



**Capital Projects & Purchasing Department
113 Mable T. Willis Blvd.
Walterboro, SC 29488
843.539.1968**

**BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS**

**Non-Mandatory Pre-Bid Conference will be held
Tuesday, November 14, 2017 at 11:00am
Project site location: 176 New Street, Smoaks, SC 29481**

BID DUE: THURSDAY, NOVEMBER 30, 2017 at 2:00pm

MAIL RESPONSE TO:

Capital Projects & Purchasing Department
Attn: Kaye B Syfrett
113 Mable T. Willis Blvd.
Walterboro, SC 29488

DELIVER RESPONSE TO:

Capital Projects & Purchasing Department
Attn: Kaye B Syfrett
113 Mable T. Willis Blvd.
Walterboro, SC 29488

TABLE OF CONTENTS
(1 OF 2)

DIVISION 000 - BIDDING AND CONTRACT REQUIREMENTS

2016-1701	Advertisement for Bid.....	3
2016-1702	Information for Bidders.....	4
2016-1703	Bond Forms.....	17
2016-1704	Contract.....	23
2016-1705	Notice of Award.....	29
2016-1706	Notice to Proceed.....	30
2016-1707	Application for Payment.....	31
2016-1708	Certificate of Substantial Completion.....	34
2016-1709	Contractor's Affidavit.....	35
2016-1710	Field Order.....	36
2016-1711	Work Change Directive.....	37
2016-1712	Change Order.....	38
2016-1713	Forms.....	39
2016-1714	Bid Forms.....	58

END OF SECTION

SECTION 2016-1701 Advertisement for Bid

Owner: Town of Smoaks, 176 New Street, Smoaks South Carolina 29481

Sealed Bid: **CPST-12** Town of Smoaks Water System Improvements, 176 New Street, Smoaks South Carolina will be received at the Colleton County Capital Projects and Purchasing Department located at 113 Mable T. Willis Boulevard until **2:00pm, Thursday, November 30, 2017** and publicly opened and read aloud. The work to be completed as a part of this project consists of providing all required materials, equipment and labor necessary to complete the Water System Improvements located in the Town of Smoaks in Smoaks South Carolina, with the following approximate quantities:

Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances. All existing water lines are to be abandoned and remain in place unless otherwise noted.

The Instructions to Bidders, Bid Form, Contract, Plans, Specifications, Bid Bond, Performance Bond, Payment Bond, and other contract documents may be examined at the following locations:

Colleton County website: colletoncounty.org/bids-and-proposal-requests

Bidders must deposit security with all bids. Security shall be in the form of a certified check or bid bond made payable to **Town of Smoaks**, and shall be for an amount equal to not less than five percent (5%) of the amount of the bid. Provisions of the security shall be as described in the Information for Bidders. No bid will be considered unless the bidder is legally qualified under the provisions of the South Carolina Sections 40-11-10 through 40-11-428).

NOTICE TO BIDDERS:

Each bidder shall fully acquaint him/herself with conditions of this Bid. The failure or omission of a bidder to acquaint him/herself with existing conditions shall in no way relieve him/herself of any obligation with respect to this Bid or to the Contract.

BIDS WILL NOT BE CONSIDERED FROM ANY VENDOR THAT OWES DELINQUENT PROPERTY TAXES TO THE COUNTY OF COLLETON.

NOTICE TO BIDDERS: Each bidder shall fully acquaint him/herself with the conditions relating to the scope and restrictions attending the execution of the work under the conditions of this Bid. All amendments to and interpretations of this solicitation shall be in writing and issued by the Colleton County Capital Projects & Purchasing Department. Colleton County or the Town of Smoaks shall not be legally bound by any amendment or interpretation that is not in writing. Award of the project is contingent on funding approval by the Town of Smoaks, Town Council.

The Owner reserves the right to waive any informality or to reject any or all bids.

Engineer
Davis & Floyd
101 North Main Street, Suite 901
Greenville SC 29601
D. Mack Kelly, Jr., PE, PLS, CFM

Owner
Town of Smoaks
176 New Street
Smoaks, SC 29481

SECTION 2016-1702 Information for Bidders

ARTICLE 1 - DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the 001, General Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. **Issuing Office** - The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
 - B. **Architect, Engineer, Owner** - The person or firm in charge of the project. This person or firm will be selected by the owner and in some instances, the owner will self-perform, acting as the Architect.
 - C. **Owner of Project**- Town of Smoaks

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents can be found at <http://www.colletoncounty.org/bids-and-proposal-requests>.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer or Architect assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer or Architect, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

- 3.01 Bidders must be licensed as a General Contractor in the State of South Carolina and will hold all Trade Contracts and the Building Permit on the project.
- 3.02 To demonstrate Bidder's qualifications to perform the Work, within five (5) days of Owner's request, Bidder shall submit written evidence such as financial data; previous experience, present commitments.

ARTICLE 4 - EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

- 4.00 **Non- Mandatory Pre-Bid Conference** will be held **Tuesday, November 14, 2017 at 11:00am** on the grounds of the project site, located at 176 New Street, Smoaks South Carolina. *No other scheduled tours will be conducted.*
- 4.01 Subsurface and Physical Conditions
- A. The General Conditions identify:

Not Reports of explorations and tests of conditions at or contiguous to the Site where performed by the owner.
- 4.02 Underground Facilities
- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer or Architect by owners of such Underground Facilities, including Owner, or others.

4.03 Hazardous Environmental Condition

- A. The General Conditions identify those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that Engineer or Architect has used in preparing the Bidding Documents.
- B. Copies of reports and drawings referenced in Paragraph 4.03.A are included herein. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work appear in Paragraph 4.06 of the General Conditions.

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates. Construction Coordinator, Project Coordinator and Owner shall be notified prior to any site visits.

4.06 Reference is made to Article 7 of the General Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of Contract Documents (other than portions thereof related to price) for such other work.

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

- a. Examine and carefully study the Bidding Documents, the other related data identified in the Bidding Documents, and any Addenda.
- b. Visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- c. Become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- d. Carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities), which have been identified in Paragraph 4.02 of the General Conditions, and (2) reports and drawings of Hazardous Environmental Conditions at the Site which have been identified in Paragraph 4.06 of the General Conditions.
- e. Obtain and carefully study (or accept consequences of not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site, which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by

Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.

