of work performed under this Contract.
- C. The traffic control services required herein are intended to ensure public safety by the direction and control of traffic. Traffic control personnel are not intended to serve as watchmen or security to protect the Contractor's equipment and material or to warn pedestrians of such hazards as open trenches or manholes. It is solely the Contractor's responsibility to guard open excavations by erecting suitable barriers by day and lights by night.
- D. Nothing contained herein shall be construed as relieving the Contractor of any of his/her responsibilities for the protection of persons and property under the terms of the Contract.
- E. All payments to the Uniformed Traffic Officers under this Contract shall be in accordance with the General Laws of the State of North Carolina and any amendments thereto. On a weekly basis, the Contractor shall submit to the Engineer a summary of the hours each officer provided traffic control services. Owner shall be responsible for reimbursing the Contractor for the cost charged by the jurisdiction for police officers' time, with no markup by the Contractor. Reimbursement for police officers' time within a given month shall coincide with the corresponding month's Payment Application. The Contractor will be responsible for paying the police cost, and the police cost from the municipality shall be included in the Contractor's voucher for payment without overhead or profit and no other markup. Payment for flaggers will also be paid for in the same manner without overhead or profit under a separate allowance item.
- F. Prior to submitting their bid on the project, contact all agencies having jurisdiction over the project including, but not limited to Orange County Water and Sewer Authority (OWASA), University of North Carolina at Chapel Hill, City of Chapel Hill and Carrboro, and NCDOT in order to determine the traffic control requirements and costs of same. The cost of traffic control is included in appropriate bid item.
- G. Provide the Police Departments with construction schedules on a biweekly basis showing work that requires traffic control. In the event the construction schedule is revised after submittal to the Police Department, the Contractor shall provide at least 24 hours' notice before commencing the unscheduled work.

- H. Contractor shall be responsible for all snow removal and ice control within the construction zone throughout the duration of construction.
- I. No road shall be closed to traffic without the prior consent of the Engineer, Owner, or NCDOT, as applicable.
- J. Traffic control, including but not restricted to signing, devices and message board, shall be provided for all openings in roads by the Contractor in accordance with municipal and State standards.

1.02 REQUIREMENTS

- A. All traffic control work performed by the Contractor shall be in accordance with the Work Zone Traffic Control Standards (latest edition), the latest edition of the North Carolina Department of Transportation Roadway Design Manual, the Details in Appendix B, and these Specifications. Where reference is made to one of the aforementioned publications, the revision in effect at the time of bid opening shall apply.
- B. Furnish, install, transport operate, maintain equipment, repair and replace; services, and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow during construction.
- C. Follow the traffic control requirements shown in the Contract Documents detailing all temporary changes in traffic control equipment, street or road closures, detours, etc. Make every effort to adhere to these requirements. The Owner and Engineer reserve the right to modify traffic control requirements through the course of the Contract.
- D. Remove temporary equipment and facilities when no longer required and restore grounds to original or to specified conditions.
- E. Notify all Customers at least 72 hours in advance of any work that will interfere with access to their residence or place of business.
- F. No road shall be closed to traffic without the prior consent of the Engineer and the Owner.
- G. Traffic control, including but not restricted to signing and devices, shall be provided for all openings in roads by the Contractor in accordance with Owner and State standards.
- H. Special work hour limitations are discussed in Section 01014, Construction Sequence and Schedule Requirements.

1.03 MINIMUM REQUIREMENTS FOR TRAFFIC CONTROL

- A. Provide for access to all buildings including business and parking areas at all times. This shall include but is not limited to schools, churches, hospitals, urgent care centers, polling stations, and grocery stores. The Contractor shall allow for the maintenance of a minimum of one – 11-foot lane of traffic, in one direction, at all times.
- B. Make every reasonable effort to avoid detours. No detour shall be allowed without prior approval from the Engineer and the Owner. A detailed Traffic Control Detour Plan shall be submitted by the Contractor to the Engineer and Owner showing schedule, signing and control

for the proposed detour. Said plan(s) shall be submitted at least five workdays prior to the proposed detour and shall be subject to the review and approval of the Engineer and Owner.

- C. Traffic control and road closings in the local municipalities are under the direct control of the Police Department.
- D. Normal drainage shall be maintained. The pavement shall be maintained in broom-swept clean condition, and all work shall be cleaned up at the close of operations each day.
- E. During non-working hours, all excavations shall be either back-filled or steel-plated, and all roadways shall be kept completely clear of any obstructions to traffic. No barricades shall be left within the roadway at night when work is not in progress.
- F. If the Contractor is notified of hazardous construction practice, violation of a regulation or motor vehicle code or if traffic volumes become excessive, all operations shall be summarily discontinued and immediate corrective action shall be taken to the satisfaction of regulator before work can resume.
- G. In the event an obstruction blocks pedestrian traffic, provide a safe passage area for pedestrians.
- H. When the Contractor will be performing an operation which requires the closing of a lane of traffic, even for brief periods of time, close the lane and so mark it with the necessary Protections. Flagmen shall be placed in advance of all lane closures. Additional flagmen shall be placed anywhere in the work area that trucks or other vehicles enter or leave the traffic stream. The cost of flagmen shall be included in unit price. The local police departments shall determine the number of flagmen which may be required by the Contractor.

1.04 TRAFFIC CONTROL

- A. All traffic control shall be performed in accordance with all Federal, State, and local laws, codes, rules and regulations.
- B. All individuals performing traffic control shall be properly equipped and trained. Where required by the road opening permit or as required by the agencies have jurisdiction over the road a Uniformed Police officer for Traffic Control shall be paid for under the Uniformed Police Traffic Control Allowance Bid Item on the Bid Form. Flaggers are also to be paid for under the Traffic Control Allowance.
- C. A minimum of one trained traffic control person shall be present during all work in public streets. If the setup is such that more than one trained traffic control person is needed to control traffic at any one location, provide the additional personal at no additional cost to the Owner.
- D. Be aware of certain festivals and activities that occur in the local municipality. These activities may cause changes in traffic patterns and road closures. Work with Owner and Engineer and is responsible for being aware of the dates, times and locations of all festivals and activities that may be located in work areas and require adjustments to traffic control and construction schedule. Coordinate all work with Owner and Engineer.
- E. Personal vehicles shall not be permitted to park in the work area or immediately adjacent thereto.

- F. No construction vehicles shall be left on the street overnight unless approved in writing by the municipality having jurisdiction.

1.05 TRAFFIC CONTROL SUBMITTALS

- A. Maintain traffic on affected roads and streets at all times as specified and required for permit approvals.
- B. Work shall not commence until approval has been obtained from the Police Department, the Engineer, and the municipality's Department of Public Works Traffic Engineering Division. Approval by the Engineer shall be required before the Contractor applies for street occupancy and street opening permits with the Department of Public Works' Engineering Division. The traffic control plans submitted to and approved by the Engineer shall be the basis of the plans submitted with the permit applications to the Department of Engineering. Revise and resubmit the traffic control plans based on the Department of Public Works' Engineering Division comments as required to receive approval for street occupancy and street opening permits. Approval by the Engineer does not assure approval without revision by the Department of Public Works' Engineering Division. All traffic control work and road closures must abide by permits issued by the relevant municipality's Department of Public Works Traffic Engineering Division.
- C. Prior to submitting the traffic control plans to the Engineer, Contractor is to review its proposed traffic control set-up for each work site and work activity with representatives of the local Police Department having jurisdiction. Obtain input from the Police Department regarding the level of police presence and any work hour restrictions on construction activities at the sites.
- D. The traffic control plans shall indicate:
 - 1. Street right-of-way, traffic flow directions, driveway locations, and other site features.
 - 2. The location and arrangement of all traffic control devices, signs, equipment, and personals.
 - 3. Location where temporary no parking signs will be posted. No parking signs shall be dated for a period longer than five (5) calendar days and shall be posted at least 24 hours in advance of work commencing.
 - 4. Legend and description of symbols used.
 - 5. Arrangement and dimensions of work zones, buffer areas, transition zones, and traffic lanes.
 - 6. Location of bypass pumps, hose, and water hose routes and required hose ramps.
 - 7. Anticipated work schedule, including work hours (start and ending times), dates, and duration.
- E. Modifications to approved traffic control plans shall be submitted for approval before being implemented in the field.
- F. See Section 01010 Summary of Work and Section 01046 Control of Work for related work.
- G. Provide to the Engineer complete copies of approved street permits for each site per Section 01170, Special Provisions, prior to commencing work at each site.
- H. Provide to the Engineer written approval from the Police Department and the Department of Public Works prior to commencing work at each site.

- I. The Engineer shall be copied on all correspondence to and from the Police Department and Department of Public Works Traffic Engineering Division concerning obtaining approval of the traffic control plans.

END OF SECTION

SECTION 01580 PROJECT IDENTIFICATION SIGNS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Provide and install, prior to the start of construction, the project sign(s) indicated below.
 - 1. Environmental Infrastructure Project sign in accordance with the North Carolina Drinking Water State Revolving Fund and Bipartisan Infrastructure Law requirements.

PART 2 PRODUCTS

2.01 ENVIRONMENTAL INFRASTRUCTURE PROJECT SIGN

- A. In accordance with the North Carolina Department of Environmental Quality a project identification sign, at least six feet long and four feet high, bearing the emblem of the Department shall be displayed in a prominent location at each publicly visible project site and facility. The sign shall identify the project, State loan support, and other information as required by the Department.
- B. The Project Sign shall be constructed as shown on the illustration appended to this specification section. The Contractor shall verify that all information is accurate and current before fabrication of the identification sign.
- C. The Project Signs shall be constructed as shown on the illustration appended to this specification section. Verify that all information is accurate and current before fabrication of the identification signs.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Signs shall be located at the beginning and end of the construction site. One sign shall face the traffic traveling in one direction, and the other sign shall face the traffic traveling in the opposite direction. If the Contractor plans to work at multiple sites at the same time, the Contractor shall provide a sufficient number of signs so that two (2) signs are located at each site in accordance with these specifications.
- B. Environmental Infrastructure Sign: Provide and install the Project Sign at a location designated by the Engineer and approved by the Drinking Water Infrastructure representative.
- C. All project signs shall be maintained by the Contractor in good condition at all times for the duration of the construction.
- D. Contractor shall be required to remove all project signs from the construction sites at the conclusion of the work when ordered by the Engineer.

END OF SECTION

SECTION 01601 CONTROL OF MATERIALS

PART 1 GENERAL

1.01 APPROVAL OF MATERIALS

- A. Unless otherwise specified, only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by the Contractor shall be subject to the inspection and approval of the Engineer. No material shall be delivered to the work without prior approval of the Engineer.
- B. As specified in Section 01300, Submittals, the Contractor shall submit to the Engineer, data relating to materials and equipment he/she proposes to furnish for the work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product and to form an opinion as to its conformity to the specifications.
- C. Furnish facilities and labor for handling and inspection of all materials and equipment. If the Engineer requires, either prior to beginning or during the progress of the Work, the Contractor shall submit additional samples or materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed and shipped as directed at the Contractor's expense.
- D. Any delay of approval resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of a claim against the Owner or the Engineer.
- E. In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes, and surfaces, the Contractor shall provide such samples of workmanship or finish as may be required.
- F. The materials and equipment used on the work shall correspond to the approved samples or other data.
- G. Certify that the purchased products and materials used by the Contractor, subcontractor, material suppliers, and equipment suppliers in the performance of this Contract are in accordance with the "Buy American" provision in Public Law 95-217 (Section 215 of the Public Law 91-500 as amended) and EPA regulations and guidelines. In addition, provide all information required to justify the use of any foreign made product.

1.02 HANDLING AND STORAGE OF MATERIALS

- A. All materials and equipment to be incorporated in the work shall be handled and stored by the manufacturer, fabricator, supplier, and Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting and any injury, theft or damage of any kind whatsoever to the material or equipment.
- B. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous, reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease and in a position to prevent accumulations of standing water and to minimize rusting. Flat metal shall be stored vertically. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water,

staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking and spalling to a minimum.

- C. All mechanical equipment subject to corrosive damage by the atmosphere if stored outdoors (even though covered by canvas) shall be stored in a building to prevent injury. The building may be a temporary structure on the site or elsewhere, but it must be satisfactory to the Engineer.
- D. All materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work, and the Contractor shall receive no compensation for the damaged material or its removal.
- E. All pipe and other materials delivered to the job shall be unloaded and placed in a manner that will not hamper the normal operation of the work or interfere with the flow of necessary traffic.

END OF SECTION

SECTION 01700 CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Special provisions are included in Section 01170.
 - 2. Submittals are included in Section 01300.
 - 3. Project Record Documents are included in Section 01720.

1.02 RELATED WORK

- A. Project deliverables are described in Division 1, 2, 3 and 15.

1.03 PROJECT RECORDS

- A. Maintain in Contractor's office, one set of the following information; actual revisions to work shall be recorded in these documents:
 - 1. Specifications
 - 2. Addenda
 - 3. Change Orders and other Modifications to the Contract
 - 4. Reviewed submittals
 - 5. Contract Maps
 - 6. Details
- B. Record information concurrent with the progress of the Work.
- C. Specifications:
 - 1. Changes made by Addenda and Modifications.
- D. Submit record information and complete service line log documents to Engineer prior to Application for Final Payment.
 - 1. Record information shall be submitted in accordance with as specified in Section 01720, Project Record Documents.

1.04 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Engineer's inspection.
- B. Provide all deliverables as specified, prior to submitting the final payment application.
- C. Provide submittals to Engineer that are required by governing or other authorities having applicable jurisdiction including but not limited to permit close out information, certificates of occupancy, etc.
- D. Provide evidence that all customer complaints have been addressed. Evidence must meet the satisfaction of the Engineer before complaint is closed.
- E. Provide photographic evidence that final restoration has been completed at each work location.
- F. Submit Application for Final Payment identifying total adjusted Contract Sum, previous payments and sum remaining due. The adjusted Contract Sum shall reflect the actual installed unit quantities as well as other possible adjustments for change orders, liquidated damages, and recovery of engineering fees.
- G. Submit fully executed Contractor's Certificate, Final Release and Release of Liens with a final payment application.
- H. Submit the information required by the Contract, including tabulations and an accurate list and the proof of business registration of each subcontractor or supplier used in the fulfillment of the Contract, or attest that no subcontractor was used.

1.05 FINAL CLEANING

- A. Before requesting the inspection for certification of substantial completion, the Contractor shall complete the following to the extent that the inspection operations left the work area in an unacceptable condition.
 - 1. Clean the project area of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface, as necessary.

END OF SECTION

SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SCOPE

- A. Keep and maintain, at the job site, a copy of contract documents, Contract maps, details, photos, service applications and sketches of installed service line marked up to indicate all changes made during the course of a project, as specified herein.
- B. Engineer will maintain the electronic database that shall be updated as work progresses. Contractor will add quantities via application provided and the information in the electronic database will be compared with the Contractor's pay applications on a weekly and monthly basis. No pay applications will be approved by the Engineer until the quantities match between the Contractor's pay application, electronic database and the Engineer's recorded quantities. Neither the Owner or Engineer are responsible for the delay in review and approval of the Contractor's payment application as a result of the Contractor not utilizing the electronic database as specified or in a timely manner.

1.02 RELATED REQUIREMENTS

- A. Submittals are included in Section 01300.
- B. Contract Closeout is included in Section 01700.

1.03 REQUIREMENTS INCLUDED

- A. Maintain a record copy of the following documents, marked up to indicate all changes made during the course of a project:
 - 1. Specifications
 - 2. Service applications with information and data for every water service line replaced as specified herein.
 - 3. Swing ties.
 - 4. Traffic engineering permits.
 - 5. Road opening permits.
 - 6. Sidewalk opening permits.
 - 7. Plumbing permits.
- B. Assemble copies of the following documents for turnover to the Owner at the end of the project, as specified.
 - 1. Field Orders, Change Orders, Design Modifications, and RFIs.
 - 2. Field Test records.

3. Permits and permit close-outs (final approvals).
4. Certificate of Completion, as applicable.
5. Laboratory test reports.
6. Certificates of Compliance for materials and equipment.
7. Record Shop Drawings.
8. Material delivery tickets.
9. Pre-construction and post-construction photography.
10. Service Applications.

C. Record Drawings

1. Photographs and other large files shall be provided in a file sharing site as required in Section 01322, Photographic Documentation.
2. Orange County Water and Sewer Authority standard service application for every water service line replaced. All information on the service applications shall also be tracked in a database as the work progresses.
 - a. Record service applications shall be provided via email, with one file for each service application.
 - b. Service application shall contain information in all relevant sections of the application.
3. The annotated service applications constitute the Contractor's Record documents and shall be accurate representations of as-built conditions, including all revisions made necessary by change orders, design modifications, requests for information and field orders.
4. Record drawings shall be accessible to the Owner and Engineer at all times during the construction period.
5. Record documents are considered incidental to the project. Ascertain as-built record information specific to the work, including assistance with the measurements to develop tie-cards produced by the Resident Project Representative.
 - a. Compile record information contemporaneously with construction progress for review and approval on a monthly basis along with pay application. If Engineer determines that the record information provided by the Contractor be inaccurate, incomplete or does not meet the requirements of these Specifications, Engineer will return the information to the Contractor for correction. Contractor shall correct the record information at no additional cost to the Owner and shall resubmit to the Engineer for review and approval. Requirements for as-built record documents and information for the work include:

- 1) Laboratory test reports (e.g., bacteriological and primary & secondary water quality, soil and concrete test).
 - 2) Legibly mark the Specifications to record the manufacturer, trade name, catalog number, and supplier of each product and item of equipment or material actually installed, as well as any changes made by Field Order, Change Order, RFI, and approved shop drawing.
 - 3) Service applications
6. Record documents shall be stored on-site apart from documents used for construction. Record documents shall not be used for construction purposes. The information submitted by the Contractor in the Record Documents will be assumed to be correct, and the Contractor shall be responsible for the accuracy of such information and shall bear the costs resulting from the correction of incorrect data.
7. The following information shall be provided electronically in the database management system on a daily basis for each property where work is performed:
 - a. Observed pre-construction materials (utility side and private side both interior and exterior)
 - b. Which side of the service is replaced (or if it is a test pit only)
 - c. Record of attempts to reach the homeowner for scheduling the replacement
 - d. Homeowner's information
 - e. New materials used
 - f. Date work scheduled and date work completed
 - g. Contractor name
 - h. Contract number
 - i. Service line length and diameter
 - j. Main diameter
 - k. Depth to service line
 - l. Street surface (for utility side)
 - m. Surface at curb stop
 - n. GPS Measurements
 - o. Up to 10 additional data entries to be specified by the Owner or Engineer

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. The Contractor shall provide the equipment necessary to support the online submittal exchange platform. This shall include at least one tablet device per construction crew that can utilize a web browser and include a data package that does not require Wi-Fi for connectivity.

2.02 MAINTENANCE OF RECORD DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
- B. File documents and samples in accordance with the Construction Specifications Institute (CSI) format.
- C. Maintain documents in a clean, dry, legible, condition and good order. Do not use record documents for construction purposes.
- D. Make documents and sample available for inspection by the Engineer or Owner at all times.
- E. All record documents, including service applications, shall be scanned and linked to the correct water service in the database management system.
- F. Up-to-date electronic record documents may be a pre-requisite of processing periodic monthly pay applications if so specified under the section for progress payments.

2.03 RECORD INFORMATION COMPILATION

- A. Do not conceal any work until the required information is acquired.
- B. Items to be recorded include, but are not limited to:
 - 1. Location of utilities and appurtenances concealed in the construction – referenced to visible and accessible features.
- C. Details not indicated on the original Details.
- D. Water Service Applications
- E. Specifications - legibly mark each Section to record:
 - 1. Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually installed.
 - 2. Changes made by Field Order, Change Order, RFI, and approved shop drawing.

2.04 SUBMITTAL

- A. Monthly applications for payment will be contingent upon up-to-date Record documents. Contractor is to send weekly updates on replacement item quantities completed at each address.

If requested by the Engineer or Owner, provide a copy of the Record documents, or present them for review prior to processing monthly applications for payment.

- B. Upon substantial completion of the work and prior to final acceptance, the Contractor shall finalize and deliver a complete set of Project Record Documents to the Engineer conforming to the construction records of the Contractor. The Project Record Documents shall consist of service applications and corrected and annotated Contract maps. Unless specified otherwise elsewhere, Record Documents shall be both a hard copy of the service applications and scanned in PDF format.
- C. The information submitted by the Contractor into the Project Record Documents will be assumed to be correct, and the Contractor shall be responsible for the accuracy of such information and shall bear the costs resulting from the correction of incorrect data.
- D. Delivery of record documents for each location is a prerequisite for complete payment of the replacement bid items as specified in Section 01025, Measurement and Payment.
- E. Delivery of a complete compiled set of Project Record Documents to the Owner and Engineer will be a prerequisite to final payment.
- F. Maintain a copy of all books, records, and documents pertinent to the performance under this Agreement for a period of five years following completion of the contract.

END OF SECTION

SECTION 02140 DEWATERING AND DRAINAGE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Design, furnish, install, operate, monitor, maintain and remove a temporary dewatering system as required to permit construction to proceed in-the-dry.
- B. Furnish, maintain and remove temporary surface water control measures adequate to drain and remove surface water entering excavations.
- C. Work shall include the design, equipment, materials, installation, protection, and monitoring of geotechnical instrumentation required to monitor the performance of the dewatering and drainage system as required herein.
- D. Collect and properly dispose of all discharge water from the dewatering and drainage systems. Under no circumstances shall water from dewatering systems be discharged into the existing sewer system without prior approval from the Owner which may include fees and applications.
- E. All discharges from dewatering activities to surface waters, wetlands, vernal habitats, or storm sewers shall be free of sediment. Discharges due to dewatering activities shall be in accordance with local and state regulations and any related permitting fees are to be at the Contractor's expense. Care shall be taken not to damage or kill vegetation by excessive watering or by damaging silt accumulation in the discharge area. If discharges are sediment-laden, techniques shall be employed to remove sediment prior to discharge. A sedimentation basin shall be constructed and used as specified, where necessary, to protect vegetation and to achieve environmental objectives.
- F. Obtain and pay for all permits required for dewatering and drainage systems under the replacement bid items.
- G. Repair damage caused by dewatering and drainage system operations.

1.02 RELATED WORK

- A. Submittals are included in Section 01300.
- B. Testing and Laboratory Services is included in Section 01410.
- C. Trenching, Backfilling and Compaction is included in Section 02221.
- D. Granular Fill Material is included in Section 02230.
- E. Sedimentation and Erosion Control are included in Section 02270.
- F. Pavement Repair and Resurfacing is included in Section 02576.
- G. Loaming and Seeding is included in Section 02930.

1.03 SUBMITTALS

- A. Dewatering and drainage system designs shall be prepared by the Contractor. Contractor shall submit qualifications as required herein.
- B. Submit a dewatering and drainage system design plan.
 - 1. The plan shall include a description of the proposed dewatering system(s) and include the proposed installation methods to be used for dewatering and drainage system(s) elements. The plan shall include equipment, and dewatering system design calculations in the plan.
- C. The plan shall identify the anticipated area influenced by the dewatering system(s) and address impacts to adjacent existing and proposed structures.
- D. Coordinate dewatering and drainage submittals with the excavation and support of excavation submittals. The submittal shall show the areas and depths of excavation to be dewatered.
- E. Do not proceed with any excavation or dewatering activities until the dewatering submittals have been reviewed by the Engineer.

1.04 QUALITY ASSURANCE

- A. Perform all work in accordance with current applicable regulations and codes of all Federal, State and local agencies.

1.05 DESIGN REQUIREMENTS

- A. The Contractor is responsible for the proper design and implementation of methods for controlling surface water and groundwater.
- B. The primary purpose of the groundwater control system(s) is to perform all pipe laying "in-the-dry" and on undisturbed subgrade soils in the areas of the proposed excavations. The Contractor is responsible for lowering the groundwater as necessary to complete construction in accordance with the details and specifications at no additional cost to the Owner.
- C. Design all groundwater control system components to prevent loss of fines from surrounding soils.
- D. The Contractor shall be responsible for damage to properties, buildings or structures, sewers and other utility installations, pavements and work that may result from dewatering or surface water control operations.
- E. Design review and field monitoring activities by the Owner or by the Engineer shall not relieve the Contractor of his/her responsibilities for the work.

1.06 DEFINITIONS

- A. Where the phrase "in-the-dry" is used in this Section, it shall be defined as an excavation, stable with no ponded water, mud, or muck, is able to support construction equipment without rutting or disturbance and is suitable for the placement and compaction of fill material, pipe or concrete foundations.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Piping, pumping equipment and all other materials required to control of surface water and groundwater in excavations shall be suitable for the intended purpose.
- B. Standby pumping systems and a source of standby power shall be maintained at all sites.

PART 3 EXECUTION

3.01 GENERAL

- A. Control surface water and groundwater such that excavation to final grade is made in-the-dry, the natural undisturbed condition of the subgrade soils is maintained and softening and/or instability or disturbance due to the presence or seepage of water does not occur. All construction and backfilling shall proceed in-the-dry and flotation of completed portions of work shall be prohibited.
- B. Methods of groundwater control may include but are not limited to perimeter trenches and sump pumping, perimeter groundwater cutoff, ejectors and combinations thereof.
- C. It is expected that the type of system, and details of the work will have to be varied depending on soil/water conditions at a particular location.
- D. All work included in this Section shall be done in a manner which will protect adjacent structures and utilities and shall not cause loss of ground or disturbance to the pipe bearing soils or to soils which support overlying or adjacent structures.
- E. Locate groundwater control system components where they will not interfere with construction activities adjacent to the work area. Excavations for sumps or drainage ditches shall not be made within or below 1H:1V slopes extending downward and out from the edges of existing or proposed foundation elements or from the downward vertical footprint of the pipe.

3.02 SURFACE WATER CONTROL

- A. Construct surface water control measures, including dikes, ditches, sumps and other methods to prevent, as necessary, flow of surface water into excavations and to allow construction to proceed without delay.
- B. All sewer and storm inlets within construction areas shall be provided with perimeter hay bales or other appropriate siltation control measures. All inlets shall be maintained to allow capture of incoming flow and shall not be blocked.

3.03 EXCAVATION DEWATERING

- A. At all times during construction, provide and maintain proper equipment and facilities to promptly remove and properly dispose of all water entering excavations. Excavations shall be maintained in-the-dry.

- B. Excavation dewatering shall maintain the subgrade in a natural undisturbed condition and until the fill, structure or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural elevations.
- C. Masonry and concrete shall not be placed in water or be submerged within 24 hours after being installed. Water shall not flow over new masonry or concrete within four days after placement.
- D. In no event shall water rise to cause unbalanced pressure on structures until the concrete or mortar has set at least 24 hours. Prevent flotation of the pipe by promptly placing backfill.
- E. Dewatering shall at all times be conducted in such a manner as to preserve the natural undisturbed condition of the subgrade soils at the proposed bottom of excavation.
- F. If the subgrade of the trench or excavation bottom becomes disturbed due to inadequate dewatering or drainage, excavate below normal grade as directed by the Engineer and refill with structural fill, screened gravel or other material as approved by the Engineer at the Contractor's expense.
- G. It is expected that the initial dewatering plan may have to be modified to suit the variable soil/water conditions to be encountered during construction. Dewater and excavate, at all times, in a manner which does not cause loss of ground or disturbance to the pipe bearing soil or soil which supports overlying or adjacent structures.
- H. Pumping from the dewatering system shall be continuous until pipe or structure is adequately backfilled. Stand-by pumps shall be provided.
- I. Water entering the excavation from precipitation or surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to a sump and pumped from the excavation to maintain a bottom free from standing water.
- J. Drainage shall be disposed of in an approved area as specified in Section 01110, Environmental Protection Procedures. Existing or new sanitary sewers shall not be used to dispose of drainage without first obtaining written permission from the local municipality.

3.04 REMOVAL OF SYSTEMS

- A. At the completion of the excavation and backfilling work, and when approved by the Engineer, all pipe, pumps, generators, other equipment and accessories used for the groundwater and surface water control systems shall be removed from the site. All materials and equipment shall become the property of the Contractor. All areas disturbed by the installation and removal of groundwater control systems shall be restored to their original condition.

END OF SECTION

SECTION 02151 UTILITY IMPACT MOLING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to install and test the water service line piping and appurtenances using pneumatic horizontal boring (aka moling) methods as specified herein.
- B. The Contractor shall be capable of providing crews as needed to complete the work without undue delay.
- C. The Contractor shall be prepared to provide temporary water service to any location that is not completed within the allocated time.
- D. Review and comply with the coordination requirements listed in Section 02663, Water Service Connections.
- E. Review and comply record-keeping requirements listed in Section 01720, Project Record Documents.

1.02 RELATED WORK

- A. Trenching, Backfilling, and Compaction is included in Section 02221.
- B. Water Service Connections are included in Section 02663.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, Submittals, shop drawings for the pneumatic horizontal boring tool, replaceable boring heads, the air compressor.
- B. Submit, prior to the start of work, a typical drawing showing the equipment setup and the size and location of all proposed pits and excavations required to complete the work.
- C. The Owner shall approve or disapprove the Contractor and/or manufacturer based on the submitted information.

1.04 GUARANTEE

- A. All work shall be fully guaranteed by the Contractor for one (1) year from the date of Substantial Completion. During this period, all serious defects discovered by the Customer or Owner shall be removed and replaced in a satisfactory manner by the Contractor at no cost to the Customer or Owner.

1.05 REFERENCE STANDARDS

- A. Horizontal boring to install polyethylene (PEX) tubing shall conform to the following standards:

1. ANSI/AWWA C904-22 Crosslinked Polyethylene (PEX) Pressure Tubing for Water Service
2. ASTM F1962 Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles
3. Plastics Pipe Institute (PPI) Handbook of Polyethylene Pipe, Chapter 12
4. Plastics Pipe Institute Municipal Advisory Board (MAB-7)

PART 2 PRODUCTS

2.01 MATERIAL

- A. Provide and install polyvinyl chloride (PVC) pipe or crosslinked polyethylene (PEX) pipe in accordance with Section 02663, Water Service Connections.
- B. Provide and install copper water service line pipe in accordance with Section 02663, Water Service Connections.