- f. Agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
 - g. Become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
 - h. Correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
 - i. Promptly give Owner written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Owner is acceptable to Bidder.
 - j. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
 - k. No plea of ignorance of conditions that exist or may hereafter exist on the site of the work, or difficulties that may be encountered in the execution of the work, as a result of failure to make necessary investigations and examinations, will be accepted as an excuse for any failure or omission on the part of the Contractor to fulfill in every detail all the requirements of the contract documents and to complete the work for the consideration set forth therein, or as basis for any claim whatsoever.
 - l. Apparent omission of a detailed description concerning any point, shall be regarded as meaning the best commercial practice is to prevail and that only material and workmanship of the finest quality is to be used.
 - m. Bidders may refer to Sections 2-67, 2-73, and 2-74 of Ordinance #2008-09, also known as the Colleton County, South Carolina Purchasing Policy to determine their remedies concerning this competitive process. The failure to be awarded a bid shall not be valid grounds for protest.
 - n. The Bidder further agrees that the performance time specified is a reasonable time, having carefully considered the nature and scope of the project as aforesaid.
- 4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific 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 Owner written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Owner are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 - SITE AND OTHER AREAS

- 5.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional land and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 6 - INTERPRETATIONS AND ADDENDA

- 6.01 All questions about the meaning or intent of the Bidding Documents are to be submitted in writing and submitted by email to; jstieglitz@colletoncounty.org. Interpretations or clarifications considered necessary by Owner in response to such questions will be issued by Addenda. Questions received less than **ten (10)** days prior to the date for opening of Bids will not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. **Questions shall be submitted by 12:00pm Monday, November 20, 2017.**
- 6.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by the Owner. Addenda will be posted on the Colleton County website. It is the responsibility of the bidder to monitor this web site for addendums. Notice of issued addendum will not be forwarded to bidders.
- 6.03 Division 000 and Division 001 shall have authority over all over documents. Where duplication of titles, articles, standards, requirements and such are found, Division 000 and Division 001 govern.

ARTICLE 7 - BID SECURITY

- 7.01 A Bid must be accompanied by Bid security made payable to the **Town of Smoaks** in an amount of five percent (5%) of Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid Bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.
- 7.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within fifteen (15) days after the Notice of Award, Owner may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders Whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven (7) days after the Effective Date of the Agreement or sixty (60) days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.
- 7.03 Bid security of other Bidders Whom Owner believes do not have a reasonable chance of receiving the award will be returned within fourteen (14) days after the Bid opening.

ARTICLE 8 - CONTRACT TIMES

- 8.01 **Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances with all the remaining water lines to be abandoned and remain in place, is to be completed within One Hundred Eighty (180) calendar days after the Notice to Proceed has been issued.**

ARTICLE 9 - LIQUIDATED DAMAGES

- 9.01 Document Execution
- A. The successful Bidder, upon failure or refusal to execute and deliver the contract and bonds within seven (7) days after they have received the notice of Award of their bid, shall forfeit to the Owner, as liquidated damages, the security deposited with the bid.
- 9.02 Project Execution

- A. Bidder must agree to commence work on or before a date to be specified in a written “Notice to Proceed” by the Owner and to fully complete the project within the dates specified in the Bid Form, Article 6; Paragraph 6.01. Bidder must agree also to pay as liquidated damages the sum as indicated in the Bid Form, Article 6; Paragraph 6.02 for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

ARTICLE 10 - SUBSTITUTE AND “OR-EQUAL” ITEMS

- 10.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment may be furnished or used by Contractor if acceptable to the Construction Coordinator, application for such acceptance will not be considered by the Owner until after the Effective Date of the Agreement.
- (a) The use of a “**Brand Name Only**” specification is for the purpose of describing the sole item that will satisfy the county’s requirements. Bids offering alternate products will be declared non-responsive.
- (b) The use of a “**Brand Name or Equal**” specification is for the purpose of describing the standard of quality, performance and characteristics desired and is not intended to limit or restrict competition. An item shall be considered to be substantially equivalent, or “equal” to the specified brand in the opinion of the Purchasing Director, the County can reasonably anticipate sufficiently similar quality, capacity, durability, performance, utility and productivity as provided by the specified brand.

ARTICLE 11 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 The General Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner with the bid packet. The bidder shall submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner, Project Coordinator or Construction Coordinator, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, in which case apparent Successful Bidder shall submit an acceptable substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 11.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner, Project Coordinator or Construction Coordinator makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner, Project Coordinator and Construction Coordinator subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.
- 11.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.
- 11.04 Each bidder shall fully acquaint himself with conditions of this Bid. The failure or omission of a bidder to acquaint himself with existing conditions shall in no way relieve him of any obligation with respect to this Bid or to the Contract.

ARTICLE 12 - PREPARATION OF BID

- 12.01 Should a bidder need any reasonable accommodations for any type of disability in order to participate in this procurement, you are asked to contact the Colleton County Capital Projects & Purchasing Department.
- 12.02 The Bid Form is included with the Bidding Documents. Additional copies may be obtained from Owners Web Site.
- 12.03 All blanks on the Bid Form shall be completed by printing in ink or by typewriter and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each unit price item listed therein, or the words "No Bid," "No Charge," or "Not Applicable" entered.
- 12.04 A Bid by an individual shall show the Bidder's name and official address.
- 12.05 A Bid by a joint venture shall be executed by each joint venture in the manner indicated on the Bid Form. The official address of the joint venture shall be shown below the signature.
- 12.06 All names shall be typed or printed in ink below the signatures.
- 12.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 12.08 The address and telephone number for communications regarding the Bid shall be shown.
- 12.09 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the Contract. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.
- 12.10 Any reports, studies, photographs, negatives or other documents prepared by vendor in the performance of its obligations shall be the exclusive property of the procurer and all such material shall be remitted to the procurer by the vendor upon completion, termination or cancellation of this order. Vendor shall not use, willingly allow or cause to have such material used for any purpose other than performance of its obligations under this order without the prior written consent of the procurer.
- 12.11 The contractor will take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of the handicapped, and concerning the treatment of all employees, without regard or discrimination by reason of age, race, color, religion, sex, national origin or physical handicap. The following are incorporated herein by reference: 41 C.F.R. 60-1.4, 60-250.4 and 60-741.4.
- 12.12 All construction contracts over \$2,000.00 must include a provision for compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3). This act provides that each Contractor shall be prohibited from inducing, by any means, persons employed in the construction, completion, or repaid of public work to give up any part of their compensation.
- 12.13 The contractor certifies that the vendor(s) will provide a "drug-free workplace" as that term is defined in Section 44-107-30 of the Code of Laws of South Carolina, 1976, as amended, by the complying with the requirements set forth in title 44, Chapter 107
- 12.14 The federally-assisted construction contractor certifies that he will not maintain or provide, for his employees, segregated facilities at any of his establishments and that he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this

certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated on the basis of race, color, religion, or national origin because of habit, local custom, or any other reason. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause and that he will retain such certifications in his files.