2.02 EQUIPMENT

- A. The pneumatic horizontal boring tool shall be designed and manufactured to force its way through the existing ground by compressing the surrounding soil as it progresses. The unit shall generate sufficient force to compact the existing soil as it progresses.
- B. Sizing of the pneumatic horizontal boring equipment shall be per manufacturer's specifications for the specific diameter pipe and the soil conditions.
- C. The pneumatic horizontal boring tool shall be a reciprocating stepped-cone chisel head with pre-tensioned spring. Compressed air shall repeatedly propel the piston against the rear of the chisel head assembly to compress the pre-tensioned steel spring to propel the tool forward. At the same time, the new water service line, directly attached to the rear of the boring unit shall be pulled forward with the boring unit.
- D. Provide an air compressor with a hose to drive the Mole (20 to 200 cfm at pressure recommended by manufacturer).
- E. Provide continuous in-line lubrication (oil type recommended by manufacturer) between the compressor and the tool (bore head) for optimal performance.
- F. Provide replaceable boring heads (fixed or moving), made adaptable for different soil conditions.

PART 3 EXECUTION

3.01 GENERAL INSTALLATION

- A. Pneumatic horizontal boring shall be conducted in a continuous operation powered by compressed air to propel the tool forward while pulling the new water service pipe at the same time.

- B. Use a launching cradle and an aiming scope to provide accurate bore alignment and grade.
- C. Contractor shall take caution to avoid moling through concrete walls or foundations.

3.02 INSTALLATION PROCEDURE FOR NON-STEERABLE MOLES

- A. Conduct a pre-installation inspection of the property in which moling is proposed in order to become familiarize each specific site condition (i.e., the location of access, length of pipe, conflicting utilities, etc.).
- B. Provide temporary piping in order to maintain water to existing property during pipe moling if the property will be without water for longer than 8-hours.
- C. Prior to the actual moling and disconnection of existing water service line, the Contractor shall prepare all excavation pits and have all equipment and piping on-site in order to complete the moling operation in a timely fashion.
- D. Curb stop must be excavated before any other excavation takes place to confirm the service line materials on both sides – the public side and the private side.
- E. Excavate access pits as needed along the existing water service line. The number and size of access pits shall be the minimum necessary to allow for satisfactory completion of the work.
- F. Access pits shall be of sufficient size to allow access and proper alignment for moling equipment, operator and installation of new water service line. All excavation shall be fully braced and supported in accordance with Section 02311, Excavation Support and Protection-use. Maximum pit sizes for payment are shown on the details. The Mole must be carefully aligned in the insertion pit and advanced along a straight line.
- G. Non-steerable Moles shall have a tracking device by which the depth and location of the Mole will be tracked with a walkover receiver. A sonde (beacon probe) shall be placed in a special housing between the “hose whip” (short hose) at the back of the tool and the air supply hose, or in special housing at the nose of the Mole as per manufacturer’s specifications. This allows the operator to determine if the unit is on the correct line path.

3.03 INSTALLATION PROCEDURE FOR STEERABLE MOLES

- A. The moling shall be conducted as a continuous operation. The bore head shall be immovable thus having the continuous tendency to steer. In order to bore approximately straight, the Mole has to be rotated as it advances.
- B. Moling method shall limit vibrations transmitted to the surrounding soils. The peak particle velocity (PPV) shall be limited to 0.5-inches per second (ips).
- C. The accuracy of steerable Moles depends on the accuracy of the tracking system in the Mole and the skill of the operator. The accuracy of a tracking system shall be 2 to 5 percent of the depth. Expected accuracy should be within 1 to 3 inches from designed bore path.

3.04 DEPTH/CLEARANCE

- A. The Mole shall be installed at 3 feet below grade. If the existing service line is at a more shallow depth than 3 feet, the new service line will be installed at the same depth as the existing service line. A minimum of 2 feet of clearance shall be maintained between the designed bore path and any adjacent existing underground utilities. The new service line shall be installed at the same depth or greater than the existing service line.

3.05 TOOL SIZE, ALIGNMENT AND LAUNCHING

- A. The diameter of the Mole shall be determined by the outer pipe diameter. The created bore should be approximately 15 to 25 percent larger in diameter than the product pipe or as recommended by the manufacturer to allow for borehole shrinkage and to reduce the friction between the pipe and the soil.
- B. The Mole shall be placed on the bottom of the insertion access pit and point at the receiving access pit. Due care must be taken to align the Mole in the pit properly.

3.06 AIR SUPPLY

- A. A standard air compressor with silencer shall be used to operate the impact Mole. The operating pressure at the point where the air hose is connected to the Mole should not exceed the manufacturer's recommended value. The air hose should be lightweight, flexible, and collapse resistant. For steerable moling, the hose shall also have a high torsional stiffness.
- B. As soon as the moling operation is complete, connect the new water service line in accordance with Section 02663, Water Service Connections.

3.07 BORING SPEED

- A. The penetration rate of the Mole will depend on soil conditions and can vary, the maximum penetration rate for non-steerable moling shall be 5 ft/min. The maximum speed for steerable moling shall be according to the manufacturer's recommendation.

3.08 TOOL LUBRICATION

- A. The Mole requires continuous lubrication for optimal performance. Follow the manufacturer's recommendation as to quantity and type of oil.

3.09 FIELD TESTING AND ACCEPTANCE

- A. Flushing and testing of the new service line shall be done in accordance with 02663, Water Service Connections.

END OF SECTION

SECTION 02213 ROCK AND BOULDER EXCAVATION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required and excavate and dispose of rock and boulders as specified herein. Furnish acceptable material for backfill in place of the excavated rock to bring the limits of the trench and/or excavation to those required on this project.
- B. Blasting will not be permitted on this project.
- C. Protect existing structures, utilities, roadway, adjacent property, workers, Engineer, Owner, all abutters, and the public from damage or injury from excessive ground vibrations and rock block movements.

1.02 RELATED WORK

- A. Granular Fill Materials are included in Section 02230.
- B. Sedimentation and Erosion Control is included in Section 02270.
- C. Excavation Support and Protection is included in Section 02311.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, Submittals, at least two weeks prior to commencing excavation that includes rock excavation the following:
 - 1. A description of the means and methods of rock and boulder excavation techniques including size and energy of any impact equipment and chemical properties of any chemical agents to be used for chemical splitting.
 - 2. Name and qualifications of the person(s) responsible for monitoring and reporting rock excavation vibrations.
- B. Review by the Engineer of material submitted by the Contractor shall not relieve the Contractor of responsibility for the accuracy, adequacy, and safety of the rock and boulder excavation, exercising proper supervision and field judgment and producing the results within the limits required by this Section.

1.04 DEFINITIONS

- A. Rock: Any large mass of stone, bedrock, or ledge rock.
- B. Soil Excavation: The removal of earth, including boulder, weathered rock and rock fragment, loose or disintegrated rock, loose or rotted shale, nested stones, hardpan and the like. Soil Excavation shall include all excavation of earth materials including rock excavation.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Vibrations shall be limited to peak particle velocity (PPV) of 0.5-inches per second (ips).

3.02 ROCK EXCAVATION

- A. Rock excavation may be performed by drilling, wedging, sledging, cutting, barring, jackhammering, hoe ramming, expansive chemical splitting, or another similar process in a manner, which does not cause damage to the existing structures, new construction.
- B. Blasting is not allowed.
- C. All rock excavation operations shall comply with the project, state and local noise and dust regulations.
- D. If rock below grade is shattered by rock excavation methods, and if, in the opinion of the Engineer, the shattered rock is unfit for subgrade, the rock shall be removed and the excavation refilled with thoroughly compacted screened gravel or structural fill at no additional cost.

3.03 DISPOSAL OF ROCK

- A. Fragmented rock with dimensions not exceeding 6 inches in any direction may be mixed with common fill and used as common fill in accordance with Section 02230, Granular Fill Materials.
- B. Rock and boulders may be crushed and screened for reuse in the work, provided that the resultant materials meet the requirements for gravel, crushed stone, or structural fill as specified in Section 02230, Granular Fill Materials.
- C. Excavated material shall be stacked without excessive surcharge on the excavation or obstructing free access to hydrants and gate valves. Inconvenience to traffic and abutters shall be avoided as much as possible.
- D. Should conditions make it impracticable or unsafe to stack material adjacent to the excavation, the material shall be hauled and stored at a location provided. When required, it shall be rehandled and used in backfilling the trench at no additional cost to the Owner.
- E. Rock and boulder material disposed of by wasting shall be replaced by available surplus suitable soils. Common fill to supply any deficiency of backfill shall be provided at no additional cost.
- F. Unused rock and boulders shall be removed and disposed of off-site.
- G. Provide to the Owner and Engineer the name and address of the facility receiving any unused rock generated during construction. In addition, provide to the Owner and Owner's representative documentation of the facility's commitment to accept the rock and boulders and the facility's intended use.

END OF SECTION

SECTION 02221
TRENCHING, BACKFILLING AND COMPACTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required and perform all trenching for pipelines and appurtenances, including drainage, filling, backfilling, disposal of surplus material and restoration of trench surfaces and rights-of-way.
- B. Furnish and place all sheeting, bracing and supports and remove from the excavation all materials which the Engineer may deem unsuitable for backfilling. The bottom of the excavation shall be firm, dry and in all respects, acceptable.
- C. All excavation, trenching and related sheeting, bracing, etc., shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P) and State requirements. Where a conflict between OSHA and State regulations exists, the more stringent requirements shall apply.
- D. Wherever the requirement for 95 percent compaction is referred to herein, it shall mean "at least 95 percent of maximum density as determined by ASTM D1557".

1.02 RELATED WORK

- A. Testing and Testing Laboratory Services are included in Section 01410.
- B. Dewatering and Drainage are included in Section 02140.
- C. Excavation Support and Protection is included in Section 02311.
- D. Granular Fill Materials are included in Section 02230.
- E. Pavement Repair and Resurfacing is included in Section 02576.

1.03 SUBMITTALS

- A. Submit to the Engineer the sheeting and bracing design as required prior to excavation.
- B. Submit to the Engineer the proposed method of backfilling and compaction prior to excavation.

1.04 SOIL TESTING

- A. At all structures, appurtenances, manholes, pipelines and service connections, prior to the placement of bedding material, initial backfill, concrete work mats, structural fill, granular fill or structural concrete, coordinate with the soils testing laboratory to verify the suitability of the existing subgrade soil and to perform in-place soil density tests as required to verify that the bearing capacity of the subgrade is sufficient. The Engineer shall assess all subgrades below structures prior to the placement and compaction of backfill material.

- B. Materials will be tested and observed as described in the following paragraphs. Cooperate by allowing free access to the work for selection of test materials and observations:
1. Materials to be used in the work shall be tested in accordance with Section 02230, Granular Fill Materials.
 2. If field test results are not in conformance with the requirements of these Specifications, costs of re-testing after correction of deficiencies shall be borne by the Contractor.
 3. Earthwork activities performed without properly scheduled inspection are subject to removal and replacement or additional testing as directed by the Engineer at no expense to the Owner.
 4. Testing methods shall comply with the latest applicable ASTM or AASHTO Standards specified.
 5. During the placement of bedding, backfill and fill, the Contractor shall perform in-place soil density testing to confirm that fill material has been compacted in accordance with the requirements of this Section. Such testing will be paid for by the Contractor and included in the bid price for the replacement and test pit bid items. The Engineer will designate areas to be tested. Upon request by the Owner and the time frame of the on-site inspection, the Contractor shall hire the approved testing laboratory representative to test compaction of subgrade and placement and compaction of bedding and backfill. The approved testing laboratory representative shall confirm the suitability of the subgrade of the excavated trench prior to placement of any bedding and backfill.
 6. Materials which have been previously tested may be subjected to further testing from time to time and may be rejected if it is determined that they do not conform to the requirements of these Specifications. Rejected materials shall be removed from the work immediately when so directed by the Engineer, notwithstanding the results of previous testing.
- C. The Engineer or Owner may conduct additional soil testing. Cooperate fully in obtaining the information desired and allowing free access to the work.
- D. Payment for all testing and testing laboratory services required by this Section shall paid through the Testing Technician Allowance.

PART 2 PRODUCTS

2.01 GENERAL

- A. Soils and materials designated for use in this Section are specified in Section 02230, Granular Fill Materials.
- B. Warning Tape
1. Tape material shall be formulated from 100 percent virgin polyethylene resins. Resins shall be pigmented for chemical stability and resistance to sulfide staining (colorfastness). Tape shall be constructed by the mechanical (non-adhesive) lamination of two plies of three layers blown film in such a manner as to produce a bi-axially oriented structure. The tape shall be able to provide a 700 percent elongation prior to rupture. The warning tape shall be

manufactured with a permanent APWA line color pigment at a maximum of every thirty (30) inches along its length, be imprinted with a continuous warning message as follows: "CAUTION: SERVICE WATER LINE BURIED BELOW"

2. During the backfilling process, all PVC and Ductile Iron water mains, service lines and system appurtenances shall have a continuous warning tape placed in the open trenches or access pits immediately above them and throughout their length at a depth of eighteen (18) inches above the utility line surface. The tape shall be two (2) inches wide. At tees, tape ends, etc., the warning tape shall be tied together (spliced) with a knot to create a continuous warning tape throughout the length of the pipeline and associated branch lines, appurtenances, etc.

PART 3 EXECUTION

3.01 TRENCH EXCAVATION

- A. All trench excavations shall comply with OSHA Standards.
- B. Trench excavation shall include material of every description and of whatever substance encountered, including brick pavement, rock, and boulders. Where encountered in the trench, rock shall be excavated to a depth of half of the pipe diameter below the pipe, but in no case less than 4-inches below the bottom of the pipe.
- C. Pavement shall be cut with a saw, wheel or pneumatic chisel along straight lines before excavating.
- D. Strip and stockpile topsoil from grassed areas crossed by trenches. At the Contractor's option, topsoil may be otherwise disposed of and replaced, when required, with approved topsoil of equal quality.
- E. Ensure that trenching does not interfere with normal 45 degrees bearing splay of any building foundation.
- F. While excavating and backfilling is in progress, traffic shall be maintained, and all utilities and other property protected as provided in the General Conditions and other Specification Sections.
- G. Do not disturb soil within the branch spread of existing trees or shrubs that are to remain. If necessary to excavate through roots, perform work by hand and cut roots with a sharp axe.
- H. Except where trees are indicated to be removed, trees shall be protected from injury during construction operations. No tree roots over 2 inches in diameter shall be cut without express permission of the Engineer. Trees shall be supported during excavation by any means previously reviewed by the Engineer.
- I. Correct unauthorized excavations as directed at no cost to the Owner.
- J. Trenches shall be excavated to the depth and in widths no larger than the limit described in Section 01046 Control of Work Paragraphs 1.16 and 1.17. The bottom of the excavations shall be firm, dry and free of irregularities lumps, projections and in all respects acceptable to the Engineer.

- K. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of subgrade soils. The trench may be excavated by machinery to or just below the designated subgrade, provided that material remaining in the bottom of the trench is no more than slightly disturbed. Subgrade soils which become soft, loose, "quick," or otherwise unsatisfactory as a result of inadequate excavation, dewatering or other construction methods shall be removed and replaced by crushed stone as required by the Engineer at the Contractor's expense.
- L. Clay and organic silt soils are particularly susceptible to disturbance due to construction operations. When excavation is to end in such soils, use a smooth-edge bucket to excavate the last 1-ft of depth.
- M. Service lines in open cut areas are to be laid on well-graded sand bedding; the trench may be excavated by machinery to the normal depth of the pipe provided that the material remaining in the bottom of the trench is no more than slightly disturbed and does not become softened.
- N. The maximum amount of open trench permitted in any one location shall be 100 feet, or the length necessary to accommodate the amount of pipe installed in a single day, whichever is greater. All trenches shall be fully backfilled at the end of each day.

3.02 DISPOSAL OF MATERIALS

- A. Excavated material shall be stacked without excessive surcharge on the trench bank or obstructing free access to hydrants and water valves. Inconvenience to traffic and abutters shall be avoided as much as possible. Excavated material shall be segregated for use in backfilling as specified below.
- A. It is expressly understood that all surplus material shall be removed from the site of the work and properly disposed of at the end of each work day. All surplus material shall be transported, stockpiled and disposed of in accordance with all local, state and federal regulations at no additional cost to the Owner.
- B. Should conditions make it impracticable or unsafe to stack material adjacent to the trench, the material shall be hauled and stored at a location provided by the Contractor. When possible, it shall be rehandled and used in backfilling the trench, see paragraph 3.06.

3.03 EXCAVATION BELOW GRADE AND REFILL

- A. Whatever the nature of unstable material encountered or the groundwater conditions, trench drainage shall be complete and effective.
- B. If the Contractor excavates below grade through error or for the Contractor's own convenience, or through failure to properly dewater the trench, or disturbs the subgrade before dewatering is sufficiently complete, the work of excavating below grade and furnishing and placing the refill shall be performed at his own expense.

3.04 WARNING TAPE

- A. During the backfilling process, all service lines and system appurtenances shall have a continuous warning tape, as specified in Part 2 of this Section, placed immediately above them and throughout their length at a depth of eighteen (18) inches above the utility line surface. At

tees, tape ends, etc., the warning tape shall be tied together (spliced) with a knot to create a continuous warning tape throughout the length of the pipeline and associated branch lines, appurtenances, etc.

3.05 BACKFILLING

- A. Contractor shall have a technician from an approved Soils Testing Laboratory on-site in accordance with Section 01410 Testing and Testing Laboratory Services.
- B. As soon as practicable after the pipe has been laid and jointed, backfilling shall begin and thereafter be prosecuted expeditiously. Backfilling shall be in compliance with the applicable City or Town's standards.
- C. Where the pipes are laid in streets, the remainder of the trench up to the bottom of Initial Pavement shall be backfilled with compacted common fill as referenced in Appendix B and as specified in Section 02230, Granular Fill Materials. At no time shall backfill layers exceed 1-ft.
- D. Water Service Connections in the open cut areas shall be installed on a minimum of a 4-inch bed of AASHTO #10 Screenings and shall be covered with a minimum of 12-inches of AASHTO #10 Screenings.
- E. To prevent movement of all pipes, dumping backfill material into the trench and then spreading will not be permitted until material has been placed and compacted to a level 1-ft over the pipe.
- F. Backfill shall be brought up evenly on all sides. Each layer of backfill material shall be thoroughly compacted by rolling, tamping, or vibrating with mechanical compacting equipment or hand tamping, to tamping to 95 percent compaction according to ASTM D 1557 or 98 percent according to ASTM D 698. If rolling is employed, it shall be by use of a suitable roller or tractor, being careful to compact the fill throughout the full width of the trench.
- G. All percentages of compaction specified herein shall be related to the maximum dry density as established by Method D, ASTM D1557-70, and verified in the field by the Contractor's field/laboratory testing representative utilizing ASTM D1556-68, D2167-66 or an approved nuclear density testing device. Prior to placing the backfill material, at least one (1) laboratory test shall be made on a representative sample to determine gradation and the moisture density characteristics of the proposed material.
- H. Nuclear compaction tests shall be performed by the technician from the Soils Testing Laboratory once per excavation when soil testing lab is on-site, or at the discretion of the Engineer's representative, to confirm the specified compaction is obtained.
- I. Where other methods are not practicable, compaction shall be by use of hand or pneumatic ramming with tools weighing at least 20 lbs. The material being spread and compacted in layers not over 6-in thick. If necessary, sprinkling shall be employed in conjunction with rolling or ramming.
- J. Subject to approval by the Engineer, fragments of ledge and boulders smaller than 6-in may be used in trench backfill provided that the quantity, in the opinion of the Engineer, is not excessive. Rock fragments shall not be placed until the pipe has at least 2-ft of earth cover. Small stones and rocks shall be placed in thin layers alternating with earth to ensure that all voids are completely filled. Fill shall not be dropped into the trench in a manner to endanger the

pipe. All other rock, ledge, boulders, and other material unsuitable for backfilling shall be removed from the site and disposed of by the Contractor.

- K. Bituminous paving shall not be placed in backfilling. Frozen material shall not be used under any circumstances.
- L. Do not compact by puddling or water jetting.
- M. Broom and hose-clean road surfaces immediately after backfilling. Employ dust control measures throughout the construction period.

3.06 RESTORING TRENCH SURFACE

- A. Where the trench occurs adjacent to paved streets, in shoulders or sidewalks, thoroughly consolidate the backfill and maintain the surface as the work progresses. If settlement takes place, immediately deposit additional fill to restore the level of the ground.
- B. The surface of any driveway or any other area which is disturbed by the trench excavation and which is not a part of the paved road shall be restored to a condition at least equal to that existing before work began.
- C. In sections where the pipeline passes through grassed areas, and at the Contractor's own expense, remove and replace the sod, or loam and seed the surface as per Section 02930, Topsoiling and Seeding, and to the satisfaction of the Engineer.
- D. Where the trench occurs in paved area, the pavement shall be restored to maintain smooth even grade that matches the adjacent pavement and preconstruction conditions as detailed in Section 02576, Pavement Repair and Resurfacing.

END OF SECTION

SECTION 02230 GRANULAR FILL MATERIALS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Granular fill materials are specified in this Section, but their use for bedding pipe, pavement base, and similar uses are specified in detail elsewhere. The Engineer may order the use of fill materials for purposes other than those specified in other Sections if, in his/her opinion, such use is advisable.
- B. Granular fill materials shall be natural or processed mineral soils, graded crushed stone or gravel obtained from off-site sources. Granular fill materials shall be free of all organic material, trash, snow, ice, frozen soil, or other objectionable materials which may be compressible, or which cannot be properly compacted. Soft, wet, plastic soils which may be expansive, clay soils having a natural, in-place water content in excess of 30 percent, soils containing more than 5 percent (by weight) fibrous organic materials, and soils having a plasticity index greater than 30 shall be considered unsuitable for use as granular fill materials. Granular fill materials shall have a maximum of 1 percent expansion when testing is performed on a sample remolded to 95 percent of maximum dry density (per ASTM D1557) at 2 percent below optimum moisture content under a 100 lbs/sq ft surcharge.

1.02 RELATED WORK

- A. Trenching, Backfilling, and Compaction are included in Section 02221.
- B. Sedimentation and Erosion Control is included in Section 02270.
- C. Pavement Repair and Resurfacing is included in Section 02576.
- D. Loaming and Seeding is included in Section 02930.

1.03 QUALITY ASSURANCE

- A. Laboratory Testing:
 - 1. Engage the soils testing laboratory as needed to perform: Grain size analyses of the samples to determine their suitability for use as backfill or fill material in conformance to the materials requirements specified herein for any imported fill. The appropriate Proctor analyses to determine the maximum dry densities required for compaction testing as specified elsewhere in the Contract Documents. Test results and determinations of suitability shall be delivered to the resident project representative no later than 3 days prior to the placement of backfill or fill materials.

1.04 SUBMITTALS

- A. Submit to the Engineer all laboratory testing and certification prior to any work.

PART 2 PRODUCTS

2.01 BORROW AND AGGREGATE MATERIALS

- A. Common Fill/Granular Backfill: In accordance with Orange Water and Sewer (OWASA) Manual of Specifications, Standards, and Design Section 02275.
- B. Crushed Stone or Crushed Gravel: In accordance with NCDOT Section 1016.
- C. Bedding Material: Shall be #57 of #67 stone in accordance with OWASA Manual of Specifications, Standards, and Design Section 02275.
- D. Topsoil: In accordance with OWASA Manual of Specifications, Standards, and Design Section 02275.
- E. Select Earth Backfill: Select common fill shall be as specified above for common fill/borrow except that the material shall contain no stones larger than 1 inch in its largest dimension and shall meet the NCDOT Standard Specifications for Roads and Structures, Section 1016.
- F. Suitability of Backfill Material: Suitable common trench backfill material shall be free of rock or gravel larger than 3 inches in any dimension, debris, waste frozen material, vegetation and other deleterious material and shall be of ASTM D2487 soil classification groups listed in the OWASA Manual of Specifications, Standards, and Design Section 02275.
- G. Flowable Fill/Concrete Backfill: In accordance with OWASA Manual of Specifications, Standards, and Design Section 02275.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 02270
SEDIMENTATION AND EROSION CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required and perform all installation, maintenance, removal, and area cleanup related to sedimentation control work as shown on the Details and as specified herein.

1.02 RELATED WORK

- A. Environmental Protection Procedures are included in Section 01110.
- B. Trenching, Backfilling and Compaction specifications are included in Section 02221.
- C. Granular Fill Materials are included in Section 02230.

1.03 SUBMITTALS

- A. Submit to the Engineer, in accordance with Section 01300, Submittals, and within 10 days after award of Contract, technical product literature for all commercial products to be used for sedimentation and erosion control.

1.04 QUALITY ASSURANCE

- A. Be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site, staging or laydown areas to off-site areas or into the sewer and/or drainage systems. Measures in addition to those shown in the details necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of the Contractor. No additional charges to the Owner will be considered.
- B. Sedimentation and erosion control measures shall conform to the requirements outlined in the North Carolina Erosion and Sediment Control Planning and Design manual, most recent edition, and the Orange Water and Sewer Manual of Specifications, Standards, and Design, which are incorporated herein by reference.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Filter Fabric
 - 1. Filter fabric shall be a woven, polypropylene, ultraviolet resistant material such as Mirafi 100X by Mirafi Inc., Charlotte, NC or equal.
- B. Filter Bags
 - 1. Geotextile Material for Bags: Meet the following minimum requirements.

Minimum Grab Tensile Strength	200 lbs
Minimum Grab Tensile Elongation	50 percent
Minimum Trapezoidal Tear Strength	80 lbs
Mullen Burst Strength	380 psi
Minimum Puncture Strength	130 lbs
Apparent Opening Size	40-80 US Std Sieve
Minimum Flow Through	70 gpm/square foot

2. Bag shall have an opening large enough to accommodate a 4-inch diameter discharge hose.

C. Crushed stone shall be as specified in Section 02230 Granular Fill Materials.

PART 3 EXECUTION

3.01 GENERAL

- A. Take sufficient precautions during construction to minimize the runoff of polluting substances such as silt, clay, fuels, oils, bitumen, and calcium chloride into the supplies and surface waters of the State. Special precautions shall be taken in the use of construction equipment to prevent operations that promote erosion.
- B. Prevent the flow or seepage of runoff to catch basins and drainage areas. Drainage shall not be disposed of until silt and other sedimentary materials have been removed. Particular care shall be taken to prevent the discharge of unsuitable drainage to a water supply or surface water body.
- C. Stormwater runoff discharges shall be inspected by observation for stormwater discharge characteristics. If visible sedimentation is leaving the disturbed limits of the sites, corrective action shall be taken immediately to control the discharge of sediments outside the disturbed limits.

3.02 INSTALLATION

- A. Construct inlet filters using filter fabric as specified in this Section and as shown in the details. Filter fabric shall be secured to inlet frame with bricks and in a fashion as to minimize impedance on traffic flow.
- B. Filter Bag
 - 1. Locate filter bag at least 50 feet from all wetlands, streams, or other surface water
 - 2. Install bag on an 8-inch gravel bed or wooden pallets to elevate the bag above the existing ground and allow water to flow in all directions.

3.03 MAINTENANCE AND INSPECTIONS

- A. Inspections
 - 1. Make a visual inspection of all sedimentation control devices once per week and promptly before and after every rainstorm.

2. If such inspection reveals that additional measures are needed to prevent movement of sediment to offsite areas or into the vent trench, promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.

B. Device Maintenance

1. Filter Bag

- a. Bag is full when half full with sediment. Replace full bag with new bag.

3.04 REMOVAL AND FINAL CLEANUP

- A. Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner. Regrade all areas disturbed during this process and stabilize against erosion with surfacing materials.

END OF SECTION

SECTION 02311 EXCAVATION SUPPORT AND PROTECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The work specified in this Section includes requirements for excavation and support of temporary excavations, and trenches. The Contractor shall design, furnish, install, and maintain a system of supports, including all bracing and associated items, to retain excavations in a safe manner and to control ground movements. Upon completion of the required construction, the system of supports shall be completely removed and the excavation and staging area sites restored as discussed herein.
- B. The work shall include site grading; fencing, barricades and signing; construction staging areas; design and construction of excavation support systems; disposal of excavated material, surface water, and groundwater; backfilling; and site restoration. Work shall include all labor, materials, and equipment required to complete excavation support.
- C. Retain the services of a professional engineer registered in the State of North Carolina to prepare excavation support and protection system designs and submittals described herein. Work shall include the design, equipment, materials, installation, protection, and monitoring of geotechnical instrumentation required to monitor the performance of the excavation support system as required herein.
- D. All excavations and support systems shall conform to applicable OSHA excavation, trenching, and shoring standards which are contained in the U.S. Code of Federal Regulations 29 (C.F.R.) 1926.650-1926.653, other federal, state or local requirements. In the event of a conflict, comply with the more restrictive applicable requirements.

1.02 RELATED WORK

- A. Dewatering and Drainage are included in Section 02140.
- B. Rock and Boulder Excavation are included in Section 02213.
- C. Trenching, Backfilling, and Compaction are included in Section 02221.
- D. Granular Fill Materials are included in Section 02230.

1.03 SUBMITTALS

- A. Submit to the Engineer in accordance with Section 01300, Submittals, Shop Drawings and design calculations for the Contractor-designed excavation support system stamped by a Professional Engineer in the State of North Carolina when excavation support is required per OSHA or State laws.
- B. Shop Drawings shall include:
 - 1. Overall plan layout of the system, indicating clearances, dimensions, material properties, member sizes, locations, spacing and penetrations depth of all members, locations of

various types of lateral supports. Indicate existing and proposed utilities, structures or other obstruction, location and type of instrumentation and monitoring points within the area of influence of the excavation.

2. Wall elevations and locations of all bracing.
3. Overall sequence of installation and removal of bracing, indicating levels to which the work will be carried out before bracing is installed or removed.
4. Method of preloading bracing (if required) and the preload for each member, and the method of locking-off the preload. Include detailed drawings of the connections, jacking supports and method of shimming.
5. Details, layout, arrangement, equipment requirements, and method of construction of the proposed excavation support system.
6. Procedures for resolving difficulties arising from misalignment of members exposed during excavation, and criteria for implementing those procedures.

C. Design calculations shall include:

1. Loads on the excavation support system for all stages of excavation, bracing removal, and concrete placement, including material and equipment loads on the adjacent ground during construction.
2. Design of wall and all bracing members including all details for all stages of construction.
3. Theoretical deflections of excavation support system and deformation of structures, pipelines, and other improvements located within the area of influence of the excavation.
4. Submit to the Engineer for review and acceptance, a plan of action to be implemented in the event any threshold value for deformation is reached. The plan of actions shall be positive measures by the Contractor to limit further movement of the wall including but not limited to trenching for struts and wales, placement of granular earth berms against the wall, installation of additional struts, or combinations thereof. The details of the mitigating measures shall include a schedule of implementation, location and/or availability of materials, structural details for all connections to the wall and support elements, and a detailed description of the method of implementation. The Contractor shall be prepared to work 24 hours per day to implement such measures. The remedial work/mitigating measures shall be at no additional cost to the Owner.

D. Submit quality control measures as required to ensure that the performance of the excavation support system is consistent with the approved shop drawings and the requirements herein.

E. Submit welder qualifications and weld procedures in accordance with AWS D1.1.

F. Submit Contractor's and Design Engineer's qualifications as described in herein.

G. At least one copy of the design shall be maintained at the job site during excavation that includes a plan indicating the sizes, types, and configurations of the materials to be used in the protective system, and the identity of the registered engineer who approved the design.

- H. Do not proceed with any support of excavation or protection activities until the submittal has been approved by the Engineer.
- I. Design Engineer's documentation shall include:
 - 1. On-site inspections of the excavation support system as the systems are constructed.
 - 2. Review of quality control measures and performance data.
 - 3. Certification that the excavation support system is constructed per the applicable design following completion of each support system and following any modifications by Contractor during construction.

1.04 QUALITY ASSURANCE

- A. Regulations: Perform all work in accordance with current applicable regulations and codes of all Federal, State and local agencies.
- B. The Contractor shall have at least 5 years of experience with work compatible with the Work shown and specified, employing labor and supervisory personnel who are similarly experienced in this type of Work.
- C. The Contractor's Design Engineer shall be a Registered Professional Engineer in the State in which the work is located with at least 5 years professional experience in the design and construction of support of excavation systems and shall have completed not less than 5 successful excavation support projects of equal type, size, and complexity to that required for the work.

1.05 DESIGN REQUIREMENTS

- A. The design of temporary excavation support systems is the responsibility of the Contractor. The design calculations and drawings shall be prepared, stamped and signed by a Professional Engineer registered in the State of North Carolina, who is experienced in designing similar excavation support systems.
- B. Design temporary excavation support systems in accordance with the requirements of this Section. These criteria are the minimum acceptable standards.
- C. All underground utility lines shall be identified, located, and protected from damage or displacement. Utility companies and other responsible authorities shall be contacted to locate and mark the locations and, if they so desire, direct or assist with protecting the underground installation. However, all mark outs of utilities shall be considered by the Contractor as approximate and the Contractor shall be solely responsible for employing prudent techniques to determine the actual location. When required, the Contractor shall obtain an excavation permit from the local authority having jurisdiction prior to the initiation of any excavation work.
- D. Design excavation support systems in accordance with all OSHA requirements and other local and agency requirements.
- E. Design the support system to minimize horizontal and vertical movements and to protect adjacent structures and utilities from damage.

- F. Excavations below the level of the base of any adjacent foundation or retaining wall shall not be permitted unless the design of the excavation and bracing includes an analysis of the stability of the structure supported by the foundation and as necessary, incorporates required bracing/underpinning of the foundation.
- G. For support systems in which bracing is installed between opposite sides of the excavation, design the excavation support of both sides to be nearly the same as feasible.
- H. Where necessary to resist point loads, pipe piles used as soldier piles shall be filled with concrete with a compressive strength not less than 3,000 psi. The strength of the concrete shall not be considered in the design of the pipe pile for bending stress.
- I. Design, install, operate, and maintain groundwater control system to control groundwater inflows, prevent piping or loss of ground, and maintain the stability of the excavation. Refer to the requirements of Section 02140, Dewatering and Drainage.
- J. Design review and field monitoring activities by the Owner or by the Engineer shall not relieve the Contractor of his/her responsibilities for the work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Soldier piles and structural steel members shall conform to ASTM A572 or ASTM A242 unless approved otherwise. No members with permanent deformations are to be provided. Members shall not be spliced unless approved by the Engineer.
- B. Pipe piles used as soldier piles shall conform to ASTM A252.
- C. Steel sheet piling shall conform to ASTM A328 or ASTM A572 or ASTM A690 unless approved otherwise.
- D. Liner plates shall be fabricated from structural quality hot-rolled carbon steel sheets or plates conforming to ASTM A1101 with the following minimum properties before cold forming:
 - E. Plates shall be of either the two- or four-flange type, punched for bolting on all sides. Bolt spacing shall be in accordance with the manufacturer's standard spacing and shall be multiples of the plate length so that the plates having the same curvature shall be interchangeable. Bolt numbers and pattern shall be determined by the liner supplier.
- F. Tensile Strength: 42,000 psi
 - 1. Yield strength: 28,000 psi
- G. Concrete shall conform to Section 03301, Concrete and Reinforcing Steel, or ASTM C33 and ASTM C150 unless otherwise approved.
- H. All timber shall be structural grade with a minimum allowable flexural strength of 1100 psi. Timber lagging shall be at least 3 inches thick and free of large or loose knots.

PART 3 EXECUTION

3.01 GENERAL

- A. Commence installation of support system and excavations only after shop drawings have been reviewed and accepted by the Engineer.
- B. All required instrumentation shall be installed and initialized prior to the start of work.
- C. Methods of construction for excavations shall be such as to ensure the safety of the Work, Contractor's employees, Engineer, and Owner's employees and inspectors, the public and adjacent property and improvements, whether public or private.
- D. Before beginning construction at any location of this project, adequately protect existing structures, utilities, trees, shrubs, and other existing facilities. The repair of or compensation for damage to existing facilities shall be at no additional cost to the Owner.
- E. As a minimum, place fencing or suitable barricades, gates, lights, and signs as necessary around the excavations and staging areas to provide for public safety. Provide personnel to serve as flagmen and watchmen.
- F. Install excavation support systems in accordance with the approved shop drawings and applicable permits.
- G. All voids between the excavation support system and earth shall be filled with materials acceptable to the Engineer.
- H. If unstable material is encountered during excavation, all necessary measures shall be taken immediately to contain it in place and prevent ground displacement.
- I. If settlement or deflections of supports indicate that support system requires modification to prevent excessive movements, redesign and resubmit revised shop drawings and calculations to the Engineer at no additional cost to the Owner.
- J. Sufficient quantity of material shall be maintained on site for the protection of work and use in case of accident or emergency.
- K. All welding shall conform to the applicable provisions of ANSI/AWS D1.1.

3.02 PORTABLE TRENCH BOXES

- A. Portable trench boxes or sliding trench shields may be used for the protection of workers only.
- B. Additional excavation, backfilling, and surface restoration required as the result of trench box use shall be at no additional cost to the Owner.
- C. Trench boxes or shields shall be designed, constructed, and maintained to meet acceptable engineering and industry standards.
- D. Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.

- E. A copy of the trench box manufacturer's specifications, recommendations, and limitations shall be in written form and maintained at the job site during all excavation work.

3.03 SOLDIER PILES

- A. Install soldier piles with the minimum embedment depths as shown on approved shop drawings.
- B. Driven piles shall be installed with driving shoes where hard driving is anticipated.
- C. For soldier piles installed in predrilled holes, provide casing or other methods of support as necessary to prevent caving of holes and loss of ground.
- D. Predrilled holes for soldier piles shall be backfilled with concrete from the pile tip elevation to the elevation of the bottom of the excavation. The remainder of the predrilled hole shall be backfilled with lean concrete or sand. Concrete strength shall be in accordance with the approved shop drawings.
- E. The predrilled hole diameter shall be sufficient to allow for proper alignment and concrete backfilling of the pile.
- F. Driven soldier piles shall be advanced without the aid of a water jet.
- G. Provide timber lagging of sufficient thickness to withstand earth pressures and in accordance with the approved shop drawings.
- H. Install lagging such that ground loss does not occur between adjacent or below the lowest board. As excavation proceeds, the maximum height of unlagged face of excavation shall not exceed 4 feet. The unlagged face shall not exceed 2-ft if water seeps or flows from the face of the excavation or if the face of the excavation becomes unstable.
- I. As installation progresses, backfill the voids between the excavation face and the lagging. Pack with materials such as hay, burlap, or geotextile filter fabric where necessary to allow drainage of groundwater without loss of ground.

3.04 STEEL SHEET PILING

- A. Install steel sheet piling with the minimum embedment depths as shown on the approved shop drawings.
- B. Drive sheeting in plumb position with each sheet pile interlocked with adjoining piles for its entire length to form a continuous diaphragm throughout the length of each run of the wall, bearing tightly against the original ground. Exercise care in driving so that interlocking members can be extracted without damaging adjacent structures or utilities. The methods of driving, cutting, and splicing shall conform to the approved shop drawings.
- C. Use templates or other temporary alignment facilities to maintain piling line.
- D. Prior to installation, the sheet piles shall be thoroughly cleaned and inspected for defects and proper interlock dimensions. Provide a tool for checking the interlock dimensions.

- E. Each sheet pile shall have sufficient clearance in the interlocks to slide, under its own weight, into the interlock of the sheet pile previously placed.
- F. Excavation shall not be carried in advance of steel sheet piling installation.
- G. Where obstructions are anticipated, pre-excavation or pre-drilling along the sheet pile wall alignment shall be conducted at no additional cost to the Owner. Pre-excavation and pre-drilling shall not extend below the lowest excavation level or into bearing soils for existing or future structures.
- H. Obstructions encountered before the specified embedment for piles shall be removed. Where obstructions cannot be removed, the sheet pile system shall be re-evaluated by the Contractor's Design Engineer for the resulted reduced embedment and additional toe stability measure implemented, as required or for realignment of the sheet pile wall. Submittal of the proposed measures shall be provided.
- I. Damaged piling or piling with faulty alignment shall be withdrawn and new piling driven properly in its place. The cost of such additional work shall be considered as part of the pile driving and shall be borne by the Contractor.

3.05 LINER PLATES

- A. Liner plates shall be installed as soon as excavation has progressed sufficiently for the next ring of plates to be installed. A complete circumferential ring of liner plates shall be installed prior to continuing the excavation. Installing more than one incomplete ring of liner plates at any time is not acceptable. Plates shall be staggered in the vertical direction to facilitate shaft strength and leakage resistance.
- B. Liner plates shall be grouted in accordance with the approved shop drawings.

3.06 INTERNAL BRACING

- A. Provide internal bracing to carry maximum design load without distortion or buckling.
- B. Include web stiffeners, plates, or angles as needed to prevent rotation, crippling, or buckling of connections and points of bearing between structural steel members. Allow for eccentricities caused by field fabrication and assembly.
- C. Install and maintain all bracing support members in tight contact with each other and with the surface being supported.
- D. Coordinate excavation work with the installation of bracing. Excavation shall extend no more than 2 feet below any brace level prior to installation of the bracing.
- E. Use procedures that produce uniform loading of a bracing member without eccentricities or overstressing and distortion of members of the system.

3.07 REMOVAL OF EXCAVATION SUPPORT

- A. Do not remove internal bracing and transfer loads to the permanent structure without prior acceptance of the Engineer.

- B. Removal shall begin at and progress from the bottom of the excavation. Members shall be released slowly as to note any indication of the possible failure of the remaining members or possible cave-in of the sides of the excavation.
- C. Backfilling shall progress together with the removal of support systems from excavations.
- D. Unless otherwise indicated, remove all portions of excavation support.
- E. Do not remove vertical support members that were installed within the zone of influence of new or existing structures. The zone of influence is defined as a zone extending down and away from the outer edge of the structure at 1 horizontal to 1 vertical. Support members installed within this zone shall be cut off at 5 ft below finished grade and abandoned in place.
- F. No untreated wood shall remain as part of the abandoned portion of the work.
- G. When removing the excavation support system, do not disturb or damage adjacent buildings, structures, waterproofing material, or utilities. Fill voids immediately with lean concrete or well-graded cohesionless sand, as indicated or as directed by the Engineer.
- H. Remove material of the excavation support system from the site immediately.

END OF SECTION

SECTION 02576 PAVEMENT REPAIR AND RESURFACING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, material, equipment, and incidentals required and replace all pavement removed over trenches or excavations or otherwise disturbed by the Contractor's operations.
- B. New pavement in streets shall consist of initial pavement over all trenches. Final bituminous concrete pavement shall be placed over trenches and excavations on roads by permit condition.
- C. Final pavement on streets under moratorium must comply with the paving requirements of the corresponding municipal ordinance or permit conditions or NCDOT permit issued. A summary of the requirements for relevant agencies are included in the details in Appendix B.
- D. Streets, driveways, parking areas or sidewalk pavements damaged or disturbed by the Contractor's operations shall be repaired, replaced, or restored in accordance with the requirements specified herein and as directed for the respective type of pavement replacement and in a manner satisfactory to the Owner and municipality.
- E. Obtain all necessary municipal and State permits for road opening and comply with all rules and regulations governing road opening permits. A summary of the requirements for relevant agencies included in the details in Appendix B.
- F. Damage to the pavement outside of the limits of work which, in the opinion of the Engineer, is not necessary to complete the Work and is a result of activities by the Contractor, his laborers, agents or subcontractors shall be repaired in a manner satisfactory to the Engineer, Owner, relevant municipality and State at the expense of the Contractor.
- G. Limits of pavement and pavement details are shown on the details in Appendix B.

1.02 RELATED WORK

- A. Trenching, Backfilling, and Compaction are included in Section 02221.
- B. Granular Fill Materials are included in Section 02230.

1.03 REFERENCE STANDARDS

- A. Except as otherwise specified herein, the current NCDOT Standard Specifications for Roads and Structures, including all addenda, shall apply to materials and workmanship required for the work of this Section.
- B. American Association of State Highways and Transportation Officials (AASHTO)
 - 1. AASHTO M144 - Standard Specification for Calcium Chloride.

- C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 MAINTENANCE

- A. The CONTRACTOR will be held responsible for any pavement failures due to settlement or failures associated with his excavations, for a period of five (5) years from the date of the pavement's installation and acceptance.
- B. If, at any time during the five (5) year period following final acceptance of paving work under this contract, any part of the paving or surfacing work which, in the opinion of the OWNER, requires replacement, repair, or remedial action to damaged private or public property (caused by any defect in the paving work), the OWNER will require the CONTRACTOR to make the necessary repairs or replacement to the OWNER's satisfaction within ten (10) days of notification.
- C. At the OWNER's discretion, the OWNER may employ other persons to make such repairs and replacement. The CONTRACTOR agrees, upon demand, to reimburse the OWASA all amounts expended for such repairs or replacements.
- D. All material and labor required for such maintenance shall be supplied by the Contractor, and the work shall be done in a manner satisfactory to the Owner at no additional cost to the Owner.
- E. Failure to meet the warranty requirements constitutes a breach of contract.

1.05 SUBMITTALS

- A. Submit to the Engineer, in accordance with Section 01300, Submittals, design mix for each bituminous material.
- B. Samples: Provide samples of materials for laboratory testing and job mix design.
- C. The following submittals must be furnished for the work of this Section:
 - 1. Certified Mix Designs
 - 2. Certified Test results for gravel gradation.
- D. Product Data: Submit data on material and equipment to be used in concrete pavement including:
 - 1. Sources of aggregate, manufacturer data sheets for cement and concrete admixtures used in the concrete mix design.
 - 2. Dowels and dowel bar assemblies.
 - 3. Reinforcement or welded wire mesh.
 - 4. Proposed Techniques: submit proposed techniques for placement, consolidation, finishing texturing and curing of concrete.
 - 5. Concrete Mix Design Data:
 - a. Submit concrete mix design for each concrete strength.

- b. Identify mix ingredients and proportions, including admixtures.

PART 2 PRODUCTS

2.01 MATERIALS

A. Asphalt Paving

1. Bituminous concrete surface course, intermediate course, base and tack coat shall comply with the requirements of Division 6 of the NCDOT "Standard Specifications for Highways and Structures," latest edition.
2. Bituminous concrete surface course shall be S9.5B or S9.5C, intermediate course shall be I19.0C and base course shall be B25.0B. Thickness shall be as shown on the Drawings.
3. Asphalt tack coat shall consist of either emulsified asphalt, or cutback asphalt, conforming to the above referenced NCDOT specifications.

B. Cementitious Materials

1. Provide cementitious materials consisting of Portland cement, blended, cement or only Portland cement in combination with supplementary cementitious materials (SCM), that conform to appropriate specifications listed below. Use cementitious materials, of same type, brand, and source throughout Project.
2. Portland Cement: Shall be consistent with requirements from NCDOT Standard Specifications for Roads and Structures, Section 1000-3 and 1024-1.

C. Supplementary Cementitious Materials (SCMs):

1. Fly Ash: ASTM C618, Class F.
2. Raw or Calcined Natural Pozzolan: ASTM C618, Class N.
3. Slag Cement: ASTM C989/C989M, Grade 120.

D. Permanent pavement marking paint shall be epoxy resin reflectorized traffic paint. Paint shall be white or yellow to match existing conditions or as directed by the Engineer.

E. Concrete sidewalks shall conform to Section 848 of the NCDOT Standard Specifications for Roads and Structures.

F. Concrete curbs shall conform to Section 846 of the NCDOT Standard Specifications for Roads and Structures.

PART 3 EXECUTION

3.01 GENERAL

A. Openings

1. It shall be unlawful for any person or persons, firm, corporation, or municipality to make any excavation in or to open or damage the surface of any road or street without written approval from the authority having jurisdiction.
2. The Contractor shall abide by the hours of construction specified in Section 01014, Construction Sequence and Schedule Requirements.
3. Notify residents and business 72-hours prior to beginning roadwork.
4. Provisions shall be made to protect all existing underground utilities during construction. Work shall be conducted to eliminate interference with subsurface utilities and their appurtenances unless permission for interference has been obtained from the proper authorities.
5. All roadways shall be cleanly saw cut before excavation is made.
6. After an opening is made, the work shall be continuous, and restoration of disturbed surfaces shall be completed as soon as conditions permit.
7. The excavated area shall be backfilled and the temporary pavement shall be completed on the same day trench is made. Open trenches shall not be permitted overnight. Steel plates are not permitted to be used to cover open trenches.
8. If the edge of any excavation ends with two (2) feet or less to the curb or edge of the pavement, remove and replace all pavement between the edge of the trench and curb or edge of pavement at no additional cost other than at the unit price bid for pavement replacement.
9. All excavations shall be completely backfilled. Trenches may not be flushed or puddled except by specific permission of the OWASA.
10. All backfill of trench work or excavated areas within City Road Right of Way shall be done in the presence of the assigned Inspector. If Inspector is not present and the excavated area has been backfilled, re-excavate the opening and backfill with the inspector present at Contractor's sole expense.
11. All openings shall be properly guarded, day and night, with approved signs, barricades, lights, etc. Flagmen shall be provided in the amount as directed by the involved jurisdiction's Police Department. If necessary, a uniformed police officer for traffic control will be determined by the involved jurisdiction's Police Department. Transverse openings shall be restricted so that not more than one half of a traveled way will be obstructed at any time, one line in each direction must be maintained at all times.
12. All pavement replacement, curbing, and sidewalk replacement shall be performed in strict accordance with the requirements of the OWASA.
13. Materials for pavement shall be mixed, delivered, placed, and compacted in accordance with the NCDOT standards and as specified herein.

14. When the air temperature falls below 50 degrees F, extra precautions shall be taken in drying the aggregates, controlling the temperatures of the materials, and placing and compacting the mixtures.
15. No mixtures shall be placed when the air temperature is below 40 degrees F, nor when the material on which the mixtures are to be placed contains frost or has a surface temperature not suitable to the Engineer. Before the Contractor leaves each site, all areas shall be restored to original conditions. If the existing traffic lines are removed or damaged during the day's construction, the Contractor is to restripe these lines as necessary and return them to their original condition. Following final completion, restore all traffic lines with long life epoxy resin.

B. Permits

1. The Contractor shall be solely responsible for obtaining and maintaining all road opening and street closure permits from applicable jurisdiction as needed. Notify police jurisdiction of work.
2. The Contractor shall apply for road opening permits from the agency with jurisdiction for the roadway. All road opening permits must be submitted a minimum of 2-weeks prior to the start of work or earlier as applicable for the jurisdiction's review time.
3. Road opening permits are valid as indicated on the permits.
4. Contractor shall be responsible for taking out and maintaining the minimum required Insurances, Bonds, statements, and providing any and all information requested by the Department of Public Works to obtain permits.
5. Notify the local municipality public works department and local police of schedule 72-hours prior to commencement of work. Notify same groups of changes to the schedule on the prior business day. Failure to notify the local Department of Public Works and police department may result in the nullification of the permit. Contractor shall be responsible for providing any and all information requested by these groups.
6. Schedule all roadway-related inspections 72-hours prior to the commencement of work. If the anticipated date and duration of work change, notify the inspector the prior business day.

C. Protection of Traffic

1. Place and maintain such barricades, detour signs, flashing lights, etc. as are deemed necessary by the by the involved jurisdiction's Police Department. Traffic control shall be coordinated with Police and municipality and comply with all municipal traffic ordinances and standards.
2. Special attention shall be given for the protection of pedestrians, school children, and motorists.
3. Ingress and egress shall be maintained to the abutting properties at all times.

4. Daily notification of the area of operations shall be made to the Engineer, Police, Fire Department, City Engineer, Department of Public Works, or City Road Supervisor.
5. No vehicular traffic or loads shall be permitted on the newly completed pavement until adequate stability has been attained and the material has cooled sufficiently to prevent distortion or loss of fines. If the climatic or other conditions warrant it, the period of time before opening to traffic may be extended at the discretion of the Engineer.
6. All agencies must be notified in the event of a detour or road closure, these include but are not limited to Police, Fire, and other emergency departments.

3.02 ROLLING AND COMPACTION

- A. Compaction shall be started immediately after spreading. Rollers shall be types approved by the Engineer. Rolling shall be a continuous process, and all parts of the pavement shall receive uniform compaction.
- B. Sidewalk compaction and curbing shall be inspected by the assigned Inspector. Curbing shall be raised level to the top of sidewalk.
- C. All pavement thicknesses referred to herein are compacted thicknesses. The Contractor shall place sufficient mix to ensure that the specified thickness of pavement occurs wherever called for.
- D. After the paving mixture has been properly spread, initial compaction shall be obtained by the use of power rollers weighing not less than 240 pounds per inch width of tread.
- E. Final compaction of the surface shall be accomplished by rollers weighing not less than 285 pounds per inch width of tread. Along curbs, structures and all places not accessible with a roller, the mixture shall be thoroughly compacted with tampers. Such tampers shall not weigh less than 25 pounds and shall have a tamping face of not more than 50 square inches. The surface of the mixture after compaction shall be smooth and true to the established line and grade.

3.03 TEMPORARY PAVEMENT

- A. Initial Pavement shall be placed immediately after trenches have been backfilled and compacted unless otherwise approved by the OWASA. Initial Pavement shall be placed wherever existing pavement has been removed or disturbed within the same workday as backfilling is completed. Exceptions are noted elsewhere in the Specification.
- B. During the interval between the completion of backfill and the time of placement of initial paving, all areas shall be maintained in a safe and satisfactory condition to allow for normal traffic use.
- C. The Initial Pavement shall be placed in two equal layers. Tack coat shall be applied between all layers and along the edges of the existing pavement. Prior to placing any initial, temporary pavement, ensure the edges of the cut pavement are vertical and square. Contractor shall correct any deficiencies prior to paving operations. This Initial Pavement shall be maintained in a safe and usable condition and brought to pre-construction grade at no additional cost until top mix pavement is placed.

- D. The base pavement shall be placed and compacted by a roller to thoroughly compact the bituminous concrete without damaging the existing pavement. The width of the roller must be less than the width of the trench. The new pavement shall be rolled smooth and flush with the existing pavement.
- E. Hose clean all road surfaces adjacent to the trench area to be paved. No paving is to be placed until subsurface is dry.
- F. Initial pavement shall be maintained in a condition suitable for traffic until replaced or overlaid by top mix. Defects shall be repaired within 3 days of notification of such defects.
- G. If the Contractor fails to maintain the trench and pavements in a safe and satisfactory condition and fails to remedy these conditions, the Owner may repair these areas at his own expenses with the cost of such repairs being deducted from payments due to the Contractor.
- H. The work area shall be cleaned with a sweeper with a water attachment for dust control immediately after each excavation is backfilled and temporarily paved. A mechanical sweeper is required to be available on-site and used at all times while construction is taking place.

3.04 FINAL PAVEMENT

- A. Final patch pavement shall be completed for all excavations in roadways within 90 days of excavation. The only exception is for weather conditions unsuitable for final pavement. Unsuitable weather conditions must be documented by Contractor.
- B. Final mill and paving pavement repair shall be completed on roads within 90 days of the final Contract excavation on streets under moratorium, in accordance with permit conditions, or as directed by the Owner.

3.05 CONCRETE ROADS

- A. Where concrete road repair is required, concrete shall be placed to match existing concrete thickness. Steel plates shall be used to protect the concrete during curing time.
- B. Prior to placing concrete, the Contractor shall cut back the existing concrete for a minimum of twelve inches beyond the limits of the pipe trench. Existing concrete shall be of suitable quality to abut repair.
- C. Drill holes into the face of the existing concrete pavement not more than 1/4 inch in diameter greater than the dowels. Maintain vertical and horizontal alignment during drilling and do not damage existing concrete surrounding the hole. Before installing dowels and joint ties, clean the holes of cement dust, standing water, and materials that interfere with the proper bonding of the epoxy grout.
- D. Place concrete in 2 layers with the first layer placed to such a depth that the surface of the layer is at the proper elevation to receive the reinforcement steel. Place the reinforcement steel followed by the next layer of concrete. Remove and replace the lower layer concrete if it has developed initial set or has been in place more than 30 minutes before being covered with the next layer. Texture the surface using a stiff broom.
- E. Steel plates shall be set flush with surrounding pavement and pinned with a minimum of one spike at each corner of the individual steel plate.

- F. All manhole/catch basin covers, grates, valve covers, and other items at the roadway surfaces shall be appropriately raised or lowered to bring them flush with the new pavement.
- G. Repair any defects in curbing caused by the Contractor's operations.

3.06 STAMPED ASPHALT

- A. Repair stamped asphalt to match the pattern, color and texture of the surrounding stamped asphalt during the placement of the final surface course.

3.07 CONCRETE SIDEWALKS

- A. Sidewalks are to be constructed in accordance with local municipal code.
- B. The subgrade shall be constructed to the required elevation to match the existing. All soft and unsuitable materials shall be removed and replaced with approved materials. The subgrade shall be compacted until a smooth, hard and dense surface is obtained. The subgrade shall be moistened prior to the placing of concrete.
- C. Forms shall be of wood or metal and shall be of the full depth of the concrete.
- D. Concrete shall be placed in the forms by methods which will prevent segregation, spread to the full depth and brought to grade by screening and straight edging and shall be floated with a wooden float to produce a surface free from irregularities.
- E. Slabs shall be separated by transverse premolded expansion joint filler for the full width of the slab, extending from the bottom of the slab to within 1/4-in of its top surface. The slab between expansion joints shall be divided into blocks approximately 5 ft in length and width by scoring transversely. Transverse scoring shall extend to at least 1/3 of the depth of the concrete slab.
- F. Concrete sidewalk panels disturbed by construction activities shall be replaced in their entirety to the nearest joint. New slabs shall be separated from existing adjacent slabs by a transverse premolded expansion joint filler for the full width of the slab, extending from the bottom of the slab to within 1/4-in of its top surface.
- G. Where sidewalks are constructed adjacent to permanent structures or other rigid construction on one side and curb on the other, an expansion joint of premolded material extending along both structure and the curb shall be placed for the full depth of the slab. A premolded expansion joint shall be placed between the sidewalk and adjacent curb at all crosswalks. All joint filler shall be fastened to prevent displacement. The walk shall be sloped so that water will drain away from the structure.
- H. After the sidewalk has been placed and finished it shall be cured as specified in Section 03301, Concrete and Reinforcing Steel.

3.08 CURBS

- A. Sidewalks are to be constructed in accordance with local municipal code.
- B. Concrete curbs shall be constructed of the same dimensions as the existing curbs. Curbs shall be poured in forms and finished with a steel trowel, float or broom so as to duplicate the finish of the existing curb.

3.09 DRIVEWAY APRONS

- A. Driveway aprons shall be 6-inches thick and include 6" x 6" steel welded fabric placed in the center of the slab. The apron shall slope uniformly from sidewalk to gutter, without depressions or humps. The surface shall be broomed to create a rough but uniform surface. If existing apron is left in place, then the new apron shall be finished to match. The entire apron segment between the nearest intact expansion joints shall be replaced.

3.10 STRIPING

- A. Surface Preparation: All dirt, oil, grease and other foreign material shall be removed from the areas upon which the traffic paint or stripes are to be placed. Large areas of tar, grease or foreign materials may require sand blasting, steam cleaning or power brooming to accomplish complete removal. Application of stripes shall not proceed until final authorization is received from the Engineer.
- B. The paint shall be applied in accordance with the NJDOT Standard Specifications for Road and Bridge Construction Section 610. Traffic shall not be permitted until the paint is thoroughly dry.
- C. All disturbed pavement markings shall be replaced to the satisfaction of the Engineer.
- D. No thinners shall be used for the above listed pavement marking applications except in accordance with the manufacturer's specifications and at the direction of the Engineer.
- E. No paint or pavement marking material shall be heated above the temperature marked on the container.
- F. Bituminous concrete pavements shall have been in place for 48 hours prior to the application of pavement markings.
- G. If for any reason material is spilled or tracked on the pavement, or any markings applied, in the Engineer's judgement, fail to conform because of a deviation from the desired pattern, remove such material by a method that is not injurious to the roadway surface and is acceptable to the Engineer, clean the roadway surface and prepare the surface for a reapplication of markings and reapply the markings as directed without additional compensation for any of the foregoing corrective operations.
- H. Parking area pavement of each handicapped parking space shall be painted with an international symbol of accessibility as shown on the Drawings, and as approved by the Engineer. Provide an R7-8 sign in accordance with the Manual of Uniform Traffic Control Devices at each space. Sign shall be fastened to a single aluminum post and bottom of sign shall be mounted 5'-0" above finished grade. Post shall have a 12-in diameter by 4'-0" deep concrete base. Concrete shall conform to Section 03301, Concrete and Reinforcing Steel.
- I. Access aisles shall be painted with parallel pavement markings as shown on the Drawings. Markings inside the perimeter border shall be equally spaced twice the distance of the line width.

END OF SECTION

SECTION 02616
DUCTILE IRON PIPE AND FITTINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required, install, disinfect, test and repair ductile iron pipe and fittings as may be directed by the Engineer.
- B. Where the word “pipe” is used, it shall refer to pipe, fittings, or appurtenances unless otherwise noted.
- C. All water main work shall be in accordance with this Section regardless of whether it is work requested by the Owner and paid for under the allowance Miscellaneous Work at Direction of the Owner or results from the Contractor’s activities where no additional compensation will be provided by the Owner.