- 12.15 By signing this bid or proposal, Contractor certifies that it will (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in their contracts with the sub-subcontractor's language requiring the sub-subcontractors to comply with the applicable requirements of Title 8, Chapter 14. (An overview is available at www.procurement.sc.gov)
- 12.16 Bidders must clearly mark as "confidential" each part of their bid which they consider to be proprietary information that could be exempt from disclosure under section 30-4-40, Code of Laws of South Carolina 1976, as amended (Freedom of Information Act). If any part is designated as confidential, there must be attached to that part an explanation of how this information fits within one or more categories listed in section 30-4-40. The County reserves the right to determine whether this information should be exempt from disclosure and no legal action may be brought against the County or its agents for its determination in this regard.
- 12.17 Nothing herein is intended to exclude any responsible vendor, his product or service or in any way restrain or restrict competition. On the contrary, all responsible vendors are encouraged to bid and their bids are solicited.
- 12.18 The successful Bidder must be responsible for obtaining all necessary city, county, and state permits/licenses and must comply with all State and local codes and ordinances. Copies of such permits/licenses shall be made available to Colleton County upon request. Work within the Walterboro City Limits may require a City Business License.
- 12.19 This Agreement shall be governed by and construed in accordance with the laws of the State of South Carolina, U.S.A.
- 12.20 All claims, disputes and other matters in question between parties arising out of, or relating to, this Agreement, or the breach thereof, shall be decided in the Circuit Court of the Fourteenth Judicial Circuit in Colleton County, South Carolina. By executing this Agreement, all parties specifically consent to venue and jurisdiction in Colleton County, South Carolina and waive any right to contest jurisdiction and venue in said Court.
- 12.21 The Town of Smoaks reserves the right to reject all or any part of any bid, waive informalities and award the contract to the lowest responsive and responsible bidder to best serve the interest of the Town of Smoaks.
- 12.22 By submitting a bid, the Bidder certifies to the best of its knowledge and belief, that it and its principals, sub-contractors and assigns are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal, State or local department or agency.
- 12.23 Federal guidelines require grant recipients to obtain sufficient assurance that bidders are not suspended or debarred from participating in federal programs when contracts exceed \$25,000. By signing the bid submittal form you verify that no party to this agreement is excluded from receiving Federal contracts, certain subcontracts, and certain Federal financial and nonfinancial assistance and benefits, pursuant to the provisions of 31 U.S.C. 6101, note, E.O. 12549, E.O. 12689, 48 CFR 9.404, and each agency's codification of the Common Rule for Non-procurement suspension and debarment. **[See <https://www.epls.gov/> for additional information.]**

ARTICLE 13 - BASIS OF BID; COMPARISON OF BIDS

13.01 Base Bid and Unit Price Schedule

- A. Bidders shall submit a base bid for the project, as listed in the Specifications, General Conditions, Drawings and any Addendums. Failure for the Contractor or Subcontractor(s) to properly perform takeoffs for the project does not relieve the bidder of their obligation to provide a complete, finished product, for the submitted base bid amount.
- B. Bidders shall submit a Base Bid as a lump sum.
- C. Bidders shall include the attached unit price schedule for each item of work listed. All quantity take offs shall be listed in the form as requested. All requested line item unit pricing shall have a associated cost listed on the form. Lumping of unit prices and or divisions will not be allowed. Failure for the bidder to provide this information along with the submitted bid documents will result in the bidder being disqualified and shall forfeit their Bid Bond.
- D. The total of all unit prices will be the sum of the products of the quantity of each item and the corresponding unit price. The total of all unit prices shall match the submitted bid price.
- E. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

13.02 The Bid price shall include such amounts as the Bidder deems proper for overhead and profit and any account of cash allowances, if any, named in the Contract Documents as provided in Paragraph 11.02 of the General Conditions.

13.03 Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents for liquidated damages for failing to achieve Substantial Completion for each day before or after the desired date appearing in Article 9.

13.04 The contents of the successful IFB/RFP are included as if fully reproduced herein. Therefore, the selected contractor must be prepared to be bound by his/her proposal as submitted.

ARTICLE 14 - SUBMITTAL OF BID

14.01 With each copy of the Bidding Documents, a Bidder shall furnish **one (1) original separate unbound copy of the Bid Documents, to include all forms listed in 2016-1714.** Two (2) additional bound copies are to be submitted with the original. The unbound copy of the Bid Form is to be completed and submitted with the Bid security.