1.02 RELATED WORK

- A. Trenching, Backfilling, and Compaction are included in Section 02221.
- B. Granular Fill Materials are included in Section 02230.
- C. Water Service Connections are included in Section 02663.

1.03 SUBMITTALS

- A. Submit to the Engineer in accordance with Section 01300, Submittals, shop drawings and product data for review.
- B. Submit a certified affidavit of compliance from the manufacturer stating that the pipe, fittings, gaskets, linings, and exterior coatings for this project have been manufactured and tested in accordance the ASTM and AWWA standards and requirements specified herein.
- C. This project is funded by the North Carolina Department of Environmental Quality Division (NCDEQ) of Water Infrastructure (DWI) via the Drinking Water State Revolving Fund (DWSRF). As part of that program, iron and steel materials and equipment shall meet the American Iron and Steel requirements, and all materials and equipment shall meet the Build America Buy America (BABA) Act requirements. Provide a certificate of compliance with the shop drawings for items in this section.

1.04 QUALITY ASSURANCE

- A. All ductile-iron pipe and fittings shall be from a single manufacturer on the List of Approved Materials/Manufacturers in Appendix C. Each length of ductile-iron pipe supplied for the project shall be hydrostatically tested at the point of manufacture to 500 psi for a duration of 10 seconds per AWWA C151. Testing may be performed prior to machining bell and spigot. Failure of ductile-iron pipe shall be defined as any rupture of the pipe wall.

- B. All ductile-iron pipe and fittings to be installed under this project shall be inspected and tested at the foundry as required by the standard specifications to which the material is manufactured.
- C. Inspection of the pipe and fittings will be made by the Engineer or representative of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the requirements specified herein, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and immediately removed from the job site.
- D. All pipe and fittings shall be permanently marked with the following information:
 - 1. Manufacturer, date.
 - 2. Size, type, class, or wall thickness.
 - 3. Standard produced to (ASTM, AWWA, etc).
 - 4. Interior coating type.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe. Under no circumstances shall the pipe be dropped or skidded against each other. Slings, hooks, or pipe tongs shall be used in pipe handling.
- B. Materials, as stored, shall be kept safe from damage. The interior of all pipe, fittings, and other appurtenances shall be kept free from dirt or foreign matter at all times.
- C. Pipe shall not be stacked higher than the limits recommended by its manufacturer. The bottom tier shall be kept off the ground on timbers, rails, or concrete. Stacking shall conform to the manufacturer's recommendations.
- D. Gaskets for mechanical and push-on joints to be stored shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- 1. Orange County Water and Sewer Authority's approved manufacturers are included in Appendix C.

2.02 PIPING

- A. Zinc coated ductile iron pipe shall be from manufacturers listed in Appendix C and must conform to AWWA C151. Pipe shall be supplied in standard lengths as much as possible.
- B. Thickness design shall be per AWWA C150, except provide minimum Thickness Class 52 piping. In areas of the system where "High Service Fire Mains" are present or other circumstances directed by the Owner, Class 56 ductile iron pipe shall be required.

- C. Metalized detectable identification tape, 2-inches wide, blue in color and imprinted with the words "Caution - WATER LINE BURIED BELOW," shall be utilized over the new water main and all service lines from the main to curb stop, if trenched. The tape shall be buried a depth of 18-24 inches below finished grade.

2.03 JOINTS

- A. Pipe joints shall be restrained by either mechanical joint or manufactured restrained joint system. The use of restraining gaskets shall be permitted. This applies to all pipe sizes 4 inch through 12 inch. Pipe 16 inch and larger shall be as approved by the OWASA Engineer.

2.04 FITTINGS

- A. Fittings shall be ductile iron, grade 70-50-05, and shall conform to AWWA C110/ANSI A21.10 or AWWA C153/ANSI A21.53 for compact fittings, pipe sizes 4 inches through 48 inches with the exception of manufacturer's proprietary design dimensions and thicknesses for iron, in accordance with AWWA C110/ANSI A21.10. All ductile iron fittings shall have a minimum working pressure rating of 350 psi and shall be cement-mortar lined and bituminous coated (minimum 1- millimeter), in accordance with AWWA C104/ANSI A21.4. The fittings shall be tested and the manufacturer shall provide certified test results when requested by OWASA. This testing shall include hydrostatic proof testing of fittings. Glands, gaskets, and bolts shall conform to AWWA C111/ANSI A21.11. The use of push on fittings is not permitted.
- B. Acceptable manufacturers are listed in Appendix C.

2.05 INTERIOR LINING

- A. The ductile iron pipe shall be cement-mortar lined with a seal coat in accordance with AWWA C104/ANSI A21.4.

2.06 EXTERIOR COATING

- A. Outside coat shall be a minimum of 1-mil bituminous paint according to AWWA C151/ANSI A21.51.

2.07 REPAIR SLEEVES

- A. Repair sleeves for repairing potable water mains shall be from a single manufacturer on the List of Approved Materials/Manufacturers in Appendix C. Clamps for water mains up to and including 10-inches in diameter shall be single band and clamps for water mains greater than 10 inches in diameter shall be multi-band. All clamps shall be Type 304 stainless steel, with Type 304 stainless steel bolts and nuts. Clamp width shall be as required to properly and fully seal the leak area.
- B. Mechanical Joint solid sleeves shall be from a single manufacturer on the List of Approved Materials/Manufacturers in Appendix C. Solid sleeves shall be installed with ductile iron retainer glands and shall be installed in accordance with manufacturers recommendations. Solid sleeves shall be installed where shown on the drawings and where necessary to prevent movement of cut out lengthen that are to be rejoined.
- C. Flexible couplings shall be from a single manufacturer on the List of Approved Materials/Manufacturers in Appendix C. Couplings shall be used only where existing pipe

diameters make the use of mechanical joint solid sleeves inappropriate. Couplings shall be installed in accordance with the recommendations of the manufacturer. All flexible couplings are to be adequately harnessed to withstand the test pressures in the lines unless other means are provided to take the thrust. Where new ductile iron mains are to be joined to existing pit cast pipe, transitional couplings suitable for the actual field-measured pipe diameters shall be provided.

- D. Coupling devices for connecting existing water mains to new mains shall be from a single manufacturer on the List of Approved Materials/Manufacturers in Appendix C. All couplings shall be furnished with a fusion bonded epoxy coating meeting the requirements of AWWA C213 and AWWA C550.

PART 3 EXECUTION

3.01 GENERAL

- A. Care shall be taken in loading, transporting and unloading to prevent injury to the pipe, lining or coatings. Pipe or fittings shall not be dropped. All pipe or fittings shall be examined before laying, and no piece shall be installed which is found to be defective. Damage to the pipe linings or coatings shall be repaired per manufacturer's recommendations. Handling and laying of pipe and fittings shall be in accordance with the manufacturer's instruction and as specified herein.
- B. Prior to delivery, all lengths of ductile iron must be secured with plastic bags on both ends.
- C. If any defective pipe is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner. All pipe and fittings shall be thoroughly cleaned before laying, shall be kept clean until they are used in the work, and when installed or laid, shall conform to the lines and grades required.

3.02 INSTALLING DUCTILE IRON PIPE AND FITTINGS

- A. Ductile iron pipe and fittings shall be installed in accordance with requirements of AWWA C600, except as otherwise specified herein. A firm, even bearing throughout the length of the pipe shall be provided by digging bell holes at each joint and by tamping backfill materials at the side of the pipe to the springline. Blocking will not be permitted.
- B. All pipe and fittings shall be sound and clean before laying. When laying is not in progress, including lunchtime, the open ends of the pipe shall be closed by watertight plugs or other approved means. Sufficient backfill shall be placed to prevent flotation. Good alignment shall be preserved in laying. The deflection at joints shall not exceed 75 percent of allowable deflection recommended by the manufacturer. If any defective pipe or fitting is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner at the Contractor's own expense.
- C. All ductile iron pipe laid underground shall have a minimum of 4-ft of cover.
- D. Fittings, in addition to those shown on the Drawings, shall be provided, where required, in crossing utilities that may be encountered upon opening the trench. Solid sleeve closures shall be installed at locations approved by the Engineer.

- E. The pipe interior shall be maintained dry and brush clean throughout the construction period.
- F. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be joined with a bell shall be beveled to conform to the manufactured spigot end. Cement lining shall be undamaged. Field cut ends shall be sealed with approved epoxy in accordance with manufacturer's instructions. Cutting of restrained joint pipe will not be allowed, unless approved at specific joints in conjunction with the use of mechanical joint retaining brands or field adaptable restrained joints.
- G. Concrete thrust blocks shall be installed at all fittings and other locations as directed by the Engineer. Joints shall be protected by felt roofing paper prior to placing concrete. Concrete shall be placed against the undisturbed material, and shall not cover joints, bolts or nuts, or interfere with the removal of any joint. Wooden side forms or sandbags shall be provided for thrust blocks.
- H. Jointing Ductile-Iron Pipe
 - 1. Mechanical joints shall be assembled in strict accordance with the manufacturer's instructions and AWWA C600. Pipe shall be laid with bell ends looking ahead. To assemble the joints in the field, thoroughly clean and lubricate the joint surfaces and rubber gasket. Bolts shall be tightened to the specified torque. Under no condition shall extension wrenches or pipe over the handle of ordinary ratchet wrench be used to secure greater leverage.
 - 2. Bolts in mechanical or restrained joints shall be tightened alternately and evenly.
 - 3. Restrained joints shall be installed according to the pipe manufacturer's instructions.
 - 4. Transition couplings shall be used where new ductile iron mains are to be joined to existing pit cast pipe and be from a single manufacturer on the List of Approved Materials/Manufacturers in Appendix C. Couplings shall be installed in accordance with the recommendation of the manufacturer. All transition couplings are to be adequately harnessed to withstand the test pressures in the lines unless other means are provided to take the thrust.

3.03 TESTING

- A. After installation, the pipe shall be tested for compliance as specified herein. Furnish all necessary equipment and labor for the pressure tests and leakage tests on the pipelines. The Engineer shall approve the procedures and method for carrying out the pressure and leakage tests.
- B. Submit detailed test procedures and method for Engineer's review. In general, testing shall be conducted in accordance with Section 4 of AWWA C600.
- C. Pressure pipelines shall be subjected to a hydrostatic pressure 50 percent above the normal operating pressure for the line being tested. This test pressure shall be maintained for a minimum of 2 hours. The leakage rate shall not exceed those indicated in AWWA C600. Provide suitably restrained bulkheads as required to complete the hydrostatic testing specified.
- D.

- E. All valves and valve boxes shall be properly located, installed, and operable prior to testing. Bulkheads shall be provided with a sufficient number of outlets for filling and draining the line and for venting air.
- F. Duration of pressure test shall not be less than 2 hours. The leakage test shall be a separate test following the pressure test and shall not be less than 2 hours in duration. All leaks evident at the surface shall be repaired, and leakage eliminated regardless of the total leakage as shown by the test. Lines that fail to meet test criteria shall be repaired and retested as necessary until test requirements are met. Defective materials, pipes, valves, and accessories shall be removed and replaced.

3.04 CLEANING

- A. At the conclusion of the work, thoroughly clean the entire pipe by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material that may have entered during the construction period. All debris shall be removed from the pipeline. The lowest segment outlet shall be flushed last to assure debris removal.

3.05 DISINFECTION

- A. Ductile iron pipe used for potable water service shall be disinfected after cleaning. Provide all necessary equipment and labor for the disinfection.
- B. Disinfection shall be in accordance with AWWA C651 standard.
- C. Discharge of chlorinated water shall comply with all Federal, State, and local standards. Provide sodium bisulfite for dechlorination prior to discharge. Under no circumstances shall chlorinated water be discharged to the combined sewer and/or drain system without dechlorinating to a maximum 1-mg/l of residual chlorine and the express permission of the Engineer.
- D. Heavily chlorinated water must be disposed of in a manner that conforms to all local, State and Federal regulations. Disposal may be to the sanitary sewer system or storm sewer system. The proposed disposal site shall be approved by the Engineer.
 - 1. If the Contractor elects to direct the heavily chlorinated water to the sanitary sewer system, the Contractor shall contact the local sewer department to ascertain any requirements for discharge. Any fees associated with the discharge to the sanitary sewer system shall be included in the unit price.
 - 2. If the Contractor elects to direct the heavily chlorinated water to a storm sewer system, the chlorine residual of water being disposed of shall be neutralized by treating with one of the reducing agents listed in Table 1. The amount of reducing agent applied shall be sufficient to the lower chlorine residual of the water disposed to 0.0 mg/l. If the Contractor elects to utilize a chemical for dechlorination, the water shall be aerated prior to discharge to the storm sewer system.

Table 1. Pounds of Chemical Required to Neutralize Various Residual Chlorine Concentrations in 100,000 Gallons of Water.

Residual Chlorine Concentration (mg/l)	Sulfur Dioxide (SO ₂)	Sodium Bisulfite (NaHSO ₃)	Sodium Sulfite (NaSO ₃)	Sodium Thiosulfate (Na ₂ S ₂ O ₃ ·5H ₂ O)
1	0.8	1.2	1.4	1.2
2	1.7	2.5	2.9	2.4
10	8.3	12.5	14.6	12.0
50	41.7	62.6	73.0	60.0

3. Engage a State Certified potable water testing lab to perform all bacteriological testing; and pay all costs of the testing. The laboratory must be acceptable to the Owner.

END OF SECTION

SECTION 02663
WATER SERVICE CONNECTIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Typical Water Service Connection Details are included in Appendix B of this Project Manual. Replace existing galvanized service lines using trenchless technology in accordance with these details.
- B. Obtain approval from the Engineer to install the entire new service line, or portions of the new service line, utilizing a method other than a trenchless method. If a service line or portion of the new service line, is installed via open-cut trench due to site conditions, failure of trenchless methods or other approved reasons, payment shall be under Bid Items for service line replacement, the same as if the service line was installed via trenchless methods including all restoration requirements as specified.
- C. Furnish all labor, materials, equipment, tools, and incidentals required to verify existing service line material, replace water service connections to the limits directed by the Engineer. Furnish all necessary labor and equipment to replace existing galvanized service line piping and install new polyvinyl chloride (PVC), polyethylene piping (PEX), or copper pipe with tracer, meter pits as required, adapters and fittings of the necessary size required, and restore the street, sidewalk, landscaped areas and any other areas disturbed by construction to their original condition unless otherwise stated.
- D. Contractor shall replace the private side of the service line if it is found to be galvanized steel/iron and provided that the property owner has signed a Service Line Replacement Agreement.
- E. Unless otherwise directed, any service line with a diameter less than 3/4-inch in diameter shall be replaced with a 3/4-inch service line. Any existing service line with a diameter equal to or greater than 3/4-inch shall be replaced with a new service line of the same diameter as the existing pipe.
- F. A list of addresses for galvanized service lines to be replaced as part of this project are listed in Appendix A of this Project Manual. Owner may remove properties from this list.
- G. Any galvanized service piping removed shall be handled and disposed of in accordance with all local, state and federal laws and regulations.
- H. Replacement work within private property shall be coordinated with the Owner, Engineer, Property Owner and Residents prior to starting any work.
- I. Service line replacements shall connect into existing piping at the first fitting inside the building. For service replacements into the building, Contractor shall either bring the new polyethylene pipe with tracer wire, by expanding the existing pipe penetration (when necessary), into the building or create a new penetration for the new water service line, as approved by the Engineer. The water service line shall extend into the building no more than two (2) feet and be connected to the premise plumbing. If the building is on a slab foundation the Contractor shall coordinate with the Owner and Engineer to determine the extent of the

service line replacement. If a meter is found to be broken or is missing, the Contractor shall notify the Owner immediately, in accordance with Section 15410, Interior Service Piping and Appurtenances, to obtain a new meter. The Contractor shall repair and provide a watertight seal of the pipe penetration through the building in accordance with Section 01180, Pipe Penetrations, as approved by Engineer.

- J. The Contractor is to document the material of pipes immediately downstream of the service line connection.
- K. Maintain an on-site supply of anticipated specialty fittings, including but not limited to tapping saddles, repair clamps, repair sleeves, repair saddles, corporation stops, curb stops, curb boxes, fittings to connect to meters of a different size than the pipe, etc., such that the work proceeds without impacting the execution of the work and causing a delay in connecting the service.
- L. Adjust alignment of the new service to avoid damaging existing trees and tree roots. Engineer may require an alternate alignment which will be anywhere along the frontage of the property.
- M. Any changes to meter alignment must be first approved by the Owner and must comply with Orange County Water and Sewer Authority Manual of Specifications, Standards, and Design.
- N. If at any point the Contractor encounters a leaking service line at an adjacent property to a scheduled service line replacement or on a portion of the service line that is not galvanized, Contractor shall notify Owner immediately to determine the appropriate course of action.
- O. Dewatering shall be in accordance with Section 02140, Dewatering and Drainage. Dewatering cost shall be included in applicable service line replacement Bid Items. If, during the course of work, an existing corporation stop becomes dislodged from the water main for any reason, Contractor shall immediately contact Owner to coordinate shut down of main and repair. Owner's inspector shall be present. The contractor shall be responsible for dewatering the excavation to perform a new water service connection in the dry, all work and dewatering shall be included in the applicable replacement Bid Item.

1.02 RELATED WORK

- A. Special Provisions are included in Section 01170.
- B. Pipe Penetration is included in Section 01180.
- C. Photographic Documentation is included in Section 01322.
- D. Project Record Documents are included in Section 01720.
- E. Trenching, Backfilling, and Compaction are included in Section 02221.
- F. Granular Fill Material is included in Section 02230.
- G. Interior Service Piping in Section 15410.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, Submittals, and within 10 days after signing the contract a list of materials to be furnished, the name of suppliers and the date of delivery of materials on the job site. Submit means and methods for repairing and sealing pipe penetrations through all types of building foundations during shop drawing submittals. All proposed means and methods for repairing and sealing pipe penetrations through building foundations shall be reviewed by the Engineer.
- B. This project is funded in part by the North Carolina Drinking Water State Revolving Fund As part of that program, iron and steel materials and equipment shall meet the Build America, Buy America requirements. Provide a certificate of compliance with the shop drawings for items in this section.

1.04 REFERENCE STANDARDS

- A. American Water Works Association (AWWA)
 - 1. AWWA C800 – Underground Service Line Valves and Fittings.
- B. AWWA C810-17 – Replacement and Flushing of Lead Service Lines
- C. AWWA C904-22 Crosslinked Polyethylene Pressure Tubing for Water Service
- D. National Sanitation Foundation (NSF)
 - 1. NSF 14 – Plastic Piping System Components and Related Materials
- E. NSF 61 - Drinking Water System Components Health Effects.
- F. American Society for Testing and Materials (ASTM)
 - 1. ASTM F876 – Standard Specification for Crosslinked Polyethylene (PEX) Tubing
 - 2. ASTM F2023 – Standard Test Method for Evaluating the Oxidative Resistance of Crosslinked Polyethylene (PEX) Tubing and Systems to Hot Chlorinated Water
 - 3. ASTM F2080 – Standard Specification for Cold-Expansion Fittings with Metal Compression-Sleeves for Crosslinked Polyethylene (PEX) Pipe
 - 4. ASTM F2657 - Standard Test Method for Outdoor Weathering Exposure of Crosslinked Polyethylene (PEX) Tubing

1.05 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be inspected for size, quality, and quantity against approved shop drawings upon delivery.
- B. Delivery schedule of all equipment shall be coordinated with the Contractor. Equipment ready for shipment prior to the agreed upon shipping date shall be stored without cost to the Owner by the manufacturer.

- C. All materials shall be suitably packed for shipment and long-term storage. Each package shall be labeled to indicate the project and the contents of each package. Where applicable, equipment numbers shall be marked on the container. Coiled pipe shall be shipped in protective packaging marked with product name and size.
- D. All equipment shipped that is exposed, such as on a flatbed truck, shall be protected during transit. The equipment shall be protected from moisture, road salt, dirt, stones or other materials thrown up from other vehicles. Electrical components shall be protected as above, but with special attention to moisture. The method of shipment protection shall be defined in the submittals.
- E. All materials shall be stored in a covered dry location off of the ground. When required to protect the materials they shall be stored in a temperature-controlled location.

1.06 QUALITY ASSURANCE

- A. All products and materials provided for potable water service application shall be certified “lead-free,” by an ANSI certified, third-party independent organization. The term “lead-free” shall refer to the wetted surface of the pipe, fittings, and fixtures in potable water systems that have a weighted average lead content less than or equal to 0.25 percent per the Safe Drinking Water Act (Sec. 1417) amended in 2020 and other equivalent state regulations.
- B. All products of a given type included in this Section shall be furnished by or through a single manufacturer.
- C. Inspection by the Engineer's representative or failure to inspect shall not relieve the Contractor of responsibility to provide materials and perform the work in accordance with the Contract Documents.
- D. The piping manufacturer shall furnish an affidavit of compliance certifying that all materials used and work performed complies with the specified requirements, including American Iron and Steel (AIS) and Build America Buy America (BABA). Provide copies of the mill test confirming the type of material used in the various components.
- E. All the types of valves and appurtenances shall be the product of well-established firms who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with this Section as applicable.
- F. The Owner and Engineer reserve the right to sample and test any materials after delivery and to reject all components represented by a sample that fails to comply with the specified requirements.

1.07 WARRANTY:

- A. Warrant the work against defects for one (1) year from the date of Substantial Completion.

PART 2 PRODUCTS

2.01 COPPER SERVICE PIPE

- A. Service pipe shall be soft, annealed seamless rolled copper tubing conforming to ASTM B88 and NSF/ANSI 61 requirements, Type “K” with a maximum working pressure of 200 psi. The name and trademark of the manufacturer shall be stamped along the pipe. Copper tubing shall be a minimum of 1-inch or shall match the existing service connection size if larger than 1-inch. Type “L” copper tubing may be used for interior piping only in accordance with Section 15410, Interior Service Piping and Appurtenances.

2.02 POLYETHYLENE PIPE

- A. All pipe shall be crosslinked polyethylene (PEX) service piping shall be SDR9 Copper Tube Size (CTS) Type “K” meeting ASTM F876, AWWA C904, and NSF/ANSI 14/61 third-party certification. PEX tubing shall be a minimum of $\frac{3}{4}$ -inch or shall match the existing service connection size if larger than $\frac{3}{4}$ -inch.
- B. Pipe shall be rated for continuous operation of 100 psi gauge pressure at 180°F temperature (690 kPa @ 82°C), and 160 psi gauge pressure at 73.4°F temperature (1105 kPa @ 23°C) as defined in AWWA C904.
- C. Pipe shall be rated for continuous operation at 200 psi gauge pressure at 73°F temperature (1378 kPa @ 23°C) when evaluated using a 0.63 design factor (see item 20 for details).
- D. Pipe shall be listed by PPI to standard TR-3 as Standard Grade.
- E. Pipe to be tested for resistance to hot chlorinated water in accordance with ASTM F2023. Pipe to have a minimum Class 3 chlorine resistance rating when evaluated to F876 and tested in accordance to F2023.
- F. PEXa pipe shall be listed with a material designation code of “3306” per the ASTM F876 standard and PPI TR-3.
- G. Pipe to have a co-extruded UV Shield made from UV-resistant polyethylene, color blue. Pipe to have minimum recommended UV exposure time of 12 months when tested in accordance with ASTM F2657 and evaluated in accordance with ASTM F876.
- H. Pipe shall be manufactured in a facility whose quality management system is certified according to ISO 9001.
- I. Bend Radius: The minimum bend radius for cold bending of PEXa pipe shall be not more than five (5) times the outside diameter.
- J. Pipe shall carry the following markings every three (3) feet (0.9 meters): Manufacturer’s name and trademark, nominal size, PEXa 3306 (material designation code) SDR9 (standard dimension ratio), POTABLE TUBING, AWWA C904, ASTM F876/ F2023 / F2080, CSA B137.5, NSF-pw-g, U.P. Code 160psi/73°F 100psi/180°F 200psi/73°F at 0.63 Design Factor, manufacturing date and footage mark.

2.03 FITTINGS

- A. Line fittings, as required on the new service line and if approved by Engineer, shall be standard three-part unions conforming to AWWA C800. For full-service line replacements from the water main into the building, fittings shall be used only at the corporation and meter box.
- B. All service fittings shall be in accordance with details in Appendix B. Contractors are responsible for contacting Owner to verify their selection of materials prior to starting any construction.
- C. The couplings shall be the "lead-free" brass compression style couplings for use with service piping (tubing) as specified herein. The conventional brass couplings shall be utilized for service connections when the house (building) foundation is less than ten (10) feet from the meter box location.

2.04 JOINING OF PIPE

- A. Pipe shall only be joined if approved by the Engineer.
- B. Compression
 - 1. Rolled copper tubing shall be joined by bronze bodied compression fittings with a synthetic rubber gasket that holds stainless steel gripper band, such as Mueller 110 Compression Connections or equal.
- C. One of the PEX fitting systems listed in ANSI/AWWA C904 Section II.B.2 may be used for joining PEX tubing. Materials shall comply with NSF/ANXI/CAN 61, and fittings shall comply with the dezincification resistance and stress corrosion cracking resistance requirements of NSF/ANSI 14.

2.05 VALVES AND APPURTENANCES

- A. Valves and appurtenances shall be in accordance with approved materials in Appendix B.
- B. All valves for service lines shall open right - clockwise. Valves of the same type shall be identical and from one manufacturer.
- C. Valves shall have the name of the maker, nominal size, flow directional arrows, working pressure for which they are designed and standard to which they are manufactured cast in raised letters on some appropriate part of the body.
- D. Unless otherwise noted, valves shall have a minimum working pressure of 200 psi and suitable for the pressures noted where they are installed.
- E. Valves shall be of the same nominal diameter as the pipe or fittings they are connected to. Except as otherwise noted, joints shall be compression joints for copper tubing.
- F. Valves shall be specially constructed for buried service.

2.06 CORPORATION STOP ASSEMBLIES

- A. Corporation stops shall be lead-free meeting all NSF lead-free requirements, shall be compliant with ASTM B62 and AWWA C800. Corporation stops for service connections shall not be less than 3/4-inch in diameter. Corporation stops shall be the same size as the service unless otherwise directed by the Engineer. Corporation stops shall be rated at 200 psi working pressure.
- B. Corporation Stops shall be of a type listed in Appendix F. Contractors are responsible for contacting Owner to verify their selection of materials prior to starting any construction.
- C. The inlet thread of all corporation stops shall be AWWA Standard CC inlet thread for their respective sizes. The outlet of all corporation stops shall be provided with compression couplings for type "K" copper service pipe for their respective sizes.
- D. New corporation stops shall be installed in the same location as the existing as needed and with the approval of the Owner. The existing corporation stop shall be removed from the main using the tapping machine with the extraction tool and the new stop shall be installed after drilling for the larger corporation.
- E. The key and body seating surfaces shall be accurately machined and fit to a taper of 1 3/4 inches per foot (0.1458 in/in) plus or minus 0.007 inches per inch. The key shall have a "D" shaped boss at the small end, and the retaining washer shall have a matching flat so machined as to provide an interference fit across the diameter of the "D" boss perpendicular to this flat. There shall be no evidence of staking or chisel marks in assembly. The stem and retaining nut shall be so designed that failure from over tightening of the retaining nut results in threads stripping rather than stem fracture.

2.07 TAPPING SADDLES

- A. Service saddles shall be utilized for all connections. Direct taps should only be utilized when directed by the Owner.
- B. Service saddles, which are to be furnished and installed by the Contractor under these specifications, shall be constructed of bronze with a body curvature designed to fit pipes accurately with a broad pressure activated gasket to provide uniform sealing pressure. Service saddles shall have double straps.
- C. Shall be compatible with approved corporation stops.
- D. The saddle clamp must be furnished with a tapped outlet with full length threads that meet AWWA Standards for corporation stops and shall conform with Orange County Water and Sewer Authority (OWASA) requirements.
- E. The saddle's double straps, bolts, nuts and washers shall be 18-8 stainless steel with all welds passivated for resistance to corrosion. The combined strap width shall be 3-1/4" wide to provide a wide stance on the pipe.
- F. A neoprene or virgin rubber gasket must be bonded into a cavity in the saddle body to provide a pressure tight seal on a water main.

- G. Tapping Saddles for 1-inch and below services shall only be used if approved or directed by the Engineer. Tapping saddles shall be compatible with approved corporation stops.

2.08 SERVICE TAP REPAIRS

- A. Repair saddle for broken or leaking tap shall conform with OWASA requirements.
- B. Abandon Corporation Cap for the abandonment of a water service corporation shall conform to OWASA requirements.

2.09 PITCHER FILTERS AND REPLACEMENT CARTRIDGES

- A. The filters shall be NSF 53 and 42 certified to remove lead under the certification limit at the time of distribution to the customer. The filter shall be:
 - 1. Pitcher filter with replacement cartridges - both the filter and the replacement cartridges shall be certified to the NSF 53 and NSF 42 standards for removal of lead.
 - 2. Provide a minimum 10-cup pitcher filter that supports an NSF 53 and 42 certified filter cartridges.
 - 3. A minimum 6-month supply of filter cartridges must be provided at the time of the replacement. Per the manufacturer's specifications, this may be a single 6-month cartridge that is provided with the pitcher filter or, when the pitcher filter includes a 2-month cartridge, an extra box of three replacement (3) cartridges each with a 2-month lifespan, totaling a minimum of 6-months of supply.
 - 4. Only full boxes shall be provided to the residents. No unopened or repackage boxes shall be provided even if this results in a greater than 6-month supply of filters.
 - 5. Pitchers and filter cartridge shall be by Brita, PUR, ZeroWater, Dupont or equal.
- B. Pitcher filters with replacement cartridges for a minimum 6-month duration shall be provided by the Contractor to each unit in a household following replacements along with instructions for use.
- C. Filters shall be stored by the Contractor in a temperature controlled, dry place for a maximum of 6 months in accordance with the manufacturer's recommendations.

PART 3 INSTALLATION

3.01 WATER SERVICE INSTALLATION

- A. Galvanized service line replacement, testing, and flushing shall be in strict accordance with AWWA C810, latest edition. Water service to the interior plumbing of the building must be shut off before any excavation, or test pits are commenced.
- B. If any portion of the private service line is galvanized, the whole side shall be replaced as a whole, no partial replacements will be allowed.
- C. Unless otherwise approved or directed by the Engineer, all work shall be performed with water mains live and in service. If emergency circumstances or special circumstances approved by

Engineer necessitate that water main be temporarily shut down, the water main must be returned to service within 8 hours – no water main shall be out of service for emergencies or special circumstances as approved by the Engineer for longer than 8 hours.

- D. The Contractor shall also install additional interior plumbing equipment as part of the overall interior private service replacement work as shown in Appendix B as needed. This work shall consist of the installation or replacement of a pressure reducing valve where necessary and all appurtenant interior copper piping and fittings required for the completed equipment installations. All materials and installations shall be in accordance with Owner specifications and/or the local plumbing code.
- E. All service connections shall be installed as shown in Appendix B and shall have a minimum of 30 inches of cover unless approved by the Engineer or Owner. Any new service connection that is not installed in the same location as the existing service and is installed in a new location must not be laid in the same trench as other utilities (i.e., gas, electric, sewer).
- F. Care shall be exercised when either pulling or placing and laying copper tubing to be sure that the pipe does not have kinks or sharp bends and to assure against it being in contact with sharp stones or ledge which would cause damage to the pipe. At least 12 inches of AASHTO #10 Screenings shall be placed adjacent to and above the service line in open cut locations.
- G. All valves on the service line and downstream of the meter shall be closed and kept closed for the duration of work unless otherwise directed by the Engineer.
- H. During installation of all valves and appurtenances, verify that all items are clean, free of defects in material and workmanship and function properly.
- I. Buried valves shall be cleaned and manually operated to verify that all items are clean, free of defects in material and workmanship and function properly before installation. Buried valves and valve boxes shall be set with the stem vertically aligned in the center of the valve box. Valves shall be set on a firm foundation and supported by tamping pipe bedding material under the sides of the valve. The valve box shall be supported during backfilling and maintained in vertical alignment with the top flush with finish grade.
- J. Water service lines shall be installed with a minimum vertical separation distance of 12 inches at all sewer and stormwater utility crossings. Where possible, water service lines shall be installed above sewer utilities in accordance with the applicable State Plumbing Code.
- K. Meter boxes will, unless otherwise directed, be installed 1-foot from the curb line or pavement limit. Contractor shall be responsible for the removal of existing meter boxes and/or installation of meter boxes in the locations directed by the Engineer. Install the meter boxes in a workmanlike manner as described herein and as directed by the Engineer and place compacted pea gravel around and below the stop to permit ready draining of the pipe through the waste opening.
 - 1. Set meter box flush with finished grade, except when located in the roadway. If meter box is within a roadway the box shall be set ½-inch below finished grade.

3.02 ELECTRICAL GROUNDING

- A. Prior to performing a service line replacement involving the private side (building to curb stop), the Contractor shall have a quality inspection performed by a competent person properly trained to check if the existing water pipe is being used for grounding and test for current with a multi-meter. If used for grounding the Contractor shall perform the following:
 - 1. If the metal water pipe is the only existing grounding electrode then an Electrical Contractor shall obtain an electrical permit with the relevant municipality to update the grounding and bonding by installing two (2) 8-foot-long ground rods not less than 6-feet apart. Once the Contractor has confirmed the grounding electrode system has been updated to the requirements of Article 250 of the NEC, the system may be disconnected from the metal water service pipe and the metal pipe may be replaced with new PEX service tubing. At no point shall the contractor connect the grounding system to the new PEX water service tubing during or after installation.
- B. All work shall be in accordance with the latest adopted version, including any NC Amendments of the National Electrical Code requirements.
- C. Contractor shall perform the work utilizing appropriate Personal Protective Equipment (PPE).
- D. Prior to performing a replacement involving the private-side of the service line, the Contractor shall have a quality inspection performed by a competent person properly trained to check if the existing water pipe is being used for grounding and test for current with a multi-meter. If improper grounding or electrical work is detected, the Contractor shall notify the homeowner who will need to contact an electrician to correct the electrical work in the building before the replacement can commence. No work shall be performed until the improper grounding or electrical work is corrected. If the electrical issue is identified on the day scheduled for replacement at that address, the Contractor will be paid under the Bid Item for “No Access Provided” and will return to the house for the replacement once the homeowner notifies the Contractor that the grounding is corrected.

3.03 FLUSHING AND LEAK TESTING

- A. Flushing and Leak Testing
 - 1. When the service line has been installed, prior to backfilling of the access pits or trenches and connecting the customer service, the ball valve shall be closed, and the Contractor shall open the corporation at the water main connection to perform a preliminary flushing and cleaning of the new service piping prior to connection to the existing private-side service piping.
 - 2. After all air is expelled, a visual leakage test is to be conducted on all exposed unions and connections. Test all pipelines for water tightness as specified herein at system pressure. Furnish all labor, testing plugs or caps, pipe connections, gauges and all other equipment required. Testing shall be performed after the line has been constructed and in the presence of the Engineer or the Owner’s representative, and no backfilling of the access pits or trenches will be permitted until the leakage testing is satisfactorily completed.
 - 3. Whereupon the final connection of the new service to the existing private service piping is completed, and the water service is activated, the Contractor will perform a final flushing

of the overall service line in accordance with AWWA C810. If inside access is permitted, a jumper shall be installed to bypass the water meter. The exterior faucet/hose bib of the house or building shall be flushed at full velocity for a minimum period of fifteen (15) minutes, or in accordance with the latest recommendation in AWWA C810, whichever is greater. If an exterior faucet is not available or is inoperable, and a final flush cannot be performed, the Contractor shall deliver and place a “red” door- hanger notice, as provided by the Owner, at the home (building). This notice will advise the homeowner and/or resident to flush their internal plumbing.

4. When the flush is complete, the final connection shall be made to the water meter and final visual leakage test under “system pressure” will commence for 10 minutes and be observed by Engineer. Repair faulty joints or remove any cracked or defective piping, valves, and fittings and replace as approved by the Engineer. Retest until water service line passes.

B. Flushing Instructions

1. Post-replacement customer flushing instructions shall be left with Customer. These instructions will be provided by the Engineer for the Contractor to distribute and will be in accordance with AWWA C810.

END OF SECTION

SECTION 02768
PIPE PULLING (EXTRACTION)

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to install new service lines and appurtenances using pipe pulling methods as shown on the water service connection detail and as specified herein.
- B. The Contractor shall be capable of providing crews as needed to complete the work without undue delay.
- C. The Contractor shall be prepared to provide temporary water service to any location that is not completed within the allocated time.
- D. Review and comply with the coordination requirements listed in Section 02663, Water Service Connections.
- E. Review and comply record-keeping requirements listed in Section 01720, Project Record Documents.

1.02 RELATED WORK

- A. Trenching, Backfilling, and Compaction are included in Section 02221.
- B. Water Service Connections are included in Section 02663.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, Submittals, shop drawings for the pipe pulling tool and pulling head.
- B. Submit, prior to the start of work, a typical drawing showing the equipment setup and the size and location of all proposed pits and excavations required to complete the work.
- C. The Owner shall approve or disapprove the Contractor and/or manufacturer based on the submitted information.

1.04 GUARANTEE

- A. All work shall be fully guaranteed by the Contractor for one (1) year from the date of Substantial Completion. During this period, all serious defects discovered by the Customer or Owner shall be removed and replaced in a satisfactory manner by the Contractor at no cost to the Customer or Owner.

PART 2 PRODUCTS

2.01 MATERIAL

- A. Provide and install polyethylene pipe or copper pipe in accordance with Section 02663, Water Service Connections.

2.02 EQUIPMENT

- A. The pipe pulling tool shall be performed per tool manufacturer's specifications for the application pulled through via a cable installed by a constant tension winch located at the receiving excavation. The pulling unit shall pull the pipe with it as it moves. The pulling head shall incorporate a shield/expander to prevent the collapse of the hole ahead of the pipe insertion.

PART 3 EXECUTION

3.01 GENERAL

- A. Conduct a pre-installation inspection of the property at which pipe pulling is proposed in order to become familiarized each specific site condition (i.e., location of access, conflicting utilities, etc.).
- B. Provide temporary piping in order to maintain water to existing property during pipe pulling if the property will be without water for longer than 8-hours.
- C. Pipe downstream of the water meter must be checked before any other excavation takes place to confirm the service line materials on the privately-owned side. If the downstream material is not galvanized, the excavation shall be backfilled and will be paid for as a test pit.
- D. Excavate access pits as needed along the existing water service line. The number and size of access pits shall be the minimum necessary to allow for satisfactory completion of the work.
- E. Access pits shall be of sufficient size to allow access for pulling equipment and installation of new water service line. All excavation shall be fully braced and supported in accordance with Section 02311. Pits shall be centered over the existing water service line. Maximum pit sizes for payment are shown on the details.
- F. Prior to the actual pipe pulling operation and disconnection of existing water service line, prepare all excavation pits and have all equipment and piping on-site in order to complete the pipe busting or pulling operation in a timely fashion.

3.02 INSTALLATION

- A. The pipe pulling shall be conducted as a continuous operation. Pipe pulling shall consist of pulling specialized head or gripper finger which will install the new water service line. The pulling head shall be sized per manufacture recommendations to prevent breakage of new service line. The new water service line shall be installed straight and parallel to the centerline of the existing water service line following the same line and grade.

- B. Pipe pulling method shall limit vibrations transmitted to the surrounding soils. The peak particle velocity (PPV) shall be limited to 0.5-inches per second.
- C. All buried utilities adjacent to the pipe pulling operation shall be reviewed, and, where necessary, be excavated to relieve transient loading during the pipe pulling operation.
- D. If the water service line is concrete encased employ substitute means to install the new water service line.
- E. The area excavated within the property for the pipe pulling operation shall be repaired, and the new water service line pipe entrance through the building wall shall be fully sealed to provide a watertight seal.
- F. As soon as the pipe pulling operation is complete, connect the new water service line in accordance with Section 02663, Water Service Connections.

3.03 FIELD TESTING AND ACCEPTANCE

- A. Flushing and testing of the new service line shall be done in accordance with 02663, Water Service Connection.

END OF SECTION

SECTION 02930 TOPSOILING AND SEEDING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and place loam, finish grade, apply lime and fertilizer, apply seed and mulch and maintain all seeded areas to fully restoration of all areas to conditions equal to or better than pre-construction and as specified herein, including all areas disturbed and all existing lawn areas.
- B. As much as feasible, salvage existing sod and grass. Utilize loam and seed to supplement existing sod to restore to existing conditions.

1.02 RELATED WORK

- A. Trenching, Backfilling, and Compaction included in Section 02221, Trenching, Backfilling, and Compaction.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, Submittals, complete shop drawings, materials, and equipment furnished under this Section including seed mixtures and product label information.
- B. Samples of all materials shall be submitted for inspection and acceptance upon Engineer's request.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: In accordance with Orange County Water and Sewer Authority (OWASA), Manual of Standard Specifications and Design Section 2.
- B. Starter fertilizer shall be a complete commercial fertilizer, 10-10-10 grade for grass areas. It shall be delivered to the site in the original unopened containers each showing the manufacturer's guaranteed analysis. Store fertilizer so that when used it shall be dry and free-flowing.
- C. Grass seed shall be in accordance with OWASA – Manual of Standard Specifications and Design Section 3.15 Seeding and Groundcover.
- D. Agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent.
- E. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- F. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors.

- G. Non-asphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.
- H. Other approved mulch anchors include synthetic or organic binders, peg and twine, and mechanical crimping.

PART 3 EXECUTION

3.01 STRIPPING AND STOCKPILING

- A. 6-inch stripping depth is typical but may vary depending on the soil structure.
- B. Stockpiles shall be located not to obstruct natural drainage, constructed according to the stockpile detail.

3.02 APPLICATION

- A. All areas having lawn or landscaping shall have loam placed to a minimum depth of 5-in (Unsettled).
- B. For all areas to be seeded:
 - 1. Fertilizer shall be applied at the rate of 0.10 lbs per square yard.
 - 2. Lawn grass seed shall be applied at the rate of 0.02 lbs per square yard. If the seed is applied by Hydroseeding, then the seed rate shall be increased by 25%.
 - 3. Small grain straw mulch shall be applied at the rate of 70 to 90 lbs/1,000 sq ft.
 - 4. Wood fiber mulch shall be applied by hydroseeding at the rate of 45 lbs/1,000 sq ft.
- C. The application of fertilizer and lime and hydroseeding must be performed separately. Hydroseeding shall be performed as a two-step process applying seed first and covering with mulch second; mulch shall not be mixed with the seed. Seed and mulch must be cleaned from all structures and paved areas of unwanted deposits.

3.03 INSTALLATION

- A. The subgrade of all areas to be loamed and seeded shall be raked, and all rubbish, sticks, roots, and stones larger than 2-in shall be removed. Subgrade surfaces shall be raked or otherwise loosened immediately prior to being covered with loam. Subgrade shall be inspected and approved by the Engineer before loam is placed.
- B. Loam shall be placed over approved areas to a depth sufficiently greater than required so that after natural settlement and light rolling, the complete work will conform to the lines, grades and elevations indicated. No loam shall be spread in water or while frozen or muddy.
- C. After loam has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. All large stiff clods, lumps, brush, roots, stumps, litter, and other foreign material shall be removed from the loamed area and disposed of. The areas shall also be free of smaller stones, in excessive quantities, as determined by the Engineer. The whole surface shall then be

rolled with a hand roller weighing not more than 100 lbs/ft of width. During the rolling, all depressions caused by settlement of rolling shall be filled with additional loam, and the surface shall be regraded and rolled until a smooth and even finished grade is created.

- D. Seeding, mulching, and conditioning shall only be performed during those periods within the seasons which are normal for such work as determined by the weather and locally accepted practice, as approved by the Engineer.
- E. Schedules for seeding and fertilizing shall be submitted to the Engineer for approval prior to the work. Landscape work shall only be performed during acceptable growing seasons, as defined for USDA hardiness zone 8a. The customer shall be responsible for the watering of the newly seeded areas to promote satisfactory initial grass growth within the restored grassed areas.
- F. Lime and fertilizer are to be spread mechanically, then:
 - 1. After the loam is placed and before it is raked to true lines and rolled, limestone shall be spread evenly over loam surface and thoroughly incorporated with loam by heavy raking to at least 4-inches of loam.
 - 2. Fertilizer shall be uniformly spread and immediately mixed with the upper 4-inches of topsoil.
- G. Seeding shall be done within 10 days following soil preparation. Seed shall be applied rates and percentages indicated.
- H. In order to prevent unnecessary erosion of newly graded slopes and unnecessary siltation of drainage ways, carry out seeding and mulching as soon as satisfactory completion of a unit or portion of the project. A unit of the work will be defined as not more than 5,000 sq ft.
- I. When protection of newly graded areas is necessary at a time that is outside of the normal seeding season, protect those areas by whatever means necessary (such as straw applied with a tar tack) or by other measures as approved by the Engineer.

3.04 SEEDING IN WOODED AND UNGRADED AREAS

- A. For preparation and seeding in wooded areas under this Contract and where no grading is required, all of the specified materials and procedures shall be utilized except that no disking shall be performed within the drip line of trees to be preserved. The seedbed shall be prepared by the addition of a thin layer of topsoil roughly 1-in deep.

3.05 MAINTENANCE AND PROVISIONAL ACCEPTANCE

- A. Keep all seeded areas watered and in good condition, reseeding if and when necessary, until a good, healthy, uniform growth is established over the entire area seeded.
- B. On slopes, provide against washouts by an approved method. Any washout that occurs shall be regraded and reseeded at the Contractor's expense until a good sod is established.
- C. The Engineer will inspect all work for provisional acceptance at the end of the 8-week grass maintenance period, upon the written request, received at least 10 days before the anticipated date of inspection.

- D. A satisfactory stand will be defined as a section of grass of 5 sq ft or larger that has:
 - 1. No bare spots larger than 1 sq ft.
 - 2. No more than 10 percent of total area with bare spots larger than a 4-inch square.
- E. Furnish full and complete written instructions for maintenance of the lawns to the Customer at the time of provisional acceptance.
- F. The inspection by the Engineer will determine whether maintenance shall continue in any area of manner.
- G. After all necessary corrective work and clean-up has been completed and maintenance instructions have been received by the Customer, the Engineer will certify in writing the acceptance of the lawn areas. Maintenance of lawns or parts of lawns shall cease on receipt of acceptance.

END OF SECTION

SECTION 03301
CONCRETE AND REINFORCING STEEL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required and install all concrete work complete as shown on the Drawings and as specified herein.

1.02 SUBMITTALS

- A. Submit to the Engineer, in accordance with Section 01300, Submittals, shop drawings and product data. Submittals shall include at least the following:
 - 1. Concrete mix for each formulation of concrete proposed for use including constituent quantities per cubic yard, water-cementitious ratio, type and manufacturer of cement.
 - 2. Bar schedules and bar bending details in conformity with the recommendations of ACI 315.
 - 3. Technical data on all materials and components.
 - 4. Material Safety Data Sheets (SDS) for all concrete admixtures and curing agents.
- B. Certifications
 - 1. Certify concrete proposed will have a minimum 28-day compressive strength as specified.

1.03 QUALITY ASSURANCE

- A. If during the progress of the work, it is impossible to secure concrete of the required workability and strength with the materials being furnished, the Engineer may order such changes in proportions or materials, or both, as may be necessary to secure the desired properties. All changes so ordered shall be made at the Contractor's expense.
- B. Reinforced concrete shall comply with ACI 318.
- C. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products, and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- D. All testing and inspection services required, unless otherwise specified, shall be provided and paid for by the Contractor. Testing necessary to establish the concrete mixes shall be performed by and at the expense of the Contractor. Methods of testing shall comply with the latest applicable ASTM standards.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Reinforcing steel shall be shipped and stored with bars of the same size and shape fastened bundles with durable tags, marked in a legible manner with waterproof markings showing the same designations as shown on the submitted bar schedules and shop drawings.
- B. Reinforcing steel and Welded Steel Wire Fabric shall be free from mill scale, loose rust, dirt, grease, or other foreign matter. Store off the ground and protect from moisture, dirt, oil, or other injurious contaminants.
- C. Products shall be stored in conformity with the manufacturer's recommendations.
- D. Sand, aggregates, and cement shall be stored or stockpiled in conformity with the recommendations of ACI 301.

1.05 FIELD CONDITIONS

- A. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- B. Hot-Weather Concrete Placement: Comply with ACI 301 (ACI 301M) and as follows when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cement shall be domestic Portland cement conforming to NCDOT Standard Specifications for Roads and Structures, Section 1000-3 and 1024-1.
- B. Fine aggregate shall be washed inert natural sand conforming to the requirements of ASTM C33.
- C. Coarse aggregate shall be well-graded crushed stone or washed gravel conforming to the requirements of ASTM C33, size 57 unless otherwise directed.

- D. Water shall be potable, clean, and free from injurious amounts of oils, acids, alkalis, organic matter, or other deleterious substances.
- E. Concrete admixtures shall be free of chlorides and alkalis (except for those attributable to water). When it is required to use more than one admixture in a concrete mix, the admixtures shall be from the same manufacturer. Admixtures shall be compatible with the concrete mix including other admixtures and shall be suitable for use in contact with potable water after 30 days of concrete curing. No admixtures shall be used unless approved by the Engineer in writing.
 - 1. Air-entraining admixture shall comply with ASTM C260. Proportioning and mixing shall be in accordance with manufacturer's recommendations.
 - 2. Water reducing admixture shall comply with ASTM C494, Type A. Proportioning and mixing shall be in accordance with manufacturer's recommendations.
 - 3. Admixtures causing retarded or accelerated setting of concrete shall not be used without written approval from the Engineer. When allowed, the admixtures shall be retarding or accelerating water-reducing admixtures.
- F. Reinforcing steel bars shall be deformed, intermediate grade, steel bars conforming to ASTM A615 Grade 40. Rail-steel bars will not be permitted in the work.
- G. Welded Steel Wire Fabric: Conforming to ASTM A1064.
- H. Tie wires for reinforcing steel shall be 16 gauge or heavier, black annealed wire.
- I. Precast concrete block bar supports shall conform to CRSI - Manual of Standard Practice (MSP) for Precast Concrete Bar Supports.

2.02 CONCRETE QUALITY

- A. Class A concrete, shall be designed in accordance with the specifications in Section 1000-4 of NCDOT Standard Specifications for Roads and Structures.

2.03 MIXING CONCRETE

- A. Ready-mix concrete shall conform to ASTM C94 and the requirements herein, or as otherwise approved by the Engineer. If ready-mix concrete is to be used, the manufacturer shall furnish a statement to the Engineer for his approval giving the dry portions to be used, with evidence that these will produce concrete of the quality specified.
- B. Select proportions of ingredients to meet the design strength and materials limits specified and to produce concrete having proper placability, durability, strength, appearance, and other required properties. Proportion ingredients to produce a homogenous mixture which will readily work into corners and angles of forms and around reinforcement without permitting materials to segregate or allowing excessive free water to collect on the surface.

2.04 MEASURING, BATCHING, MIXING AND TRANSPORTING CONCRETE

- A. Measuring, batching, mixing and transporting concrete shall conform to ASTM C94 and the requirements herein, or as otherwise approved in writing by the Engineer.
- B. Ready-mixed concrete, whether produced by a concrete supplier or the Contractor shall conform to the requirements above. No hand mixing will be permitted.
- C. Admixtures shall be dispensed into the batch in conformity with the recommendations of the manufacturer of the admixtures.
- D. Concrete shall be mixed until there is uniform distribution of the materials and shall be discharged completely before the mixer is recharged. The mixer shall be rotated at a speed recommended by the mixer manufacturer and mixing shall be continued for at least 1-1/2 minutes after all the materials are in the mixer. Concrete shall be placed within 1-1/2 hours of the time at which water was first added, otherwise it shall be rejected. Concrete which has been remixed or rettempered, or to which an excess amount of water has been added, shall also be rejected.

2.05 FORMS

- A. Forms shall be free from roughness and imperfections, substantially watertight and adequately braced and tied to prevent motion when concrete is placed. No wooden spreaders will be allowed in the concrete.
- B. Wire ties will not be allowed. Metal ties or anchorages which are necessary within the forms shall be so constructed that the metal work can be removed for a depth of at least 1-in from the surface of the concrete without injury to such surface by spalling or otherwise. Forms shall be thoroughly cleaned before using and shall be treated with oil, or other approved material.

PART 3 EXECUTION

3.01 REINFORCING STEEL

- A. Fabricate reinforcing steel accurately to the dimensions shown. Bend bars around a revolving collar having a diameter of not less than that recommended in ACI 318. All bars shall be bent cold.
- B. Provide tension lap splices in compliance with ACI 318. Stagger splices in adjacent bars where possible. Provide Class B tension lap splices at all locations unless otherwise indicated.
- C. Lap splices in welded wire fabric in accordance with the requirements of ACI 318 but not less than 12-in. Tie the spliced fabrics together with wire ties spaced not more than 24-in on center and lace with wire of the same diameter as the welded wire fabric. Offset splices in adjacent widths to prevent continuous splices.
- D. Before being placed in position, reinforcement shall be thoroughly cleaned of loose mill and rust scale, dirt and other coatings, including ice, that reduce or destroy bond. Where there is a delay in depositing concrete after the reinforcement is in place bars shall be reinspected and cleaned when necessary.

- E. Reinforcement which is to be exposed for a considerable length of time after being placed shall be given a heavy coat of cement grout.
- F. In no case shall any reinforcing steel be covered with concrete until the amount and position of the reinforcements have been checked and permission given to proceed by the Engineer.

3.02 INSPECTION AND COORDINATION

- A. The batching, mixing, transporting, placing and curing of concrete shall be subject to the inspection of the Engineer at all times. The Contractor shall advise the Engineer of his/her readiness to proceed at least 24 hours prior to each concrete placement. The Engineer will inspect the preparations for concreting including the preparation of previously placed concrete, the reinforcing steel, and the alignment, cleanliness and tightness of formwork. No placement shall be made without the inspection and acceptance of the Engineer.

3.03 CONCRETE APPEARANCE

- A. Concrete mix showing either poor cohesion or poor coating of the coarse aggregate with paste shall be remixed. If this does not correct the condition, the concrete shall be rejected.
- B. Concrete for the work shall provide a homogeneous structure which, when hardened, will have the required strength, durability and appearance. Mixtures and workmanship shall be such that concrete surfaces, when exposed, will require no finishing. When concrete surfaces are stripped, the concrete when viewed in good lighting from 10-ft away shall be pleasing in appearance and at 20-ft shall show no visible defects.

3.04 PLACING AND COMPACTING

- A. Reinforcement, where required, shall be accurately placed in exact positions shown, shall be secured against displacement with annealed iron wire ties or suitable clips at intersections and shall have a clear space of 2-in between the steel and face of forms unless otherwise indicated. Wire ties passing through the forms for the purpose of holding the steel in proper position will not be allowed. Concrete blocks with wire ties cast therein may be used where approved by the Engineer for the purpose of maintaining the clearance between reinforcement and forms. Reinforcing bars shall be free from rust, scale, dirt, grease, and injurious contaminants.
- B. No concrete shall be placed until forms, the condition of subgrade and method of placement have been approved by the Engineer. Before depositing concrete, all debris, foreign matter, dirt, and water shall be removed from the forms. The contact surface between concrete previously placed and new concrete shall be cleaned and brushed with cement paste.
- C. Concrete shall not be placed in water or submerged within 24 hours after placing, nor shall running water be permitted to flow over the surface of fresh concrete within 4 days after its placing.
- D. Deposit concrete as near its final position as possible to avoid segregation due to rehandling or flowing. Pumping of concrete will be permitted when an approved design mix and aggregate sizes, suitable for pumping, are used. Do not deposit concrete which has partially hardened or has been contaminated by foreign materials. If the section cannot be placed continuously, place construction joints as specified or as approved. Do not drop concrete more than 4-ft.

- E. High-frequency mechanical vibrators shall be used to the extent necessary to obtain proper consolidation of the concrete, but not to move or transport concrete in the forms. Care shall be taken to avoid segregation of aggregates by excess vibration. Vibration shall continue until the frequency returns to normal, trapped air ceases to rise and the surface appears liquefied, flattened and glistening. Concrete adjacent to forms and around pipe stubs shall be carefully spaded or rodded.
- F. No concrete shall be mixed or placed during freezing weather without explicit permission. When placing concrete when the air temperature is below 40 degrees F, the water, sand, and gravel shall be heated so that the temperature of the concrete will be at least 50 degrees F. This temperature shall be maintained for 72 hours after placing. No concrete shall be placed on the frozen ground.
- G. Preformed expansion joint filler shall be placed adjacent to structures as directed.
- H. Concrete walkways shall be placed in such quantity that, after being thoroughly consolidated in place, it shall be 4-in in depth. Finishing operations shall be delayed until all bleed water and water sheen has left the surface and concrete has started to stiffen. After water sheen has disappeared, edging operations shall be completed. After edging and jointing operations, the surface shall be floated with an aluminum or magnesium float. Immediately following floating, the surface shall be steel troweled. If necessary, tooled joints and edges shall be rerun before and after troweling to maintain uniformity. Finish shall match as near as possible the original finish.
- I. The curb face shall be equal to the face of the adjacent undisturbed curb, and the type (i.e., stand up curb or gutter curb) shall be replaced in kind to a condition equal to or better than that which existed previously. Curb that is broken or cracked during construction operations shall be removed and disposed and replaced of by the Contractor at his own expense.

3.05 CURING AND PROTECTION

- A. Protect all concrete work against injury from the elements and defacements of any nature during construction operations.
- B. All concrete shall be cured in conformity with ACI 301. Concrete that is to be used for the containment of water shall be water cured. Water curing shall be by ponding, by continuous sprinkling or by covering with continuously saturated burlap.
- C. Other concrete shall be cured by either water curing, sheet material curing or liquid membrane curing compound except that liquid membrane curing compound shall not be used on any concrete surface where additional concrete is to be placed or where the concrete surface is to be coated or painted.
- D. Finished surfaces and slabs shall be protected from the direct rays of the sun to prevent checking and crazing.
- E. Concrete placed during cold weather shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 306R. Salt, manure or other chemicals shall not be used for cold weather protection.

- F. Concrete placed during hot weather shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 305R. The temperature of the concrete shall be such that it will cause no difficulties from loss of slump, flash set or cold joints. Immediately cover the plastic concrete with sheet material during hot weather.

3.06 CONCRETE ENCASEMENTS AND THRUST BLOCKS

- A. Concrete encasements shall be placed as directed by the Engineer. Backfill shall not be placed on the concrete until permitted by the Engineer.
- B. The backs of thrust block anchors shall be placed against undisturbed earth. The sides of thrust blocks shall be formed. Minimum bearing area shall be as designated by the Engineer. Felt roofing paper shall be placed to protect pipe joints. Concrete shall not be placed over bolts or nuts, or to prevent the removal of joints.

3.07 FIELD TESTS

- A. With the start of any new concrete mix, sets of three field control cylinder specimens will be taken by the Contractor during the progress of the work as directed by Engineer, in compliance with ASTM C31. The number of sets of concrete test cylinders taken of each class of concrete shall be determined by the Engineer. One cylinder shall be broken at 7 days and two cylinders shall be broken and their strengths averaged at 28 days. When the average 28 day compressive strength of the cylinders in any set falls below the specified compressive strength or below proportional minimum 7 day strengths (where proper relation between 7 and 28 day strengths have been established by tests); the Engineer may reject the concrete represented by the set of cylinders, may require modification of the concrete and/or require modification of the proportions, water content, or temperature conditions of the design mix to achieve the required strengths.
- B. Cooperate in the making of tests by allowing free access to the work for the selection of samples, providing an insulated closed curing box for specimens, affording protection to the specimens against injury or loss through his/her operations and furnishing material and labor required for the purpose of taking concrete cylinder samples. All shipping of specimens will be paid for by the Contractor.
- C. Slump tests will be made in the field by the Contractor in conformity with ASTM C143.
- D. Tests for air content shall be made in compliance with either the pressure method complying with ASTM C231 or by the volumetric method complying with ASTM C173.

3.08 STRIPPING AND FINISHING CONCRETE

- A. Forms shall not be stripped before the concrete has attained a strength of at least 30 percent of the specified design strength unless otherwise approved by the Engineer. This is equivalent to approximately "100 day-degrees" of moist curing.
- B. Care shall be exercised to prevent damaging edges or to obliterate the lines of chamfers, rustications or corners when removing the forms or doing any other work adjacent thereto.
- C. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to the satisfaction of the Engineer.