14.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope plainly marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, Contractor's License Number, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "**CPST-12**". A mailed Bid shall be addressed to:

Colleton County
Kaye B. Syfrett, Procurement Manager
113 Mable T. Willis Boulevard
Walterboro, SC 29488

- 14.03 In the case of Inclement Weather/Closure of Colleton County offices; If the Colleton County office is closed for business at the time scheduled for bid opening, for whatever reason, sealed bids will be accepted and opened on the next scheduled business day, at the originally scheduled time.
- 14.04 The Bid shall be submitted on the Bid Form provided; no other form is acceptable.
- 14.05 The successful Bidder will be required to provide verified breakdown of costs of all services and work in a manner acceptable to the Owner.
- 14.06 All blanks on the Bid Form shall be filled in, either typed or printed in ink. The person signing the bid shall initial all corrections or erasures.
- 14.07 Where so indicated on the Bid Form, the Bid Sum shall be expressed in both words and figures; in case of a discrepancy between the two, the Sums expressed in words shall govern.
- 14.08 List unit price on quantity specified - extend and show total. In case of errors in extension, unit prices shall govern. Unit pricing shall include all applicable overhead, administrative, profit and other associated cost.
- 14.09 Bidder shall quote all Alternates in the Bidding Documents. If Bidder fails to bid on all Alternates, then his/her Bid may be considered irregular, non-responsive and may be disqualified.
- 14.10 Bids containing qualifications will be considered irregular, non-responsive and may be disqualified.
- 14.11 A Bid Form submitted by a partnership shall list the names of all partners and shall be signed in the partnership name by one of the members of the partnership who is authorized to sign for the partnership.
- 14.12 A Bid Form submitted by a corporation shall be executed in the legal name of the corporation, followed by the state of incorporation and signed by the President or Vice President or another authorized officer. The name of each person signing the Bid Form shall be typed or printed below the signature.
- 14.13 When the person signing for a corporation is other than the President or Vice President and when requested by the Owner, a resolution or other satisfactory evidence of the authority of the officer signing in behalf of the corporation shall be furnished for the Owner's records. The name of each person signing the Bid Form shall be typed or printed below the signature.

ARTICLE 15 - MODIFICATION OF BID

- 15.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the 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.

ARTICLE 16 - OPENING OF BIDS

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

ARTICLE 17 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 18 - EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, non-responsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also, reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.
- 18.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 18.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 18.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the General Conditions.
- 18.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.
- 18.06 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Project.
- 18.07 The Owner reserves the right not to Award the Project.
- 18.08 The Owner shall have the right to accept Alternates in any order or combination, and to determine the low bidder on the basis of the sum of the Base Bid and alternates accepted.

ARTICLE 19 - CONTRACT SECURITY AND INSURANCE

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

ARTICLE 20 - SIGNING OF AGREEMENT

- 20.01 When Owner gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within seven (7) days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within seven (7) days thereafter, Owner shall deliver one (1) fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 21 - RETAINAGE

- 21.01 Retainage from progress payments to the Contractor shall be **ten percent (10%)** of each payment for work completed and stored materials on site.

ARTICLE 22 – INSURANCE

22.01 The successful bidder shall procure, maintain, and provide proof of, insurance coverage for injuries to persons and/or property damage as may arise from or in conjunction with, the work performed on behalf of the Owner by the bidder, his agents, representatives, employees or subcontractors. Proof of coverage as contained herein shall be submitted fifteen (15) days prior to the commencement of work and such coverage shall be maintained by the bidder for the duration of the contract period; for occurrence policies.

a. General Liability

Coverage shall be as broad as: Comprehensive General Liability endorsed to include Broad Form, Commercial General Liability form including Products/Completed Operations.

Minimum Limits

General Liability:

\$2,000,000 General Aggregate

\$2,000,000 Products & Completed Operations Aggregate

\$1,000,000 Personal and Advertising Injury

\$1,000,000 Each Occurrence (Bodily Injury and Property Damage)

\$50,000 Fire Damage Limit

\$5,000 Medical Expense Limit

b. Automobile Liability

Coverage sufficient to cover all vehicles owned, used, or hired by the bidder, his agents, representatives, employees or subcontractors.

Minimum Limits

Automobile Liability:

\$1,000,000 Combined Single Limit

\$1,000,000 Each Occurrence

Limit \$5,000 Medical Expense

c. Workers' Compensation

Limits as required by the Workers' Compensation Act of SC. Employers

Liability, \$1,000,000

d. Owners' & Contractors' Protective Liability

Policy will be in name of Colleton County.

Minimum limits required are \$1,000,000

e. Excess or Umbrella Liability

General Aggregate \$2,000,000

Each Occurrence \$2,000,000

f. Contractual Liability

Bodily Injury:

Each Accident \$2,000,000

Annual Aggregate \$2,000,000

Property Damage:

Each Accident \$2,000,000

Annual Aggregate \$2,000,000

g. Coverage Provisions

1. All deductibles or self-insured retention shall appear on the certificate(s).
2. The County of Colleton and the Town of Smoaks, its officers/officials, employees, agents and volunteers shall be added as "additional insured" as their interest's may appear. This provision does not apply to Professional Liability or Workers' Compensation/Employers' Liability.

3. The bidder's insurance shall be primary over any applicable insurance or self-insurance maintained by Colleton County or the Town of Smoaks.
4. Shall provide 30 days' written notice to Colleton County & the Town of Smoaks before any cancellation, suspension, or void of coverage in whole or part, where such provision is reasonable.
5. All coverage for subcontractors of the bidder shall be subject to all of the requirements stated herein.
6. All deductibles or self-insured retention shall appear on the certificate(s) and shall be subject to approval by the County. At the option of Colleton County, either; the insurer shall reduce or eliminate such deductible or self-insured retention; or the bidder shall be required to procure a bond guaranteeing payment of losses and related claims expenses.
7. Failure to comply with any reporting provisions of the policy(s) shall not affect coverage provided Colleton County & the Town of Smoaks, its officers/officials, agents, employees and volunteers.
8. The insurer shall agree to waive all rights of subrogation against Colleton County & the Town of Smoaks, its officers/officials, agents, employees or volunteers for any act, omission or condition of premises which the parties may be held liable by reason of negligence.
9. The bidder shall furnish Colleton County certificates of insurance including endorsement affecting coverage. The certificates are to be signed by a person authorized by the insurance company(s) to bind coverage on its' behalf, if executed by a broker, notarized copy of authorization to bind, or certify coverage must be attached.
10. All insurance shall be placed with insurers maintaining an A.M. Best rating of no less than an A: VII. If A.M. Best rating is less than A: VII, approval must be received from Colleton County's Risk Officer.

22.02 Colleton County will require each contractor and service provider to maintain on file with the Colleton County Procurement Manager, a current Certificate of Insurance showing limits as required by the Workers' Compensation Act of SC:

Employers Liability, \$1,000,000.

The law also recognizes "statutory employees." These are employees who work for a subcontractor who may be working for a business or another contractor. Employers should inquire whether or not a subcontractor working for them has workers' compensation insurance, regardless of the number of employees employed by the subcontractor. If the subcontractor does not, the subcontractor's injured employees would be covered under the employer's workers' compensation insurance. If the subcontractor does not carry workers' compensation insurance, then the owner or the principal contractor would be liable just as if the subcontractor's employee was one of their employees. For answers to additional questions, visit the SC Worker's Compensation Commission website at: <http://www.wcc.state.sc.us/Frequently%20Asked%20Questions/FAQ.htm>.

22.03 Contractor shall provide and maintain, during the progress of the work and until execution of the Certificate of Contract Completion, a Builder's Risk Insurance policy to cover all work in the course of construction including false work, temporary buildings, scaffolding, and materials used in the construction process (including materials designated for the project but stored off site or in transit). The coverage shall equal the total completed value of the work and shall provide recovery at replacement cost.

- a) Such insurance shall be on a special cause of loss form, providing coverage on an open perils basis insuring against the direct physical loss of or damage to covered property, including but not limited to theft, vandalism, malicious mischief, earthquake, tornado, lightning, explosion, breakage of glass, collapse, water damage, and testing/startup.
- b) Coverage shall include coverage for "soft costs" (costs other than replacement of building materials) including, but not limited to, the reasonable extra costs of the architect/engineer and reasonable Contractor extension or acceleration costs. This coverage shall also include the reasonable extra costs of expediting temporary and permanent repairs to, or permanent replacement of, damaged property. This shall include overtime wages and the extra cost of express or other means for rapidly transporting materials and supplies necessary to the repair or replacement.
- c) The policy shall specifically permit and allow for partial occupancy by the owner prior To execution of the final Certification of Contract Completion, and coverage shall remain in effect until all punch list items are completed.
- d) The Builder's Risk deductible may not exceed \$5,000. The Contractor or subcontractor experiencing any loss claimed under the Builder's Risk policy shall be responsible for that loss up to the amount of the deductible.
- e) If Contractor is involved solely in the installation of material and equipment and not in New building construction, the Contractor shall provide an Installation Floater policy in lieu of a Builder's Risk policy. The policy must comply with the provisions of this paragraph.

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SECTION 2016-1703 BOND FORMS

BID BOND

Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.

BIDDER (Name and Address): _____

SURETY (Name and Address of Principal Place of Business): _____

OWNER (Name and Address): Town of Smoaks
176 New Street
Smoaks, SC 29481

Bid Number: **CPST-12**

Bid Due Date: **Thursday, November 30, 2017 at 2:00pm**

Project (Brief Description Including Location): **Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances. All existing water lines are to be abandoned and remain in place unless otherwise noted.**

Bond Number: _____

Date (Not later than Bid due date): _____

Penal sum _____ (Words) _____ (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each because this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER

SURETY

(Seal)
Bidder's Name and Corporate Seal

(Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title

Attest: _____
Signature and Title

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

PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR: SURETY:

OWNER: Town of Smoaks
176 New Street
Smoaks, SC 29481

CONTRACT:
Date: _____

Amount: _____

Description (Name and Location): **Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances. All existing water lines are to be abandoned and remain in place unless otherwise noted.**

BOND

Bond Number: _____
Date (Not earlier than Contract Date): _____
Amount: _____
Modifications to this Bond Form: _____

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL
Company: _____

Signature: _____ (Seal)
Name and Title:

SURETY

Surety's Name and Corporate Seal (Seal)

By: _____
Signature and Title
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest: _____
Signature and Title

CONTRACTOR AS PRINCIPAL
Company: _____

Signature: _____ (Seal)

Name and Title:

SURETY

Surety's Name and Corporate Seal (Seal)

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title:

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.
2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.
3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
 - 3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and
 - 3.3. Owner has agreed to pay the Balance of the Contract Price to:
 1. Surety in accordance with the terms of the Contract;
 2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.
4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:
 - 4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
 - 4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
 1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
 2. Deny liability in whole or in part and notify Owner citing reasons therefor.
5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.
6. After Owner, has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:
 - 6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;
 - 6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and
 - 6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.
7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.
8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.
9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.
11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted here from and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common-law bond.
12. Definitions.
 - 12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
 - 12.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
 - 12.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
 - 12.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR:

SURETY:

OWNER: Town of Smoaks
176 New Street
Smoaks, SC 29481

CONTRACT

Date: _____

Amount: _____

Description (Name and Location): **Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances. All existing water lines are to be abandoned and remain in place unless otherwise noted.**

BOND

Bond Number: _____

Date (Not earlier than Contract Date): _____

Amount: _____

Modifications to this Bond Form: _____

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____

Signature: _____ (Seal)

Name and Title: _____

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest: _____

Signature and Title

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____

Signature: _____ (Seal)

Name and Title: _____

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title
(Attach Power of Attorney)

Attest: _____

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.
2. With respect to Owner, this obligation shall be null and void if Contractor:
 - 2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.
4. Surety shall have no obligation to Claimants under this Bond until:
 - 4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2. Claimants who do not have a direct contract with Contractor:
 1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.
5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.
6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:
 - 6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2. Pay or arrange for payment of any undisputed amounts.
7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.
8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.
9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.
11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted here from and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common-law bond.
14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
15. DEFINITIONS
 - 15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
 - 15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
 - 15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

SECTION 2016-1704 CONTRACT

CONTRACT

THIS AGREEMENT is by and between Town of Smoaks, 176 New Street,
Smoaks South Carolina, 29481

(hereinafter called "Owner") and _____

doing business as an **individual/a partnership/a corporation/a joint venture** (strike out inapplicable terms), with its primary office in the City of _____, County of _____, State of _____.

Owner and Contractor, in consideration of the mutual covenants set forth herein, 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:

Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances. All existing water lines are to be abandoned and remain in place unless otherwise noted.

ARTICLE 2 - THE PROJECT

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

Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances. All existing water lines are to be abandoned and remain in place unless otherwise noted.

ARTICLE 3 - DESIGN

3.01 The Project has been designed by: Davis & Floyd, The Engineer of record, D. Mack Kelly Jr. will act as the Construction Coordinator as the Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to the Construction Coordinator in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT TIMES

4.01 Time of the Essence

A. All time limits for Milestones for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Dates for Substantial Completion and Final Payment

Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of

1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances with all the remaining water lines to be abandoned and remain in place, is to be completed within One Hundred Eighty (180) calendar days after the Notice to Proceed has been issued.