- D. As soon as forms have been stripped, form ties, if employed, shall be removed, and the recess filled to ensure complete water tightness. Any defects in the surface of the walls shall be chipped out and repaired in a workmanlike manner. Defective concrete where it occurs shall be cut to a minimum depth of 1-in, thoroughly roughened and neat cement brushed in. The hole shall then be filled with mortar in the proportion of 1 part cement and 2-1/2 parts sand with a minimum of water. Mortar for filling form tie recesses shall be mixed to a slightly damp consistency (just short of "balling"), pressed into the recess until dense, and troweled smooth. Mortar in larger patches shall be applied and allowed to assume a partial set following which it shall be struck off flush with the adjoining surface.
- E. Patches shall be kept moist for several days to assure proper curing.
- F. Concrete to receive damp proofing and concrete not exposed in the finished work shall have off-form finish with fins, and other projections removed and tie cones and defects filled as specified.
- G. Sidewalks broken or cracked as a result of the construction operations shall be removed and disposed of by the Contractor and replaced in their entirety to the nearest joint at the Contractor's own cost.

END OF SECTION

SECTION 15050
INTERIOR PIPING - GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies the basic administrative and testing requirements for interior piping. Specific piping materials, systems, and installation procedures are specified in Section 15410, Interior Service Piping and Appurtenances.
- B. The existing plumbing systems, including piping and equipment, shall remain in operation until the new water service line is in service. All systems shall be maintained without interruption. The demolition and removal work shall be coordinated with the Owner, Customer and construction schedule for the new water service line.
- C. The temporary shutdown of the individual water system for service transfer shall be limited to 8-hours.
- D. Field verify all piping and plumbing systems to be removed and perform the removal work as required to provide complete and safe transfer of service.
- E. All plumbing demolishing work shall be performed following State plumbing codes and Owner requirements by a Plumber licensed in the State of North Carolina.

1.02 RELATED WORK

- A. Interior Service Piping and Appurtenances are included in Section 15410.
- B. Water Service Connections are included in Section 02663.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, Submittals, general submittals for piping and piping systems as listed below. It is not intended that all submittals listed below be provided for all piping materials and systems. Refer to individual System or Piping Sections for specific submittals.
- B. This project is funded by the North Carolina Department of Environmental Quality (NCDEQ) Department of Water Infrastructure (DWI) via the Drinking Water State Revolving Fund (DWSRF). As part of that program, iron and steel materials and equipment shall meet the Build America, Buy America requirements. Provide a certificate of compliance with the shop drawings for items in this section.
- C. Shop Drawings and Product Data
 - 1. Pipe hangers and supports technical data
 - 2. Catalog cuts of joints, couplings, harnesses, expansion joints, gaskets, fasteners, and other accessories.
- D. Manufacturers Installation (or application) instructions.

1.04 WARRANTY:

- A. Warrant the Work against defects for one (1) year from the date of Substantial Completion.

1.05 QUALITY ASSURANCE

- A. All materials shall be new and unused.
- B. Install piping to meet the requirements of all local codes.
- C. Provide manufacturer's certification that materials meet or exceed minimum requirements as specified. Reference to standards such as ASTM and ANSI shall apply to those versions in effect at the time of bid opening.
- D. Unless otherwise specified, pressures referred to in all Piping Sections are expressed in pounds per square inch gauge above atmospheric pressure, psig and all temperatures are expressed in degrees Fahrenheit (F).

1.06 DELIVERY, STORAGE AND HANDLING

- A. During loading, transportation and unloading take care to prevent damage to pipes and coating. Carefully load and unload each pipe under control at all times. Place skids or blocks under each pipe in the shop and securely wedge pipe during transportation to ensure no injury to pipe and lining.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Specific piping materials and appurtenances are specified in the respective Piping or System Sections.
- B. General installation materials shall be as specified below.
 - 1. Unions shall be brass or bronze unions for joining nonferrous pipe.

PART 3 EXECUTION

3.01 GENERAL

- A. All dirt, scale, weld splatter, water, and other foreign matter shall be removed from the inside and outside of all pipe and sub-assemblies prior to installing.
- B. All pipe joints and connections to equipment shall be made in such a manner as to produce a minimum of strain at the joint.
- C. Install piping in a neat manner with lines straight and parallel or at right angles to walls or column lines and with risers plumb. Run piping so as to avoid passing through ductwork or directly under electric light outlets and/or interference with other lines. All work shall be accomplished using recognized methods and procedures of pipe fabrication and in accordance with the latest revision of applicable ANSI Standards, ASME Codes and Pipe Fabrication Institute Standards, and Plastic Pipe Institute (PPI) Standards.

1. Use the full length of pipe except where cut lengths are necessary. Do not spring or deform piping to make up joints.
2. Pipe shall be cut square, not upset, undersized or out of round. Ends shall be carefully reamed and cleaned before being installed.
 - a. Bends in PEX tubing are not permitted closer than 10 pipe diameters from any fitting or valve. The recommended minimum radius of curvature is 8 times the tubing diameter when supported bends are made. Manufacturer approved snap-on bend supports may be used to achieve this bend radius. Consult the tubing manufacturer for specific bending limitations and recommendations.
3. Do not use bushings except where specifically approved by the Engineer. Reducers shall be eccentric to provide for drainage from all liquid-bearing lines and facilitate air removal from water lines.
4. Verify the locations and elevations of any existing piping and manholes before proceeding with work on any system. No claim for extra payment will be considered if the above provision has not been complied with.
5. Where lines of lower service rating tie into services or equipment of higher service rating the isolation valve between the two shall conform to the higher rating.
6. Mitering of pipe to form elbow is not permitted.
7. All piping interiors shall be thoroughly cleaned after installation and kept clean by approved temporary closures on all openings until the system is put in service. Closures should be suitable to withstand the hydrostatic test.
8. End caps on pre-cleaned pipe shall not be removed until immediately before assembly. All open ends shall be capped immediately after completion of installation.

3.02 UNIONS

- A. Use unions to allow the dismantling of pipes, valves, and equipment.
 1. Unions shall be provided where indicated and in the following locations even if not indicated.
 - a. In long runs of piping to permit convenient disassembly for alterations or repairs.

3.03 LEAK TESTING AND DISINFECTION

- A. Refer to Sections 02663 Water Service Connections, 02616 Ductile Iron Pipe and Fittings, and 15410 Interior Service Piping and Appurtenances for testing and flushing processes.

END OF SECTION

SECTION 15410
INTERIOR SERVICE PIPING AND APPURTENANCES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies the basic interior service line piping, including the methods of installation for PEX piping, valves and associated appurtenances as shown in project details or as needed in the field.
- B. Furnish all labor, materials, equipment, services, and incidentals required and install complete and connect interior service piping to existing building plumbing system as shown in project details and as specified herein. If not present, install an electrical jumper across meter per National Electrical Code and install grounding as specified in Section 02663, Water Service Connections.
- C. The installation of the new water service line for each property has not been individually detailed. The water service line connection details in Appendix B were developed to illustrate to the Contractor the required plumbing elements and the required order of the plumbing elements to be used. The piping and equipment shown on the water service line connection details are not to scale and do not show every offset or fitting, nor every hanger or support, or structural difficulty that may be encountered. To carry out the intent and purpose of the water service line connection, Contractor shall field verify all piping and plumbing systems to ensure all necessary plumbing parts are installed to provide a complete and safe transfer of the domestic water service without extra charge to the Owner or Customer. The Contractor shall be responsible for coordinating the system installation and routing with the work of all trades.

1.02 RELATED WORK

- A. Pipe Penetrations is included in Section 01180.
- B. Water Service Connections is included in Section 02663.
- C. Piping – General Requirements are included in Section 15050.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, Submittals, and within 10 days after issuance of a Notice to Proceed a list of materials to be furnished, the name of suppliers and the date of delivery of materials on the job site.
- B. Submittals shall include a representative catalog cut for each different type of item indicating the materials of construction, important dimensions, and range of pipe sizes for which that item is suitable and structural fasteners to be used.
- C. Submittals shall include jumper wire material, attachment device UL listing and schematic and installation procedures.
- D. This project is funded by the North Carolina Department of Environmental Quality (DEQ) Division of Water Infrastructure (DWI) via the Drinking Water State Revolving Fund

(DWSRF). As part of that program, iron and steel materials and equipment shall meet the Build America Buy America (BABA) and American Iron and Steel (AIS) requirements. Provide a certificate of compliance with the shop drawings for items in this section.

1.04 SERVICE AND UTILITY CONNECTIONS

A. Water Service

1. The source of water for potable use in the building shall be brought into the building and connected to the first fitting.

1.05 QUALITY ASSURANCE

- A. All products and materials provided for potable water service application shall be certified “lead-free,” by an ANSI certified, third-party independent organization. The term “lead-free” shall refer to the wetted surface of the pipe, fittings, and fixtures in potable water systems that have a weighted average lead content less than or equal to 0.25 percent per the Safe Drinking Water Act (Sec. 1417) amended in 2020 and other equivalent state regulations.
- B. All products of the given type included in this Section shall be furnished by or through a single manufacturer or as specified on the schedules.
- C. Inspection by the Engineer's representative or failure to inspect shall not relieve the Contractor of responsibility to provide materials and perform the work in accordance with the documents.
- D. The piping manufacturer shall furnish an affidavit of compliance certifying that all materials used and work performed complies with BABA and the specified requirements. Provide copies of the mill test confirming the type of material used in the various components.
- E. All the types of valves and appurtenances shall be the product of well-established firms who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with this Section as applicable.
- F. The Owner and Engineer reserve the right to sample and test any materials after delivery and to reject all components represented by a sample that fails to comply with the specified requirements.
- G. All interior plumbing work shall be performed following State plumbing codes.

1.06 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be inspected for size, quality, and quantity against approved shop drawings upon delivery.
- B. Delivery schedule of all equipment shall be coordinated with the Contractor. Equipment ready for shipment prior to the agreed upon shipping date shall be stored without cost to the Owner by the manufacturer.

- C. All materials shall be suitably packed for shipment and long-term storage. Each package shall be labeled to indicate the project and the contents of each package. Where applicable, equipment numbers shall be marked on the container.
- D. All equipment shipped that is exposed such as on a flatbed truck shall be protected during transit. The equipment shall be protected from moisture, road salt, dirt, stones or other materials thrown up from other vehicles. Electrical components shall be protected as above, but with special attention to moisture. The method of shipment protection shall be defined in the submittals.
- E. All materials shall be stored in a covered dry location off the ground. When required to protect the materials they shall be stored in a temperature-controlled location.

1.07 COORDINATION

- A. Project details indicate the extent and general arrangement of the systems. If any departures from the details or specifications are deemed necessary, details of such departures and the reasons, therefore, shall be submitted as soon as practical for review. No such departures shall be made without the prior written concurrence of the Engineer.
- B. Assume full responsibility for coordination of the individual property plumbing systems, including scheduling and verification that all structures, piping and the mounting of equipment are compatible.

1.08 WARRANTY:

- A. Warrant the work against defects for one (1) year from the date of Substantial Completion.

PART 2 PRODUCTS

2.01 SERVICE PIPING

- A. Interior crosslinked polyethylene (PEX) service piping shall be SDR9 Copper Tube Size (CTS) Type "K" meeting ASTM F876, AWWA C904, and NSF/ANSI 14/61 requirements with a maximum working pressure of 200 psi.
- B. If and when required, the Contractor shall also install additional interior plumbing equipment as part of the overall interior private service replacement work as needed. This work will consist of the installation of new pressure reducing valve, if required based on pressure readings when connecting to the premise plumbing. This work will also include all appurtenant interior PEX piping and fittings required to connect new service line into premise plumbing or copper piping for replacements conducted on the UNC campus. All materials and installations shall be in accordance with Owner specifications and/or the local plumbing code.

2.02 JOINING OF PIPE

- A. Soldering
 - 1. Type S-1, Solder Alloy TC (95 percent Tin, 4.85 percent Copper 0.15 percent Selenium), ASTM B32, lead-free, certified to comply with ANSI/NSF 61. No solder containing lead shall be utilized on the project.

B. Fittings

- C. Fittings used on PEX service line applications shall be insert-stiffener type complying with the material and performance requirements of ANSI/AWWA C800 and the manufacturer's requirements for dimensions and tolerances. Insert stiffeners shall be used with ANSI/AWWA C800 fittings and valves.
- D. Alternatively, one of the PEX fitting systems listed in ANSI/AWWA C904 Section II.B.2 may be used for joining PEX tubing. Materials shall comply with NSF/ANXI/CAN 61, and fittings shall comply with the dezincification resistance and stress corrosion cracking resistance requirements of NSF/ANSI 14.

2.03 VALVES

A. Ball Valves

1. Ball valves of the same size as the service line shall be furnished and installed by Contractor within building interior. All valves and appurtenances shall have the name of the maker, flow directional arrows and the working pressure for which they are designed cast in raised letters upon some appropriate part of the body.
2. Adapter couplings for connecting new PEX tubing to existing non-lead service connections (for private side only service replacements as part of this work as approved by Engineer) shall be standard straight coupling fittings conforming to AWWA C800. When connecting new water service to existing water service, the Contractor may encounter different pipe materials such as steel, brass, etc. Couplings used to connect new to existing services shall electrically isolate the two materials and be comprised of corrosion resistant material. Contractor shall use caution to ensure that the electric ground of existing buildings is not disrupted or altered.
3. The body and cap shall be of brass, ASTM B30, the ball and stem of Type 316 stainless steel, and the seats of the seals of TFE. The valves shall have full floating ball and shall be non-lubricated. Valve seats shall be easily accessible and replaceable. Valves shall be rated to 200 psi. Ball valves shall be quarter turn and complete with an integral bleeder valve on the side.
4. Lead-free water valves shall be full port ball type with integral bleeder valve on the side.
 - a. Manufacturers:
 - 1) Flo-Tite, Inc. The Ford Meter Box Company, Inc.
 - 2) A-T Controls, Inc. Mueller Co.
 - 3) Approved equal.
5. Ferrous surfaces not to be painted shall be given a shop coat of grease or other suitable rust-resistant coating.

B. Pressure Reducing Valve

1. Pressure reducing valves shall be the same size as the service line and shall be furnished and installed by the Contractor within the building interior at any location where the static pressure exceeds 80 PSI.
2. Pressure reducing valves shall conform to ASSE 1003 or CSA B356.

2.04 PIPE HANGERS, SUPPORTS AND RESTRAINTS

- A. All pipe and tubing shall be supported as required to prevent significant stresses in the pipe or tubing material, valves, fittings, and other pipe appurtenances, and to support and secure the pipe in the intended position and alignment. All supports shall be designed to adequately secure the pipe against excessive dislocation due to thermal expansion and contraction, internal flow forces, and all probable external forces such as equipment, pipe and personnel contact.
- B. The absence of pipe supports in the details shall not relieve the Contractor of the responsibility for providing them.
- C. Pipe supports shall not induce point loadings but shall distribute pipe loads evenly along the pipe circumference.
- D. Supports shall be provided at changes in direction or as specified herein. No piping shall be supported from other piping or stairs unless specifically directed or authorized by the Engineer.
- E. PEX piping shall be supported per manufacturer's instructions and ANSI/AWWA C904-22.
- F. Anchoring Devices: select size, and space support anchoring devices, including anchor bolts, inserts, and other devices used to anchor support, to withstand shear, and pullout loads imposed by loading and spacing on each particular support. Expansion anchors shall be equal to Kwik Bolt as manufactured by Hilti USA, Tulsa, Oklahoma; or Wej-it by Wej-it Expansion Products, Inc., Broomfield, CO. The length of expansion bolts shall be sufficient to place the wedge portion of the bolt a minimum of 1-in behind the steel reinforcement.

2.05 WATER METER

- A. Immediately notify the Owner of any home that does not have a water meter installed.
- B. Replace any Ford Yoke water meter setters if encountered with meter provided by Owner.

2.06 ELECTRICAL GROUNDING

- A. Wire shall be 6 AWG copper wire or conducting metal braid shall be woven from 240 strands of 30 AWG tinned copper wires and be capable of carrying fault current comparable to that of 6 AWG copper wire, 3M Corp., Scotchbrand 25, or equal.
- B. Water pipe ground clamps shall be cast bronze saddle type, and of the correct size for the pipe, as manufactured by Thomas & Betts CO. Cat. No. 2, similar by Burndy; O.Z. Gedney Co., or equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install all piping, valves, hangers and appurtenances as specified herein and in the referenced Sections above.
- B. Do not install any equipment or materials until the Owner and Engineer have approved all submittals. If any equipment or materials are installed prior to approval of the submittals, it shall be at the Contractor's risk.
- C. If the Contractor is unable to perform work for any reason, the Contractor shall call the Engineer regarding replacing the interior piping system and provide temporary water to the water meter before departing the site.
- D. Carefully cut and remove drywall as needed to access the service line with approval from the Homeowner. Restoration of drywall is to be paid for under replacement items as applicable.
- E. Reductions in size shall be made using reducing fittings.
- F. Install all brackets, extension rods, guides, the various types of operators and appurtenances as shown in the details that are in masonry floors or walls and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, check all plans and figures which have a direct bearing on the proper location of these valves and appurtenances during the construction of the structures.
- G. All materials shall be carefully inspected for defects in workmanship and materials; all debris and foreign material cleaned out of valve openings, etc; all operating mechanisms operated to check their proper functioning and all nuts and bolts checked for tightness. Valves and other equipment which do not operate easily, or are otherwise defective, shall be repaired or replaced at no additional cost to the Owner.
- H. After installation, remove debris and excess material from the construction area. If miscellaneous objects had been relocated to obtain access to the meter, after Customer approval, those items shall be placed back in their original location prior to construction.
- I. Valves
 - 1. Install valves in locations grouped and located to be easily operated through access panels, doors, or adjacent to equipment.
 - 2. Install valves in a horizontal to upright position. Valves shall not be installed in down position from the horizontal.
 - 3. In making solvent cement connections, the solvent cement or primer shall not be spilled on valves. Any cement allowed to run from joints shall be cleaned from the pipe and fittings immediately.
- J. Soldering

1. Piping shall be cut with square ends and reamed to prevent burrs, out-of-round or improperly sized ends.
2. After cutting, all surfaces to be soldered shall be thoroughly cleaned to a metal-bright finish, free from dirt, grease or other material before fluxing and soldering. This cleaning shall be performed by using emery cloth, sandpaper or steel wool. Clean the outside end of the tubing for a length of 1/2-inch greater than the depth of the fitting. The inside of the fittings shall be cleaned in a similar manner. Apply flux and assemble the joint.
3. The surfaces to be joined shall be heated up slowly and uniformly to the melting point of the solder. The surface being soldered shall be maintained above the melting point of the solder for sufficient time to draw the solder completely into the joint. When the solder congeals to a plastic state, the excess metal shall be removed with a cloth brush, leaving a fillet around the end of the fitting. Full penetration of the solder uniformly throughout the entire socket is required. The soldered joints shall be allowed to cool in still air until only warm to the hand after which the work may be quenched.
4. Any type of crack, pinhole, area of incomplete penetration, or similar defect shall not be accepted. Peening for closing up defects shall not be permitted.
5. Heating torches of sufficient size shall be used for heating of large fittings prior to soldering. Multiple tips or ring burners for use on combination torches may be used.
6. Remove all external and internal loose solder and flux after joint cools.

K. Hangers and Supports

1. Existing hangers and supports shall be re-used for the interior service line piping.
2. Install support systems in accordance with MSS SP69 and MSS SP89. Install pipe anchors where required to withstand expansion thrust loads and to direct and control thermal expansion.
3. Repair mounting surfaces to original condition after attachments are made.

L. Meters

1. If the water meter is broken, missing, or is a Ford Yoke meter style, Contractor shall notify Owner. Contractor shall not connect to a water service without a meter unless directed by the Owner. Contractor to verify the location and existence of a meter prior to starting work.

3.02 LEAK TESTING AND FLUSHING

- A. All pipe support systems shall be tested after installation in conjunction with piping flushing and leak testing. If any part of the pipe support system proves to be defective or inadequate, it shall be repaired to the satisfaction of the Engineer.
- B. Refer to Section 02663, Water Service Connections, for leak testing and flushing processes.

- C. Instructions for the resident for continued flushing after the Contractor's flushing immediately following the installation shall be provided to each resident in the home where the line is replaced.

3.03 RESTORATION

- A. Clean up any construction debris and dust from the replacement. Remove all equipment and materials. Replace any removed drywall with new drywall and tape as required or directed by the Engineer or Owner. Replace any removed flooring with new flooring as required or directed by the Engineer or Owner.

END OF SECTION

Appendix A List of Service Line Replacement Sites

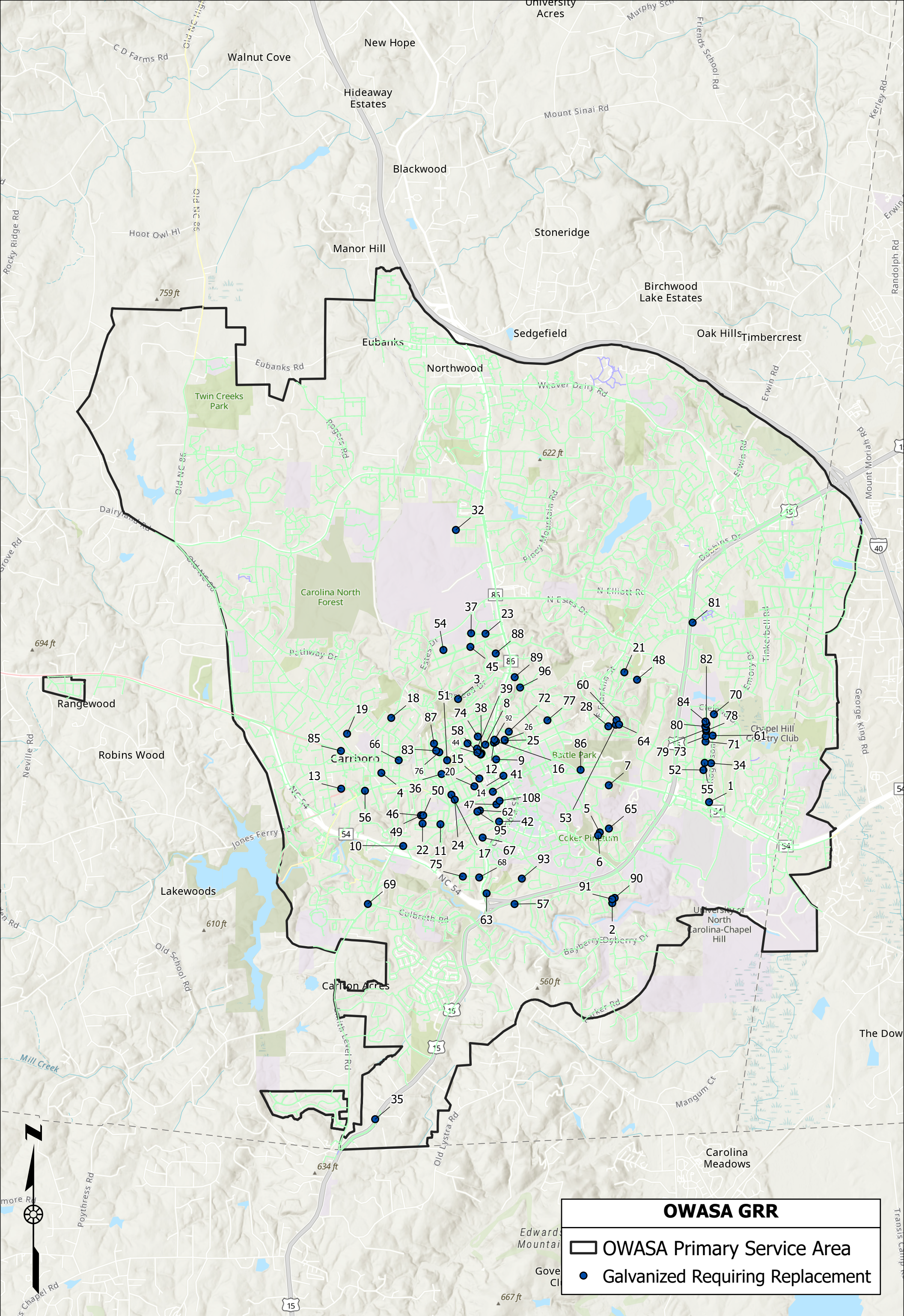


Figure 1

**Appendix A: List of Service Line
Replacement Sites**

Number	PIN	Address	Owner
1	9798357109	1 ROGERSON DR CHAPEL HILL, NC 27517	SNP PROPERTIES LLC
2	9788901226	1 SHADY LN CHAPEL HILL, NC 27517	KARIN B YEATTS
3	9788195921	100 UMSTEAD-THE PARK RD CHAPEL HILL, NC 27516	OF CHAPEL HILL TOWN
4	9778765710	101 LINDSAY ST CARRBORO, NC 27510	RIVA J ECONOPOULY
5	9788832870	102 PINE LN CHAPEL HILL, NC 27514	ALBERT T TRUSTEE RUTLEDGE
6	9788833446	103 PINE LN CHAPEL HILL, NC 27514	ANNE P CABLE
7	9788869165	105 LEDGE LN CHAPEL HILL, NC 27514	D MICHAEL MODLIN
8	9788277979	107 CARR ST CHAPEL HILL, NC 27516	LAWRENCE C BLANTON
9	9788372285	107 N COLUMBIA ST CHAPEL HILL, NC 27516	ONE WEST FRANKLIN LLC ETAL
10	9778837126	107 ROBERTS ST CARRBORO, NC 27510	ELIZABETH UPCHURCH
11	9788045189	108 GRANT ST CHAPEL HILL, NC 27516	APRIL MONET CUMMINS
12	9788382224	109 NORTH ST CHAPEL HILL, NC 27514	NANCE RENTALS III LLC
13	9778556775	110 GLOSSON CIR CARRBORO, NC 27510	NATARSA PATILLO
14	9788366500	112 FRAT CT CHAPEL HILL, NC 27516	ASSOC N CAROLINA XI
15	9788265442	113 MALLETTE ST CHAPEL HILL, NC 27516	EUN KYUNG SHIN
16	9788382224	113 NORTH ST CHAPEL HILL, NC 27514	NANCE RENTALS III LLC
17	9788150522	116 S GRAHAM ST CHAPEL HILL, NC 27516	MARGARET L NEVILLES
18	9778890338	117 ESTES DRIVE EXT CARRBORO, NC 27510	CHARLES ALSTON
19	9778588630	118 PINE ST CARRBORO, NC 27510	THOMAS V BURRUS
20	9788262054	119 KENAN ST CHAPEL HILL, NC 27516	JOHN D III JONES
21	9789916681	1212 HILLVIEW RD CHAPEL HILL, NC 27514	SRIPRIYA SRIDHAR CHITHAMoor
22	9778947228	126 JOHNSON ST CHAPEL HILL, NC 27516	WESLEY A FARRAR
23	9789237555	126 JUSTICE ST CHAPEL HILL, NC 27516	J LAWRENCE TRUSTEE MCADAMS
24	9788153315	127 S GRAHAM ST CHAPEL HILL, NC 27516	AFFORDABLE ALTERNATIVES LLC
25	9788387146	130 NORTH ST CHAPEL HILL, NC 27514	HSI SHENG CHI
26	9788386377	131 NORTH ST CHAPEL HILL, NC 27514	BARTON M JR LLOYD
28	9788887878	14 DAVIE CIR CHAPEL HILL, NC 27514	CLIFTON MICHAEL BROCK
32	9789183291	144 WINDSOR CIR CHAPEL HILL, NC 27516	CHRIS UNDERHILL
34	9798377160	16 ROGERSON DR CHAPEL HILL, NC 27517	HEIDI MOSER
35	9776790890	1800 US HIGHWAY 15 501 S CHAPEL HILL, NC 27517	PAUL DANIEL JAGOW
36	9788066547	202 N GRAHAM ST CHAPEL HILL, NC 27516	OLA B FARRINGTON
37	9789230579	204 JUSTICE ST CHAPEL HILL, NC 27516	ANNE S PLUMLEE
38	9788275750	204 SHORT ST CHAPEL HILL, NC 27516	JONG WON LEE
39	9788273798	205 CARR ST CHAPEL HILL, NC 27516	BARTON JR ETAL LLOYD
40	9788275489	205 SHORT ST CHAPEL HILL, NC 27516	LEONARD D II LONG
41	9788352873	205 WILSON CT CHAPEL HILL, NC 27516	MADISON PARTNERS LLC
42	9788344306	206 W UNIVERSITY DR CHAPEL HILL, NC 27516	CAMPBELL EDWIN ENARSON
43	9788275437	207 SHORT ST CHAPEL HILL, NC 27516	KIMBERLY HOPPIN
44	9788274656	208 SHORT ST CHAPEL HILL, NC 27516	FLORENCE A STEIN
45	9789220768	213 BARCLAY RD CHAPEL HILL, NC 27516	GREGORY OREN JOLLEY
46	9778945577	219 KNOLLS ST CHAPEL HILL, NC 27516	CAROLYN M PERRY
47	9788354105	219 MCCAULEY ST CHAPEL HILL, NC 27516	SOCIAL SCIENCE CONFERENCES INC
48	9799011186	220 VALLEY PARK DR CHAPEL HILL, NC 27514	MICHAEL RAY SHELOR
49	9778945577	221 KNOLLS ST CHAPEL HILL, NC 27516	CAROLYN M PERRY
50	9778946579	223 KNOLLS ST CHAPEL HILL, NC 27516	HAZEL P PERRY