4.03 Liquidated Damages

- A. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500 for each day that expires after the time specified in Paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 - CONTRACT PRICE

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

- A. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work, times the estimated quantity of that item as indicated in the Bid Form attached hereto as part of these Contract Documents.
- B. Allowances to be used at the owner's discretion shall be included in the Base Bid Proposal. Allowances will be listed separately in the submitted schedule of values and unit price sheet. All unused allowances shall be credited back to the owner at the completion of the project in the form of a change order.

Allowances				
Unfounded issues	LS	1	\$ 5000.00	\$ 5000.00

- C. The sum of unit price work to be completed as noted in 5.01(A) and 5.01(B) is, _____ \$ _____

ARTICLE 6 - PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by the Construction Coordinator and Project Coordinator as provided in the General Conditions.

6.02 Progress Payments; Retainage

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th day of each month during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:

1. Prior to 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 as the Construction Coordinator and Project Coordinator may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:
 - a. **90%** of Work completed (with the balance being Retainage).
 - b. **90%** of cost of materials and equipment not incorporated in the Work (with the balance being Retainage).
2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to **90%** of the Work completed, less such amounts as the Construction Coordinator and Project Coordinator shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less **10%** of the Construction Coordinator 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 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by the Construction Coordinator and Project Coordinator as provided in said Paragraph 14.07.

ARTICLE 7 – CONTRACTOR’S REPRESENTATIONS

7.01 In order to induce Owner to enter into this Agreement Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- 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 contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in Paragraph 4.02 of the General Conditions and (2) reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in Paragraph 4.06 of the General Conditions.
- E. Contractor has obtained and carefully studied (or assumes responsibility for doing so) all examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.
- F. Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the

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

- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.
- I. Contractor has given the Owner written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by the Owner is acceptable to Contractor.
- J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 8 - CONTRACT DOCUMENTS

- 8.01 A. The Contract Documents shall consist of all sections in the following divisions;

DIVISION 000 -- BIDDING AND CONTRACT REQUIREMENTS
DIVISION 001 -- GENERAL CONDITIONS
DIVISION 01 --- GENERAL REQUIREMENTS
DIVISION 02 --- SITE CONSTRUCTION
DIVISION 03 --- CONCRETE
PLANS ----- Sealed 10-05-2017
TECHINCAL SPECIFICATIONS ----- Sealed 10-23-2017
EXHIBIT "A" --- SCDOT Encroachment Permit
EXHIBIT "B" --- SCDHEC Permit to Construct Water Line
EXHIBIT "C" --- SCDHEC Land Disturbing Permit
EXHIBIT "D" --- SCDHEC OCRM Coastal Zone Consistency Determination

All information contained within these Divisions, Documents & Exhibits and the requirements thereof are of the sole responsibility of the bidder.

- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 8.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 9 - MISCELLANEOUS

- 9.01 Terms

- A. Terms used in this Agreement will have the meanings stated in the 001, General Conditions.

- 9.02 Assignment of Contract

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

an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.03 Successors and Assigns

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

9.04 Severability

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

9.05 Waiver or Forbearance

- A. Any delay or failure of the Owner to insist upon strict performance of any obligation under this Agreement or to exercise any right or remedy provided under this Agreement shall not be a waiver of Colleton County's right to demand strict compliance, irrespective of the number or duration of any delay(s) or failure(s). No term or condition imposed on Contractor under this Agreement shall be waived and no breach by Contractor shall be excused unless that waiver or excuse of a breach has been put in writing and signed by both parties. No waiver in any instance of any right or remedy shall constitute waiver of any other right or remedy under this Agreement. No consent to or forbearance of any breach or substandard performance of any obligation under this Agreement shall constitute consent to modification or reduction of the other obligations or forbearance of any other breach.

9.06 Subject to the provisions below, the contract may be terminated by the Owner upon fifteen (15) days advance written notice to the other party; but if any work or service hereunder is in progress, but not completed as of the date of termination, then this contract may be extended upon written approval of the County until said work or services are completed and accepted.

a. Termination for Convenience

In the event that this contract is terminated or canceled upon request and for the convenience of the Owner, without the required fifteen (15) days advance written notice, then the Owner shall negotiate reasonable termination costs, if applicable.

b. Termination for Cause

Termination by the Owner for cause, default or negligence on the part of the contractor shall be excluded from the foregoing provision; termination costs, if any, shall not apply. The fifteen (15) days advance notice requirement is waived in the event of Termination for Cause.

c. Non-Appropriation:

It is understood and agreed by the parties that in the event funds are not appropriated in the current fiscal year or any subsequent fiscal years, this contract will become null and void and the Owner will only be required to pay for services completed to the satisfaction of the Owner.

IN WITNESS, WHEREOF, Owner and Contractor have signed this Agreement. One counterpart each has been delivered to Owner, Contractor, Construction Coordinator, project Coordinator and provided to the Contractor for his Bonding Agency. All portions of the Contract Documents have been signed or identified by Owner and Contractor or on their behalf.

This Agreement will be effective on this _____ day of _____, 20__ (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR:

Town of Smoaks

By: _____

Richard L. Linder

Title: _____

Mayor

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for giving notices:

Capital Project and Purchasing Department

Attn: John Stieglitz

113 Mable T. Willis Boulevard

Walterboro, South Carolina, 29488

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for giving notices:

License No.: _____

(Where applicable)

Agent for service or process:

Remainder of this page intentionally left blank

SECTION 2016-1705 – NOTICE OF AWARD

BID NUMBER – CPST-12

Date: _____

Project: <u>Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances.</u>	Owner: <u>Town of Smoaks, 176 New Street, Smoaks South Carolina</u>	Engineers Project No.: 013498-00
Contract <u>Town of Smoaks Water System Improvements, 176 New Street, Smoaks South Carolina</u>		

Bidder: _____

Bidder's Address: (send Certified Mail, Return Receipt Requested): _____

You are notified that your Bid dated _____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for the installation of the project located at 176 New Street, Smoaks, South Carolina.

The Contract Price of your Contract is _____ (\$_____).

____ copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within seven (7) days of the date you receive this Notice of Award.

1. Deliver to the Owner Two (2) fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), [and] General Conditions (Paragraph 5.01).
3. Other conditions precedent:
None

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

Within seven (7) days after you comply with the above conditions, Owner will return to you one (1) fully executed counterpart of the Contract Documents.

Colleton County
Project Coordinator

By: _____
Authorized Signature

Capital Projects & Purchasing Director
Title

Acceptance of Notice

Receipt of the above Notice of Award is hereby acknowledged by _____

On this _____ day of _____, 2017.

Contractor
By: _____
Authorized Signature

Title

SECTION 2016-1706 – NOTICE TO PROCEED

BID NUMBER – CPST-12

Date: _____

<p>Project: <u>Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances.</u></p>	<p>Owner: Town of Smoaks, 176 New Street Smoaks, South Carolina</p>	<p>Engineers Project No.: 013498-00</p>
---	--	---

<p>Contract <u>Town of Smoaks Water System Improvements, 176 New Street, Smoaks South Carolina</u></p>	
---	--

Contractor: _____

Contractor's Address: [send Certified Mail, Return Receipt Requested]

You are notified that the Contract Times under the above contract will commence to run on _____ or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the date of Substantial Completion is _____ and the date of readiness for final payment is _____.

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to the Construction Coordinator and other identified additional insureds) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

 Contractor

by: _____
 Authorized Signature

 Title

 Date

Colleton County

 Project Coordinator

Given by: _____
 John T. Stieglitz

 Capital Projects & Purchasing Director

 Title

 Date

Copy to Construction Coordinator

TOWN OF SMOAKS

SECTION 2016-1707 - APPLICATION FOR PAYMENT

Contractor's Application for Payment No. _____

To (Owner): Town of Smoaks 176 New Street, Smoaks, South Carolina	Application Period:	Application Date:
BID #: CPST-12	From (Contractor):	Via (Construction Coordinator) Davis & Floyd, D. Mack Kelly
Project: <u>Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances.</u>	Contract: On	
	Schedule: Yes ____ No ____	
	Original days: 180 Revised: ____ Remaining: ____	
Engineers Project No.: 13498.00	Contractor's Project No.:	

APPLICATION FOR PAYMENT

Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
TOTALS		
NET CHANGE BY CHANGE ORDERS		

1. ORIGINAL CONTRACT PRICE.....	\$	
2. Net change by Change Orders.....	\$	
3. CURRENT CONTRACT PRICE (Line 1 ± 2).....	\$	
4. TOTAL COMPLETED AND STORED TO DATE (Column F on Progress Estimate)	\$	
5. RETAINAGE:		
a. ____ % x \$ _____ Work Completed	\$	
b. ____ % x \$ _____ Stored Material.....	\$	
c. Total Retainage (Line 5a + Line 5b)	\$	
6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)	\$	
7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)	\$	
8. AMOUNT DUE THIS APPLICATION	\$	
9. BALANCE TO FINISH, PLUS RETAINAGE (Column G on Progress Estimate + Line 5 above)	\$	

CONTRACTOR'S CERTIFICATION

The undersigned Contractor certifies that: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Payment of: \$ _____
(Line 8 or other - attach explanation of another amount)

is recommended by: _____ (Date) _____
Davis & Floyd, D. Mack Kelly, Construction Coordinator

Payment of: \$ _____
(Line 8 or other - attach explanation of another amount)

is approved by: _____ (Date) _____
John T. Stieglitz III, Capital Projects & Purchasing Director

By: _____	Date: _____
-----------	-------------

Progress Estimate

Contractor's Application

For (contract): Town of Smoaks Water System Improvements for the Town of Smoaks, 176 New Street, Smoaks South Carolina							Application Number:		
Application Period:						Application Date:			
A		B	Work Completed		E	F		G	H
Item		Scheduled Value	C	D	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (F) / B	Balance to Finish (B - F)	Retainage 10%
Specification Section No.	Description		From Previous Application (C + D)	This Period					
Totals									

Stored Material Summary

Contractor's Application

For (contract): <u>Town of Smoaks Water System Improvements for the Town of Smoaks, 176 New Street, Smoaks South Carolina</u>							Application Number:		
Application Period:						Application Date:			
A	B	C	D		E		F		G
Invoice No.	Shop Drawing Transmittal No.	Materials Description	Stored Previously		Stored this Month		Incorporated in Work		Materials Remaining in Storage (\$) (D + E - F)
			Date (Month/Year)	Amount (\$)	Amount (\$)	Subtotal	Date (Month/Year)	Amount (\$)	
		Totals							

**SECTION 2016-1708 – CERTIFICATE OF SUBSTANTIAL COMPLETION
 BID NUMBER - CPST-12**

Project: <u>Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all</u>	Owner: <u>Town of Smoaks, 176 New Street, Smoaks South Carolina</u>	Engineers Project No.: 013498-00
Contract: <u>Town of Smoaks Water System Improvements, 176 New Street, Smoaks South Carolina</u>		Date of Contract:
Contractor:		

This [tentative] [definitive] Certificate of Substantial Completion applies to:

- All Work under the Contract Documents: The following specified portions:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor and Engineer and or Architect, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

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

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

- Amended Responsibilities Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

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

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

Executed by Construction Coordinator: Davis & Floyd D. Mack Kelly Jr. _____ Date

Accepted by Contractor: _____ Date

Accepted by Owner: Mayor, Richard L. Linder, Town of Smoaks _____ Date

SECTION 2016-1709 – CONTRACTOR'S AFFIDAVIT

BID NUMBER – CPST-12

The State of _____

Date: _____

The County of _____

The City/Town of _____

_____ of _____
(Officer's Name) (Officer's Title) (Contractor's Name)

being duly sworn, deposes and says that _____
(Contractor's Name)

has furnished all labor and material entering into the: **Town of Smoaks Water System Improvements, 176 New Street, Smoaks South Carolina**

called for in the Contract Documents dated _____ with _____

Town of Smoaks states further that this officer has full knowledge of all obligations for such labor and materials, which have entered into and become part of that certain project known and designated above, and that this officer further deposes and says that all debts and other obligations for such labor and materials have been fully and completely paid for in good and lawful money of the United States of America and that there are no suits for damages against them proceeding, prospective and/or that there are no suits for damages against them proceeding, prospective, or otherwise, in consequence of their operations on the above said project.