**Appendix A: List of Service Line
Replacement Sites**

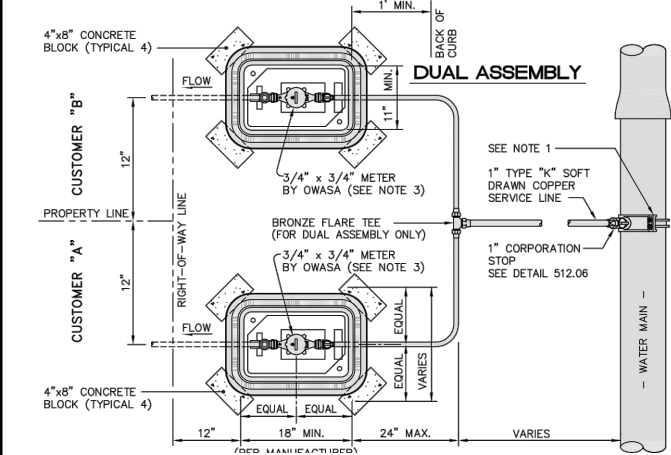
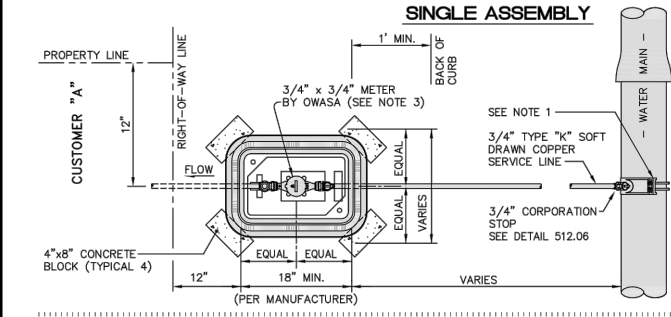
Number PIN		Address	Owner
51	9788078227	223 N ROBERSON ST CHAPEL HILL, NC 27516	FLOYD A JR FOUSHEE
52	9798363774	23 OAKWOOD DR CHAPEL HILL, NC 27517	MICHAEL POOCK
53	9788991076	25 DAVIE CIR CHAPEL HILL, NC 27514	GEORGE M IV TRUSTEE CLELAND
54	9789025696	3 POWELL ST CHAPEL HILL, NC 27516	INC ECONOMETRICS
55	9798376130	30 OAKWOOD DR CHAPEL HILL, NC 27517	THOMAS CRAVEN
56	9778657862	300 JONES FERRY RD CARRBORO, NC 27510	WILLIAM J HOLLOWAY
57	9788401099	304 MEADOW LN CHAPEL HILL, NC 27517	BRIAN BURNHAM
58	9788274614	306 CHURCH ST CHAPEL HILL, NC 27516	LAWLER DEVELOPMENT GROUP LLC
59	9788188186	306 MCDADE ST CHAPEL HILL, NC 27516	CHARLES ANTHONY BOOTH
60	9788991210	31 DAVIE CIR CHAPEL HILL, NC 27514	SUSANNE H KEY
61	9798388435	31 ROGERSON DR CHAPEL HILL, NC 27517	DENNIS M WUYCIK
62	9788245740	313 MCCAULEY ST CHAPEL HILL, NC 27516	WILLIAM C JR TRUSTEE FISCHER
63	9788208709	315 PUREFOY RD CHAPEL HILL, NC 27514	JOAN EAST
64	9788983999	32 DAVIE CIR CHAPEL HILL, NC 27514	EMILIE HENDEE
65	9788848122	401 LAUREL HILL RD CHAPEL HILL, NC 27514	CARRIE L WAFFA
66	9778873289	403 N GREENSBORO ST CARRBORO, NC 27510	MMF 401 403 LLC
67	9788237508	406 WESTWOOD DR CHAPEL HILL, NC 27516	RONNIE G TRUSTEE JACKSON
68	9788214487	407 COOLIDGE ST CHAPEL HILL, NC 27516	KATELYN R CRIZER
69	9778700424	420 SMITH LEVEL RD CHAPEL HILL, NC 27510	STEVEN GREEN
70	9798398590	45 ROGERSON DR CHAPEL HILL, NC 27517	MICHAEL B GROVES
71	9798386165	46 OAKWOOD DR CHAPEL HILL, NC 27517	JEFFREY C GRIGSTON
72	9788389770	5 COBB TER CHAPEL HILL, NC 27514	JAMES CHRISTOPHER BELCHER
73	9798386369	50 OAKWOOD DR CHAPEL HILL, NC 27517	BELL FAMILY PROPERTIES LLC
74	9788284456	502 PRITCHARD AVE CHAPEL HILL, NC 27516	REBECCA D PAUL
75	9788116439	507 COOLIDGE ST CHAPEL HILL, NC 27516	CHNS LLC
76	9788075627	517 CRAIG ST CHAPEL HILL, NC 27516	VICKIE ANN WEAVER
77	9788598137	518 NORTH ST CHAPEL HILL, NC 27514	JASON SHROPSHIRE
78	9798386674	54 OAKWOOD DR CHAPEL HILL, NC 27517	NATHAN MICHAEL RUDOLPH
79	9798386797	56 OAKWOOD DR CHAPEL HILL, NC 27517	SHARON L GRAHAM
80	9798384961	57 OAKWOOD DR CHAPEL HILL, NC 27517	ANNE BOONE
81	9799340024	6 BYPASS LN CHAPEL HILL, NC 27517	PAUL GREGANTI
82	9798397003	60 OAKWOOD DR CHAPEL HILL, NC 27517	JASON THOMAS
83	9788073813	602 CRAIG ST CHAPEL HILL, NC 27516	MERCIA RESIDENTIAL PROPERTIES
84	9798394175	61 OAKWOOD DR CHAPEL HILL, NC 27517	CATHERINE BAGCHI
85	9778576743	614 W MAIN ST CARRBORO, NC 27510	ROSE MARIE TRUSTEE BARNES
86	9788764755	698 GIMGHOUL RD CHAPEL HILL, NC 27514	PLAYHOUSE TRIO LLC
87	9788082157	704 GOMAINS AVE CHAPEL HILL, NC 27516	PATRICIA B MASON
88	9789321449	723 WILLIAMS CIR CHAPEL HILL, NC 27516	MICHAEL WHITMAN COLLINS
89	9789411302	790 MARTIN LUTHER KING JR BLVD CHAPEL HILL, NC 27517	MIDTOWN SHOPS LLC
90	9788900590	906 KINGS MILL RD CHAPEL HILL, NC 27517	J JEFFREY PEIRCE
91	9788900403	908 KINGS MILL RD CHAPEL HILL, NC 27517	JOSEPH BRACKEN
92	9788382224	APT 1 111 NORTH ST CHAPEL HILL, NC 27514	NANCE RENTALS III LLC
93	9788415660	APT A 116 PUREFOY RD CHAPEL HILL, NC 27514	MILLS FAMILY LLC
94	9788244615	APT A 319 MCCAULEY ST CHAPEL HILL, NC 27516	GREYHOUND CAPITAL PROPERTIES LLC
95	9788244615	APT C 319 MCCAULEY ST CHAPEL HILL, NC 27516	GREYHOUND CAPITAL PROPERTIES LLC

**Appendix A: List of Service Line
Replacement Sites**

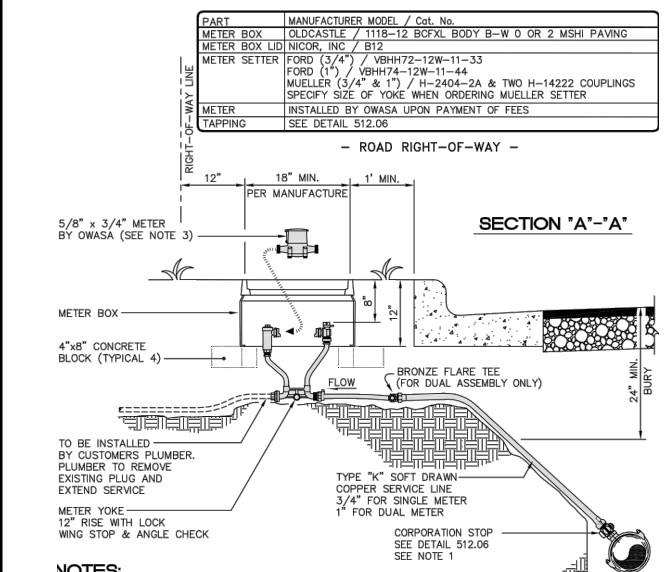
Number PIN		Address	Owner
96	9789403736.012	APT G-4 529 HILLSBOROUGH ST CHAPEL HILL, NC 27514	GAIL W KLEIMAN
108	9788354308	UNIT 3 212 MCCAULEY ST CHAPEL HILL, NC 27516	BERNADETTE PELISSIER

Appendix B Construction Details

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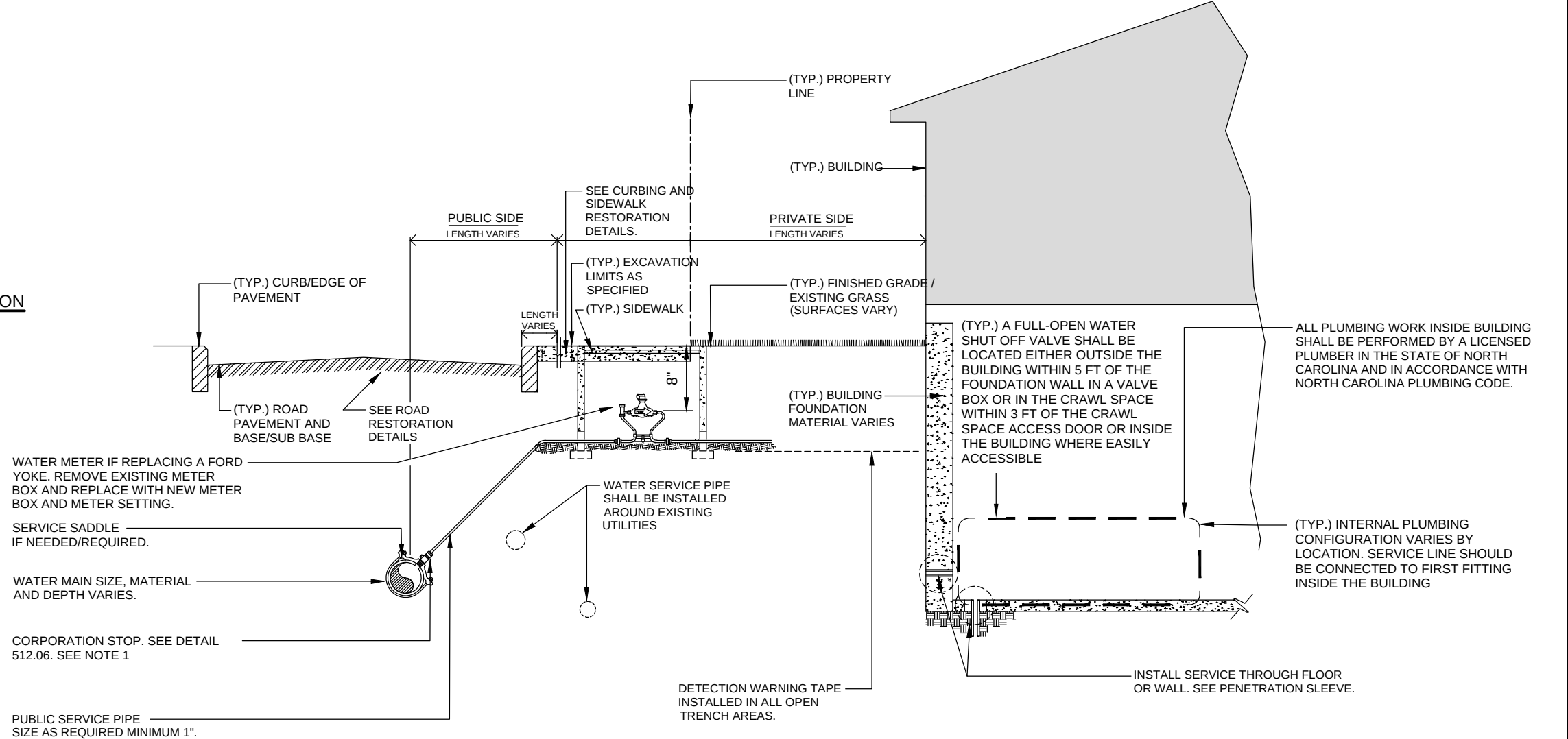


DOMESTIC AND FIRE POTECTION SERVICE INSTALLATION
NOT TO SCALE



- NOTES:**
1. Bronze service saddles shall be used on all service connections. Direct taps shall be made only as directed by an OWASA representative. See tapping detail 512.06.
 2. Omitted
 3. If installation is for stub-out meter, meter should be purchased from OWASA. (At applicants expense)
 4. Meter must be level across meter connections.
 5. Substitution requires approval by OWASA's Director of Engineering.
 6. When Required, Reduced Pressure Principle Back Flow Prevention Assembly (RP2) to be installed 5' behind meter box in accordance with OWASA's Cross-Connection Control Manual.

3/4\"/>

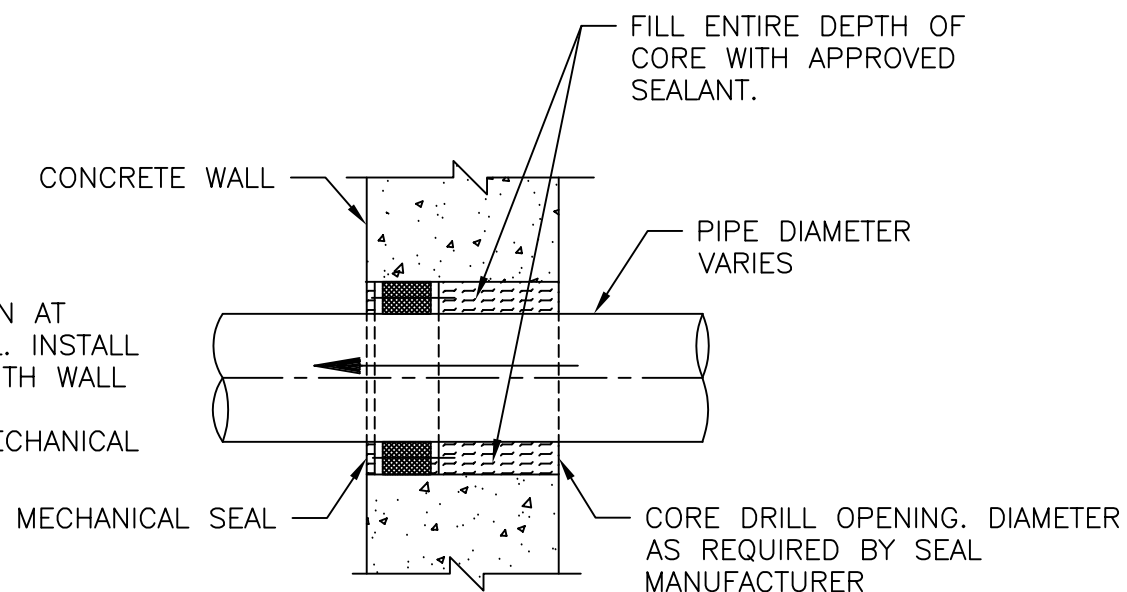


TYPICAL RESIDENTIAL WATER SERVICE CONNECTION - ELEVATION / SECTION VIEW
NOT TO SCALE

- NOTES:**
1. SERVICE LINE SHALL BE REPLACED BY TRENCHLESS METHODS WHEREVER POSSIBLE.
 2. TAPS FOR SERVICE CONNECTION SHALL BE INSTALLED ON THE MAIN AT 10 O'CLOCK OR 2 O'CLOCK POSITION ONLY.
 3. UPON COMPLETION OF SERVICE INSTALLATION, THE LINE SHALL BE COMPLETELY FLUSHED AT THE EXISTING METER LOCATION.



NOTE:
INSULATED PIPING:
INTERRUPT INSULATION AT
BOTH SIDES OF WALL. INSTALL
INSULATION FLUSH WITH WALL
AFTER WATER TIGHT
INSTALLATION OF MECHANICAL
SEAL.



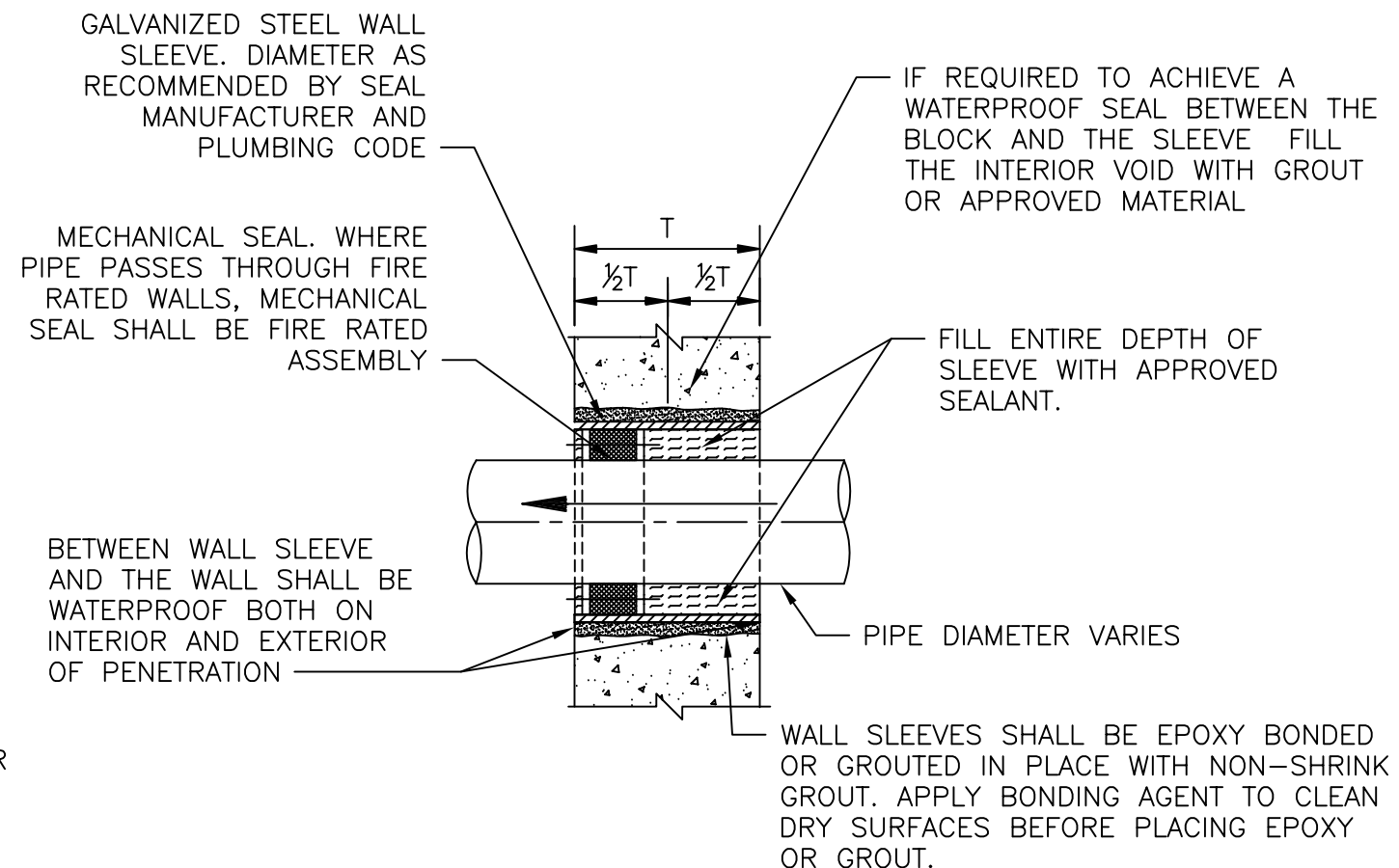
NOTES:

1. WHERE PIPE PASSES THROUGH FIRE RATED AREAS, INSTALL SEALS ON BOTH SIDES OF WALL. MECHANICAL SEALS SHALL BE FIRE RATED ASSEMBLIES.
2. IN LIEU OF MECHANICAL SEALS, NON-SHRINK GROUT, AS SPECIFIED, FILLING ALL VOIDS MAY BE USED FOR CONCRETE WALLS.

CORE DRILLED OPENING AND MECHANICAL SEAL
PENETRATION THROUGH EXISTING CONCRETE

DETAIL

NTS



NOTES:

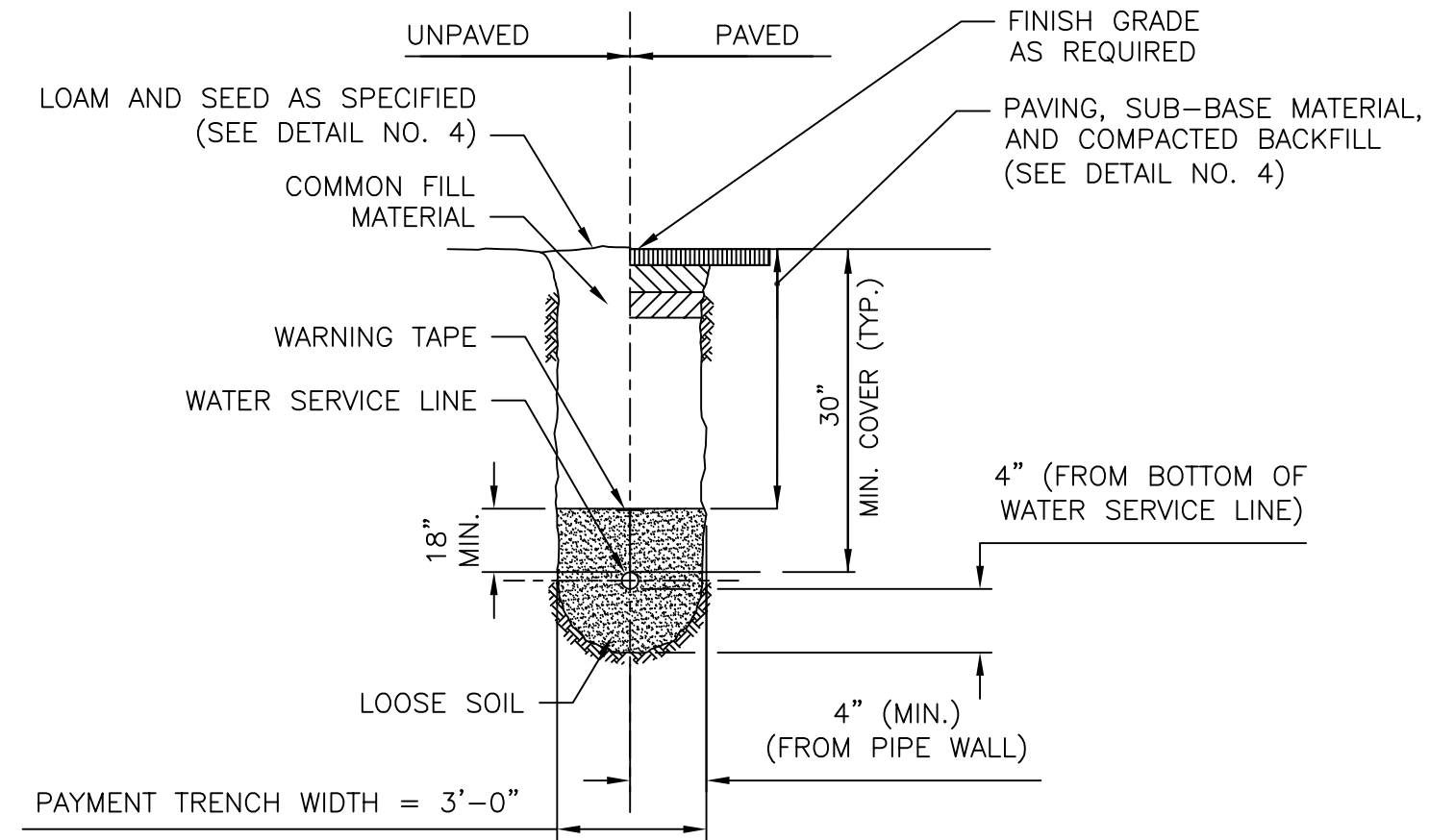
1. PIPE PENETRATIONS AND SLEEVE SHALL BE IN ACCORDANCE WITH NORTH CAROLINA PLUMBING CODE.
2. SEAL SHALL BE PLACE IN ACCORDANCE TO MANUFACTURES RECOMMENDATION.

WALL SLEEVE WITH MECHANICAL SEAL FOR
CONCRETE, BRICK CMU OR CAVITY WALLS

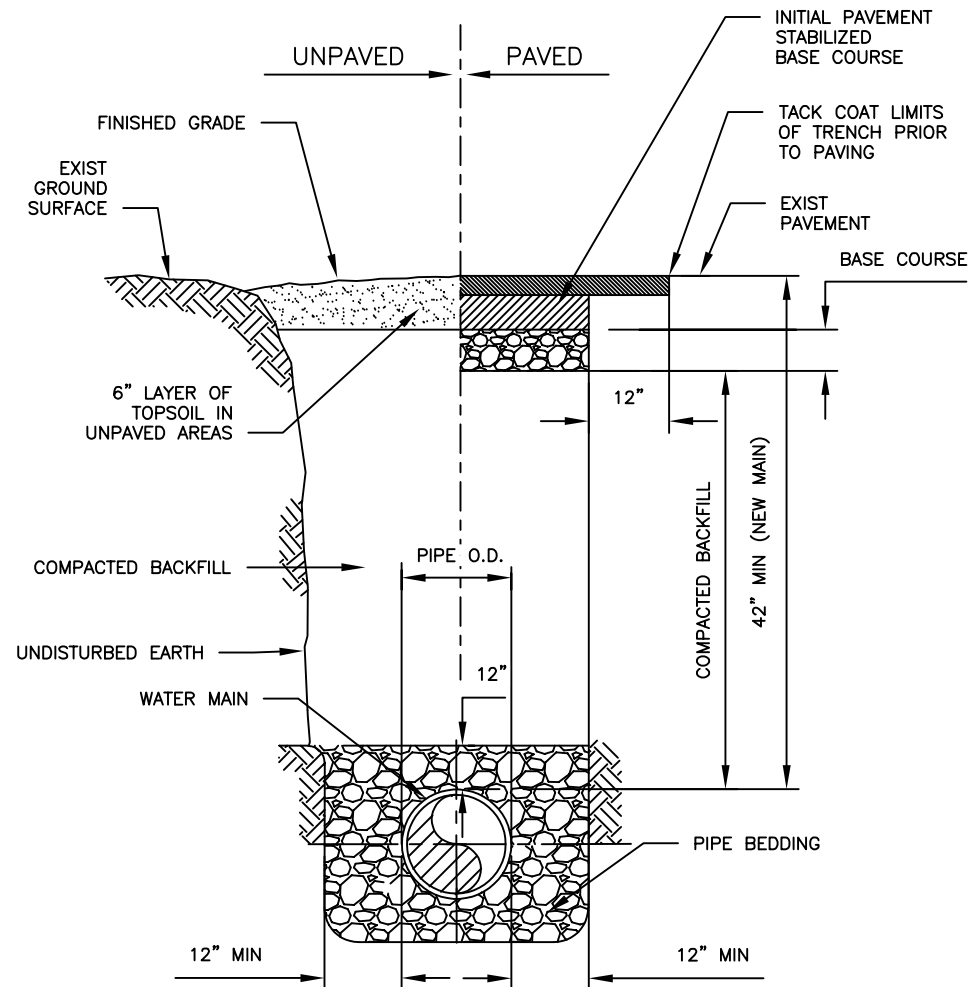
DETAIL

NTS

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TYPICAL TRENCH FOR WATER SERVICE LINE
NTS



NOTES:

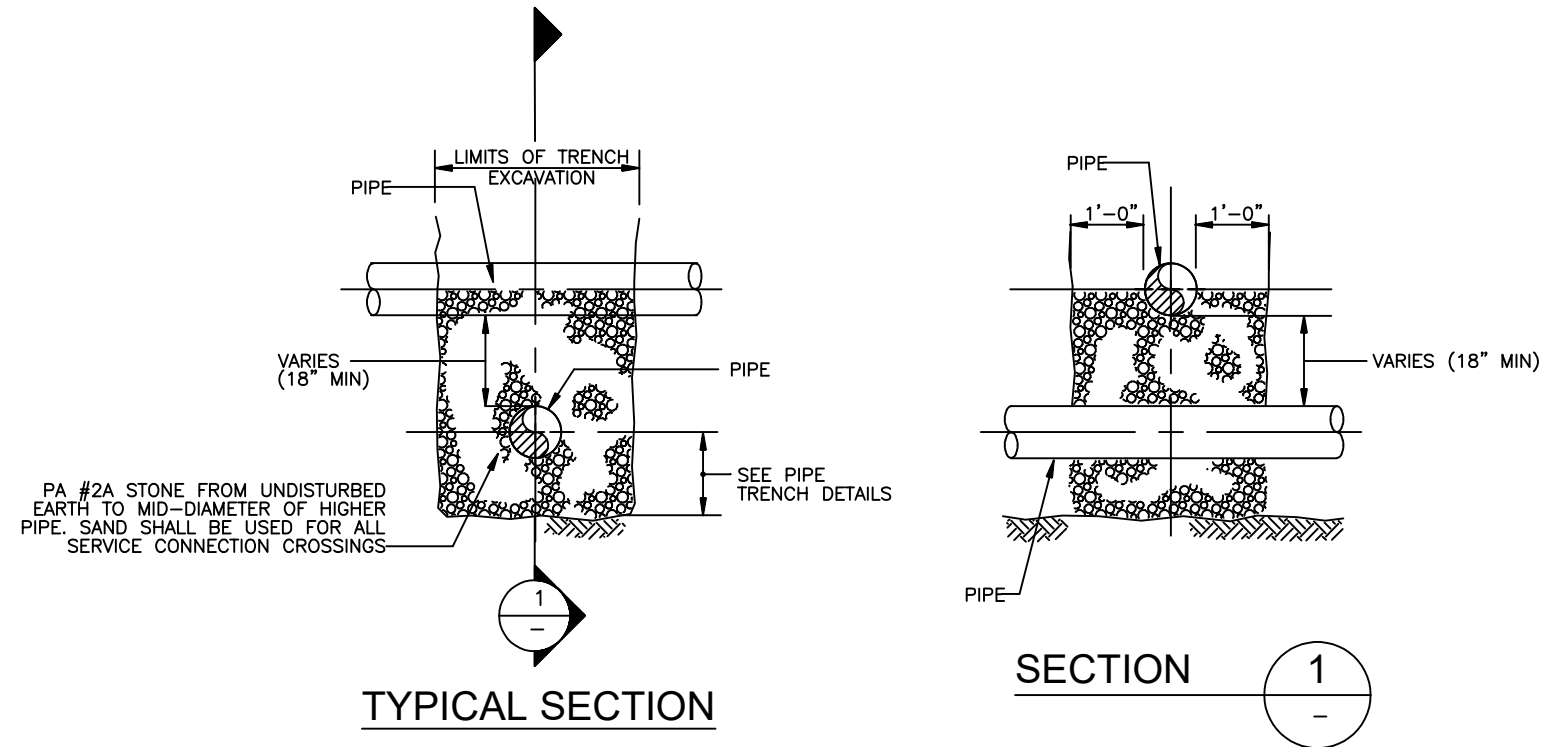
1. MAXIMUM PAY WIDTH FOR TRENCH IS 12" ON EITHER SIDE OF WATER MAIN INSTALLED BY CONTRACTOR.
2. PIPE COVER FOR COPPER PIPE SHALL BE SHOWN AS ON DETAIL NO. 3 TO 12 INCHES ABOVE THE TOP OF THE PIPE WITH WARNING TAPE. COMPACTED BACKFILL, WHICH IS BELOW THE BASE COURSE LAYER AND ABOVE THE PIPE COVER LAYER, SHALL BE AS SHOWN IN THE TABLE.

TYPICAL WATER MAIN TRENCH,
RESTORATION AND PAVEMENT DETAIL
NTS

NOTES:

1. THE LIMITS OF MILLING AND RESURFACING WILL BE DETERMINED IN THE FIELD BY THE OWNER, CITY, INSPECTOR DURING CONSTRUCTION.
2. WHEN PERFORMING THE ROADWAY WORK, CARE IS TO BE EXERCISED TO AVOID INTERFERENCE WITH THE FREE FLOW OF TRAFFIC.
3. WHEN EXCAVATING IN THE ROADWAY PAVEMENT, TRAFFIC CONTROL IS TO BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND THE CITY OF ALLENTOWN TRAFFIC ENGINEER.
4. THE NEED FOR UNIFORMED POLICE OFFICER TRAFFIC CONTROL WILL BE DETERMINED BY INVOLVED JURISDICTION'S POLICE DEPARTMENT.
5. TEMPORARY TRAFFIC STRIPES AND PAVEMENT MARKINGS ARE TO BE REPLACED IMMEDIATELY UPON PLACEMENT OF TEMPORARY PAVEMENT. PERMANENT STRIPING AND/OR MARKINGS ARE TO BE LONG LIFE EPOXY RESIN.
6. ANY REMOVAL OF THE EXISTING CURB AND ITS REPLACEMENT IS TO BE FROM JOINT TO JOINT.
7. PRIOR TO CONSTRUCTION, THE CONTRACTOR PERFORMING THE WORK IS TO OBTAIN AN APPLICATION FOR A ROAD OPENING PERMIT.

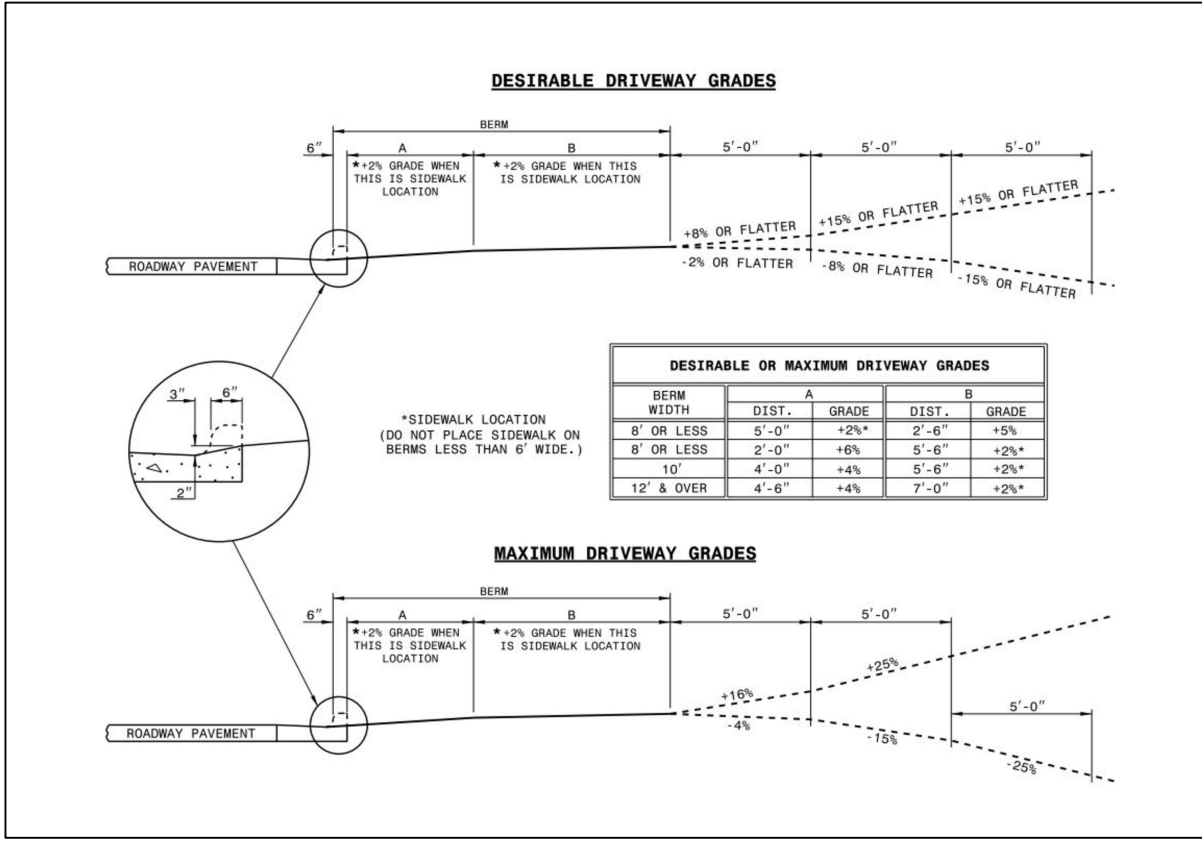
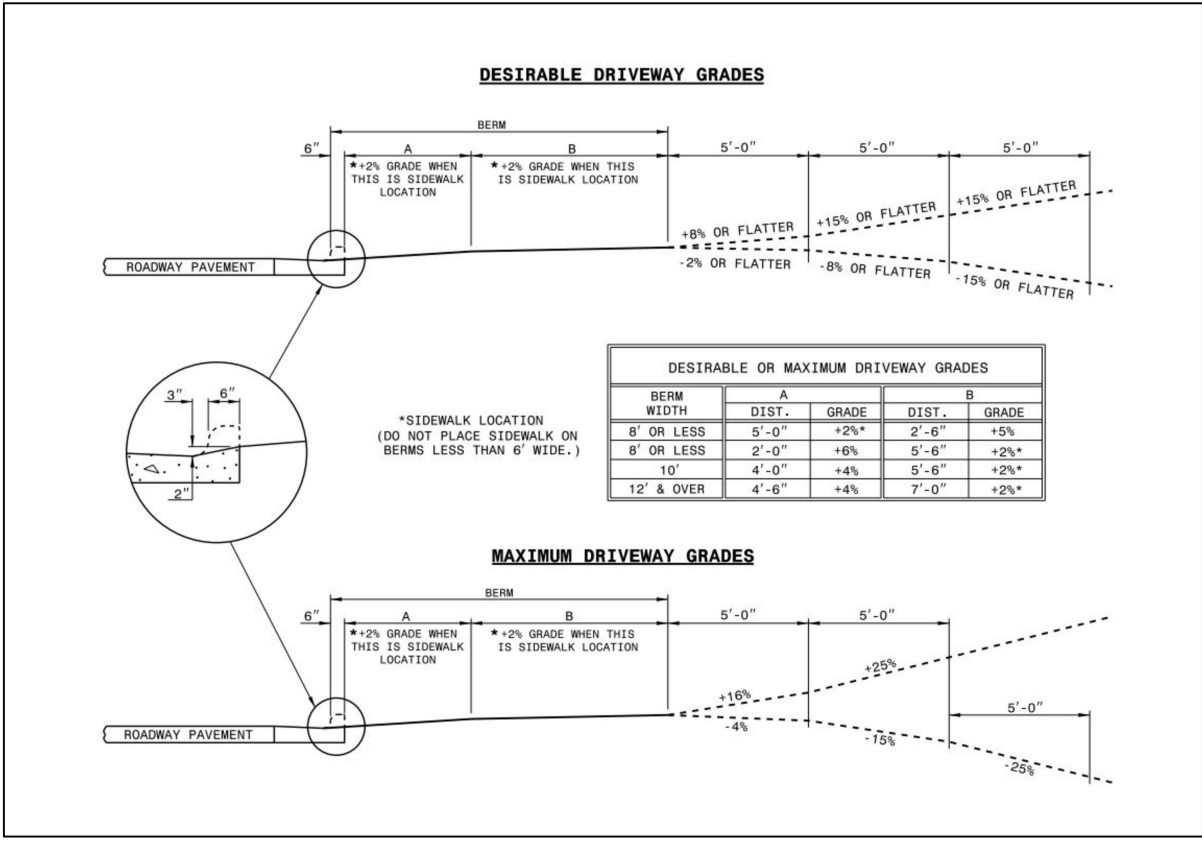
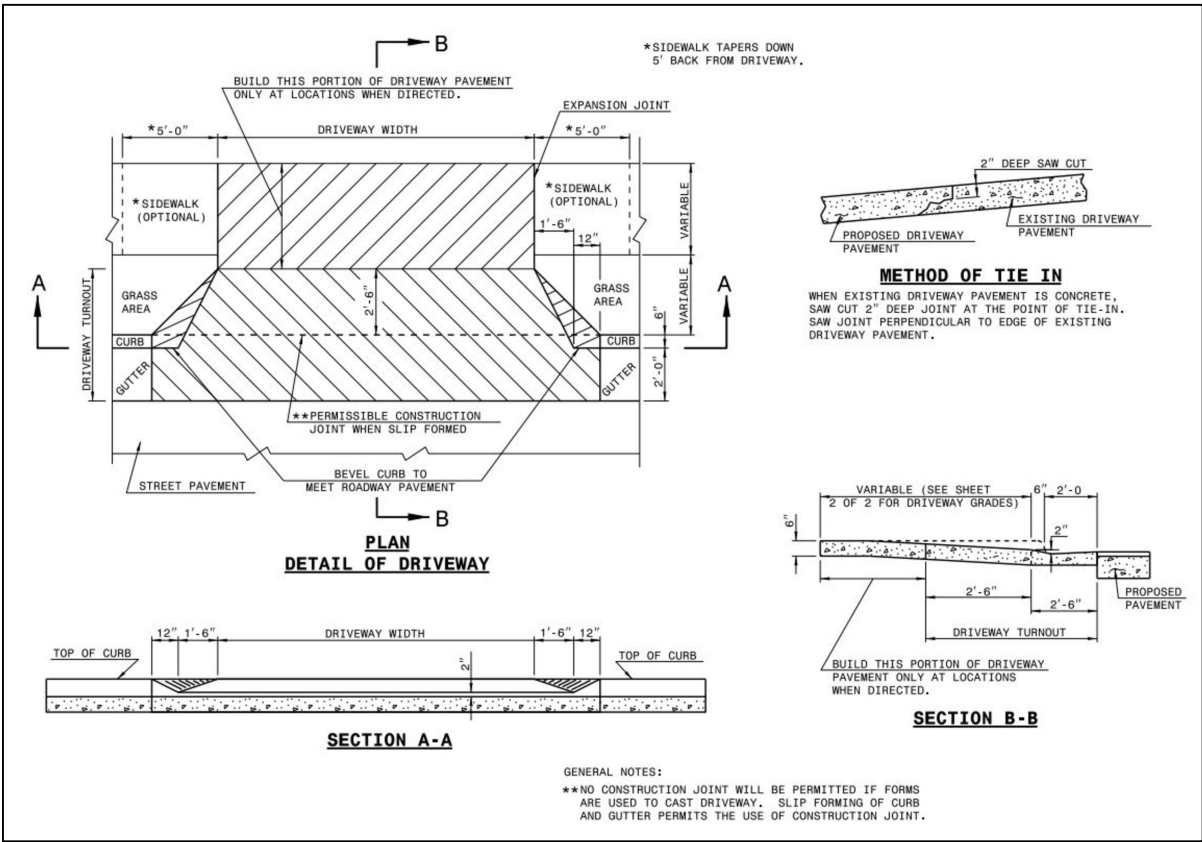
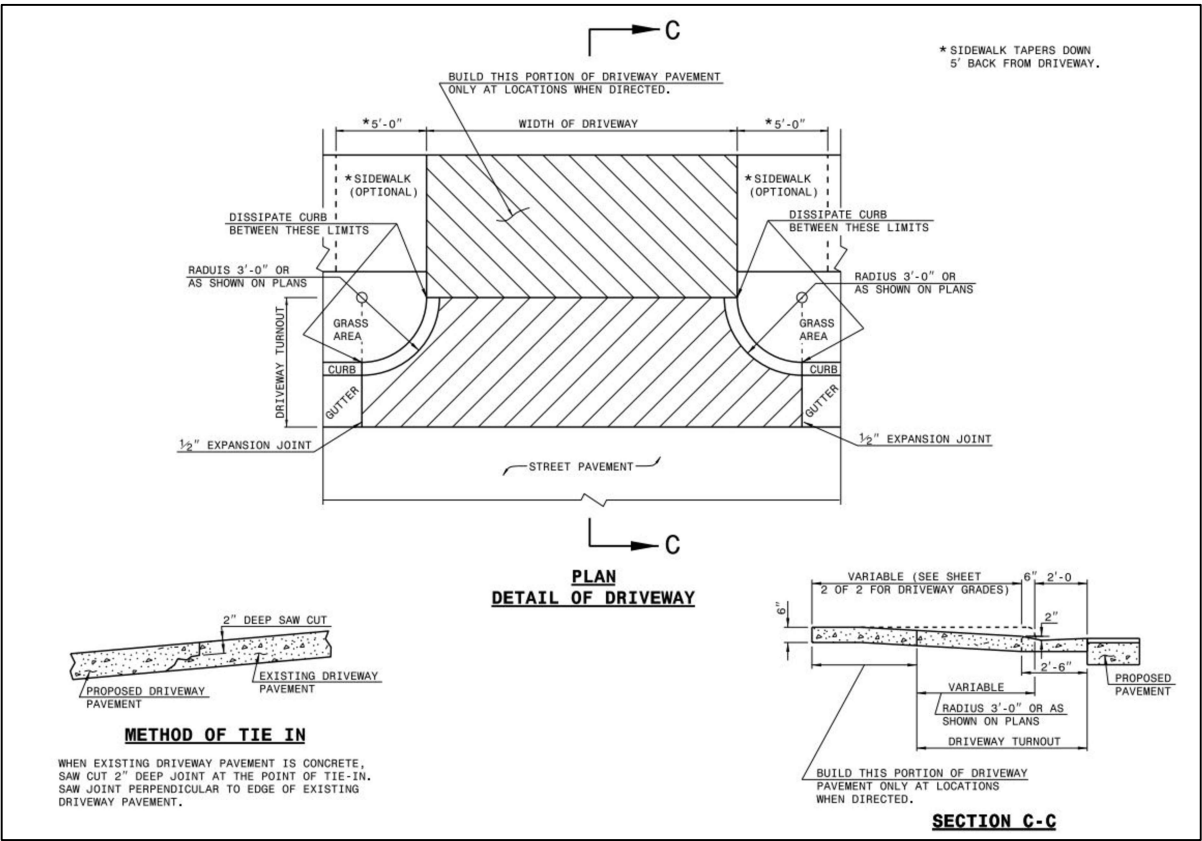
LAYER	TOWN OF CHAPEL HILL	OWASA	NCDOT
FINAL PAVEMENT BITUMINOUS CONCRETE TOP MIX	SF 9.5A		S9.B OR S9.5C
INITIAL PAVEMENT STABILIZED BASE COURSE	AGGREGATE BASE COURSE		B25.0B
STONE		#57 OR #67 STONE	
COMPACTED BACKFILL		COMPACTED COMMON FILL	
PIPE BEDDIING			

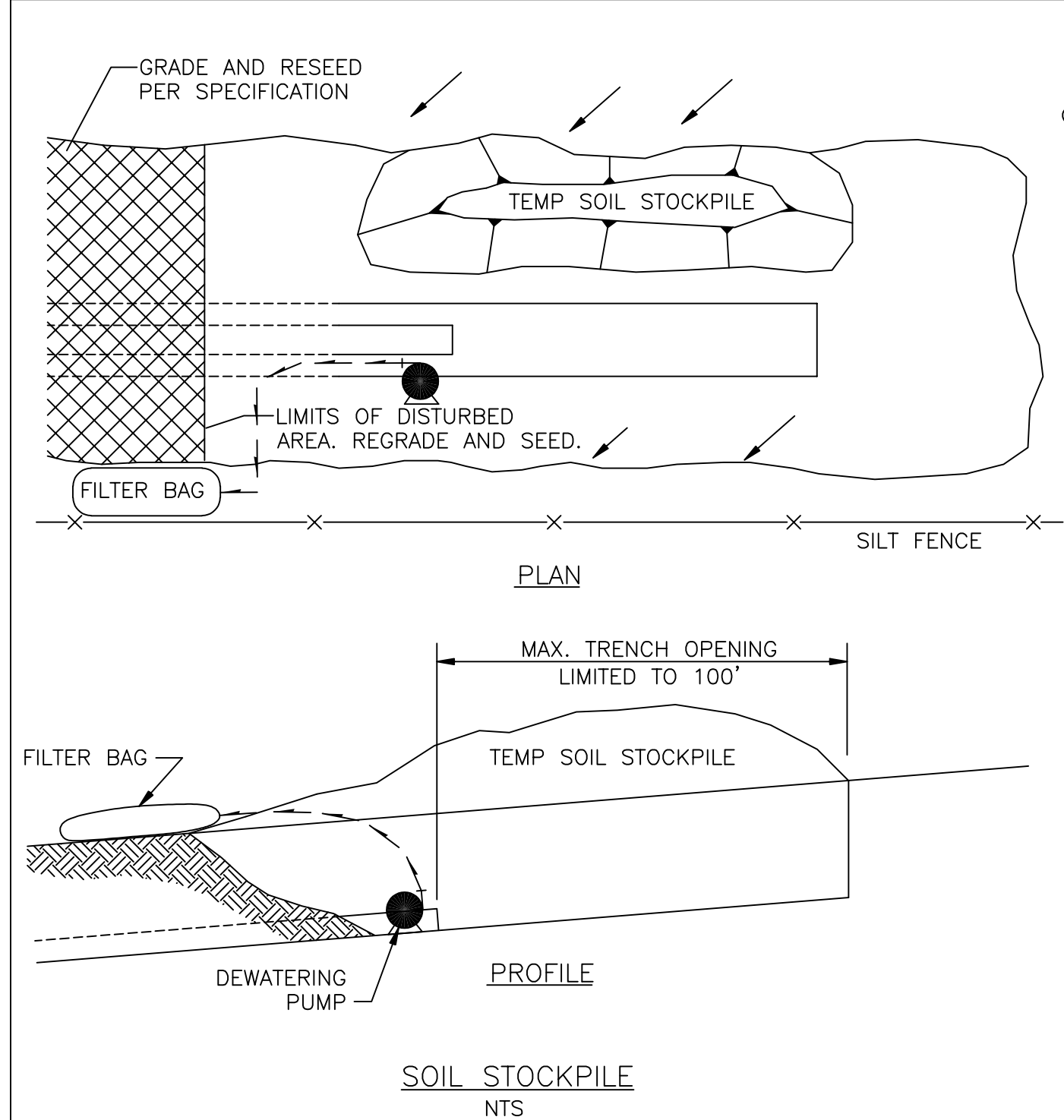


NOTES:

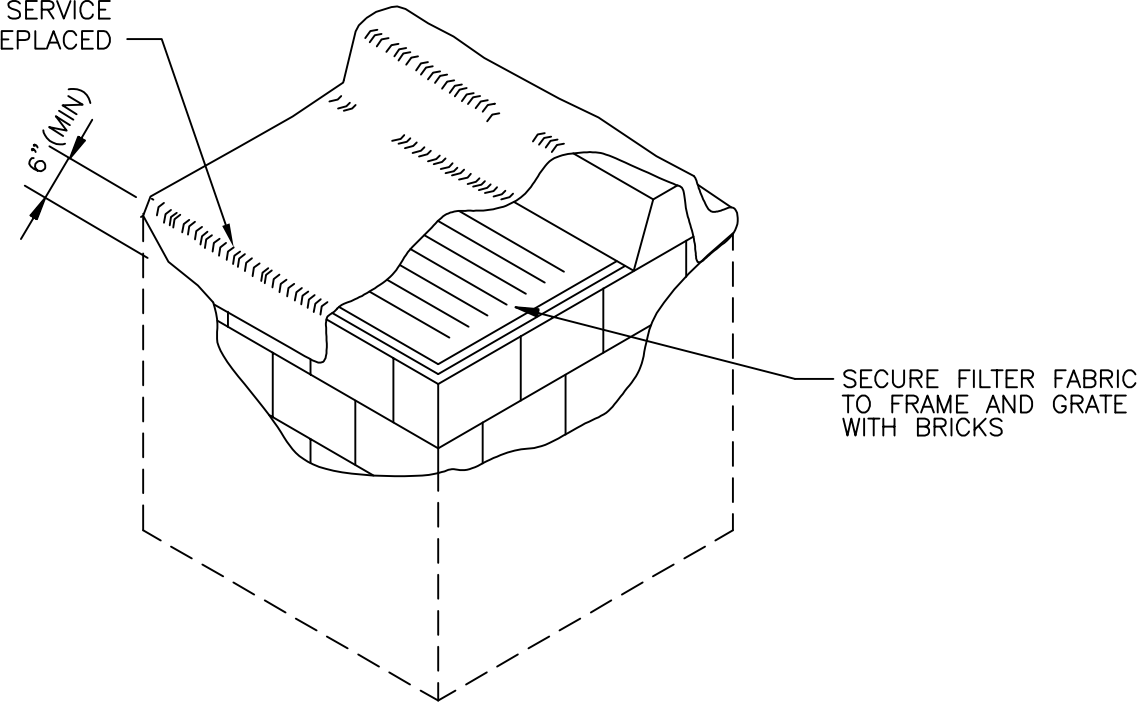
1. CONTRACTOR SHALL PROTECT EXISTING UTILITIES, AND SHALL BRACE AND SUPPORT THE UTILITIES PROPERLY TO PREVENT SETTLEMENT, DISPLACEMENT, OR DAMAGE TO THE UTILITIES. CONTRACTOR SHALL ALSO MEET SPECIAL REQUIREMENTS FOR UTILITIES IDENTIFIED HEREIN. THE CONTRACTOR SHALL LIMIT THE EXTERNAL LOADING ON EXISTING UTILITIES CAUSED BY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL USE CRANE PADS OR TIMBER PADS TO DISTRIBUTE EQUIPMENT LOADS. THE CONTRACTOR SHALL VERIFY ACCEPTABLE LOADING FOR EXISTING UTILITIES PRIOR TO STAGING EXTERNAL LOADS ON THE SITE.
2. WHENEVER A SANITARY/COMBINED SEWER CROSSES UNDER OR OVER A WATER MAIN, THE MINIMUM VERTICAL DISTANCE BETWEEN THE TOP OF THE BOTTOM PIPE AND BOTTOM OF THE TOP PIPE SHALL BE 18 INCHES WHERE POSSIBLE. FURTHERMORE, A MINIMUM HORIZONTAL DISTANCE OF 10 FEET BETWEEN SANITARY/COMBINED SEWERS AND MINIMUM 18 INCHES WHERE POSSIBLE VERTICAL SEPARATION; OR THE SEWER IS LAID IN THE SAME TRENCH WITH THE WATER MAIN LOCATED AT THE OPPOSITE SIDE ON A BENCH OF UNDISTURBED EARTH, KEEPING A MINIMUM 18 INCHES VERTICAL SEPARATION WHERE POSSIBLE. WATER MAIN JOINTS SHALL BE LOCATED AS FAR FROM THE SANITARY SEWER CROSSING AS POSSIBLE (MINIMUM 9 FEET) AND JOINTS ON EITHER END OF WATER MAINS AT SANITARY SEWER CROSSINGS SHALL BE RESTRAINED.

UTILITY CROSSING DETAIL
NTS





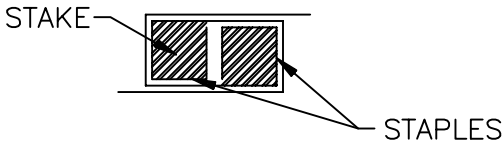
FILTERS TO BE INSTALLED ON ALL CATCH BASIN WITHIN 50' OF SERVICE CONNECTIONS BEING REPLACED



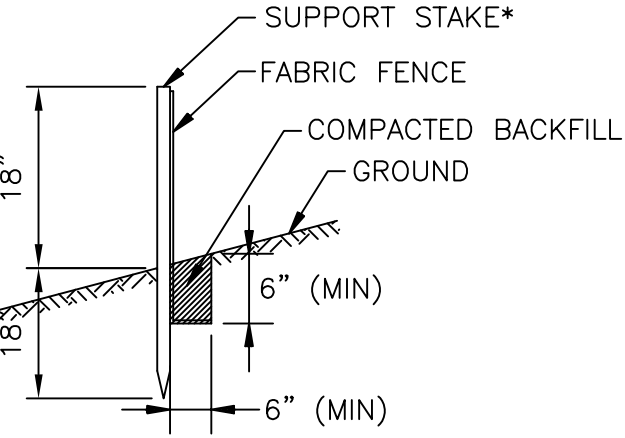
1. CONTRACTOR TO PROVIDE STORM SEWER INLET PROTECTION. FILTER TO BE SILTSACK BY ACF OR EQUAL. DESIGN CRITERIA OF THE INLET PROTECTION SHALL BE AS FOLLOWS
 - MUST SLOW THE STORM WATER, PROVIDE THE COARSE SEDIMENT PARTICLES A CHANCE TO SETTLE, AND PROVIDE AN AREA TO RETAIN THE PARTICLES THAT HAVE SETTLED.
 - IN ALL CASES, INLET PROTECTION SHOULD NOT COMPLETELY CLOSE OFF THE INLET. PROVISION MUST BE MADE TO ALLOW STORMWATER TO OVERFLOW OR BYPASS FILTER.
 - THE PROTECTION DEVICE WILL BE DESIGNED TO CAPTURE OR FILTER RUNOFF FROM THE 1 YEAR, 24 HOUR STORM EVENT AND SHALL SAFELY CONVEY HIGHER FLOWS DIRECTLY INTO THE STORM SEWER SYSTEM.
 - INSPECTIONS SHALL BE FREQUENT, AND AFTER EVERY STORM. MAINTENANCE, REPAIR, AND REPLACEMENT SHALL BE MADE PROMPTLY.
 - THE CONTRACTOR SHALL INSTALL STORM SEWER INLET PROTECTION IN ACCORDANCE WITH THE LATEST VERSION OF THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL OF NORTH CAROLINA
2. CONTRACTOR TO REMOVE FABRIC FOLLOWING COMPLETION OF WORK AND ANY RESIDUAL CONSTRUCTION DEBRIS REMOVED FROM CATCH BASIN.

INLET FILTER
NTS

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JOINING FENCE SECTIONS



STANDARD FILTER FABRIC FENCE (18" HEIGHT)

NOTES:
* STAKES SPACED @ 8' MAXIMUM. USE 2" X 2" WOOD OR EQUIVALENT STEEL STAKES.

FILTER FABRIC FENCE MUST BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.

ANY SECTION OF FILTER FABRIC FENCE WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET. SEE STANDARD CONSTRUCTION DETAIL #18.

SILT FENCE
NTS

Appendix C Site Plan Consent Checklist



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OWASA – GRR Replacement Program

Replacement Site Plan Consent Checklist

To be completed jointly by Homeowner and Contractor prior to construction.

Date of Site Visit: _____

OWASA Project Information

Project Name: Galvanized Reimbursement & Replacement (GRR) Program

OWASA Project Manager: Bill R

OWASA Project Manager Email: brosa@owasa.org

Contractor:

Contractor Phone Number:

Contractor Email:

TO BE COMPLETED BY THE PROPERTY OWNER

1. Property Information

Homeowner Name: _____

Service Address: _____

Property Owner Phone Number: _____

Property Owner Email: _____

Property Owner Phone Number: _____

2. Access & Entry Permissions

☐ Contractor granted access to property for work

☐ Property Owner will provide crawlspace/basement access

☐ For crawlspace only: If crawlspace is accessible, does the property owner grant permission for the contractor to access the crawlspace when the property owner or representative is not present and/or onsite

If the above is selected, please select **one (1)** of the options listed below:



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☐ YES- if the property owner permits access ☐ NO- if the property owner does not permit access

☐ Permission granted to temporarily adjust minor obstacles

☐ YES ☐ NO Property owner permits the contractor to work on site prior to date of planned connection

☐ Property Owner will ensure site access on workday

Access Notes:

3. Safety & Property Protection

- ☐ Contractor reviewed safety practices
- ☐ Confirm pets/children will be kept away
- ☐ Contractor reviewed access control of excavation area
- ☐ Replacement equipment permitted to be on-site

TO BE COMPLETED BY THE CONTRACTOR

2. Existing Site Conditions (Confirm with Homeowner)

- ☐ Exterior water service line entry point located
- ☐ Meter box location confirmed
- ☐ Existing Water Service Diameter verified: _____
- ☐ Existing PRV location verified (if applicable)
- ☐ Existing customer isolation valve located (if applicable)
- ☐ Crawlspace/basement access confirmed
- ☐ Above-ground obstacles identified
- ☐ Private underground utilities noted
- ☐ Landscape elements documented
- ☐ Septic components identified (if applicable)



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Notes:

3. Proposed Replacement Work

- ☐ Proposed water service route reviewed with property owner
- ☐ Proposed location of connection to existing plumbing system at building and/or structure reviewed with property owner
- ☐ Excavation areas discussed and marked
- ☐ Proposed location for new PRV (if needed) reviewed
- ☐ Proposed location for new customer shutoff valve reviewed
- ☐ Material staging and equipment access areas identified

Additional Notes:

4. Safety & Property Protection

- ☐ Reviewed safety practices
- ☐ Access control of excavation area
- ☐ Replacement equipment permitted to be on-site

5. Restoration Expectations

- ☐ Contractor will restore disturbed areas as practical
- ☐ Yard will be re-graded and seeded
- ☐ Hardscape/landscape impacts discussed
- ☐ Restoration may vary due to weather/soil conditions

Specific Requests (discuss with homeowner):



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6. Temporary Service Interruptions

- ☐ Property Owner notified of planned outage
- ☐ Estimated outage length & date provided _____
- ☐ Temporary water quality impacts reviewed with property owner

8. Diagram / Sketch Area

(Reserved for drawing or attaching a site plan)



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9. Miscellaneous

Estimated length of service line replacement: _____

PRV installation or replacement required: ☐ YES ☐ NO

Asphalt or concrete replacement required: ☐ YES ☐ NO (if yes please describe)

TO BE COMPLETED BY CONTRACTOR & PROPERTY OWNER

Homeowner Signature: _____ Date: _____

Contractor Representative: _____ Date: _____

Company: _____

Engineer: _____ Date: _____

OWASA Staff (Optional): _____ Date: _____