The said _____ will hold the Owners,
(Contractor's Name)

Town of Smoaks, Smoaks South Carolina blameless of any and all mechanic's liens that may be hereafter entered or filed for record, so as to constitute charge against said premises for work or labor done or materials furnished by them.

IN WITNESS HEREOF, this officer has heretofore put his hand and seal: _____ (Seal)
(Officer's Name)

I, _____, Notary Public in and for the above-named County and State do

hereby certify that _____ personally known to me to be the affiant in the
(Officer's Name)

foregoing Affidavit, personally appeared before me this day and, having been duly sworn, deposes and says that the facts set forth in the above Affidavit are true and correct.

WITNESS my hand and seal this _____ day of _____, 2017

_____ (Seal)

Notary Public for the State of _____ My Commission Expires: _____

SECTION 2016-1710 – FIELD ORDER

BID NUMBER – CPST-12

No. _____

Date of Issuance: _____

Effective Date: _____

<p>Project: <u>Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances.</u></p>	<p>Owner: Town of Smoaks, 176 New Street, Smoaks South Carolina</p>	<p>Engineers Project No.: 013498-00</p>
<p>Contract: <u>Town of Smoaks Water System Improvements, 176 New Street, Smoaks South Carolina</u></p>		<p>Date of Contract:</p>
<p>Contractor:</p>		

Attention:

You are hereby directed to promptly execute this Field Order issued in accordance with General Conditions Paragraph 9.05A., for minor changes in the Work without changes in Contract Price or Contract Times. If you consider that a change in Contract Price or Contract Times is required, please notify the Construction Coordinator immediately and before proceeding with this Work.

Reference: _____ (Specification Section(s)) _____ (Drawing(s) / Detail(s))

Description:

Attachments:

Construction Coordinator: **Davis & Floyd, D. Mack Kelly Jr.**

Receipt Acknowledged by (Contractor): _____

Date: _____

SECTION 2016-1711 – WORK CHANGE DIRECTIVE

BID NUMBER – CPST-12

No. _____

Date of Issuance: _____

Effective Date: _____

<p>Project: <u>Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances.</u></p>	<p>Owner: Town of Smoaks, 176 New Street, Smoaks South Carolina</p>	<p>Engineers Project No.: 013498-00</p>
<p>Contract: <u>Town of Smoaks Water System Improvements, 176 New Street, Smoaks South Carolina</u></p>		<p>Date of Contract:</p>
<p>Contractor:</p>		

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

Item No.	Description

Attachments (list documents supporting change):

Purpose for Work Change Directive:

- Authorization for Work described herein to proceed on the basis of Cost of the Work due to:
 - Non-agreement on pricing of proposed change.
 - Necessity to expedite Work described herein prior to agreeing to changes on Contract Price and Contract Time.

Estimated change in Contract Price and Contract Times:

Contract Price \$ _____ (increase/decrease) Contract Time _____ days (increase/decrease)

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

Recommended for Approval by Construction Coordinator: Davis & Floyd, D. Mack Kelly Jr.	Date
Authorized for Owner by:	Date
Accepted for Contractor by:	Date
Approved by Funding Agency (if applicable):	Date:

SECTION 2016-1712 – CHANGE ORDER

No. _____

BID NUMBER – CPST-12

Date of Issuance: _____

Effective Date: _____

<p>Project <u>Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances.</u></p>	<p>Owner: Town of Smoaks, 176 New Street, Smoaks South Carolina</p>	<p>Engineers Project No.: 013498-00</p>
--	--	---

<p>Contract: <u>Town of Smoaks Water System Improvements, 176 New Street, Smoaks South Carolina</u></p>	<p>Date of Contract: _____</p>
--	--------------------------------

<p>Contractor: _____</p>

The Contract Documents are modified as follows upon execution of this Change Order:

Description: _____

Attachments: (List documents supporting change): _____

CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIMES:
----------------------------------	----------------------------------

<p>Original Contract Price: _____</p> <p>\$ _____</p>	<p>Original Contract Times: <input type="checkbox"/> Working days <input type="checkbox"/> Calendar days</p> <p>Substantial completion (days or date): _____</p> <p>Ready for final payment (days or date): _____</p>
---	---

<p>[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:</p> <p>\$ _____</p>	<p>[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:</p> <p>Substantial completion (days): _____</p> <p>Ready for final payment (days): _____</p>
---	--

<p>Contract Price prior to this Change Order:</p> <p>\$ _____</p>	<p>Contract Times prior to this Change Order:</p> <p>Substantial completion (days or date): _____</p> <p>Ready for final payment (days or date): _____</p>
---	--

<p>[Increase] [Decrease] of this Change Order:</p> <p>\$ _____</p>	<p>[Increase] [Decrease] of this Change Order:</p> <p>Substantial completion (days or date): _____</p> <p>Ready for final payment (days or date): _____</p>
--	---

<p>Contract Price incorporating this Change Order:</p> <p>\$ _____</p>	<p>Contract Times with all approved Change Orders:</p> <p>Substantial completion (days or date): _____</p> <p>Ready for final payment (days or date): _____</p>
--	---

<p>RECOMMENDED:</p> <p>By: _____</p> <p>Contractor (Authorized Signature)</p> <p>Date: _____</p>	<p>APPROVED:</p> <p>By: _____</p> <p>Construction Coordinator: Davis and Floyd, D. Mack Kelly Jr.</p> <p>Date: _____</p>	<p>APPROVED:</p> <p>By: _____</p> <p>Owner, Mayor Richard L. Linder</p> <p>Date: _____</p>
--	--	--

Approved by Funding Agency (if applicable): _____ Date: _____



**BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS**

ACKNOWLEDGMENT OF PRINCIPAL

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION:

State of: (_____)

County of: (_____)

On this _____ day of _____, 20 _____, before me personally came and appeared _____ to me Known, who, being by me duly sworn, did depose and say to me that he resides at _____, that he/she is the _____ of _____ the corporation described in and which executed the foregoing instrument is an impression of such seal; that it was so affixed by the order of the directors of said corporation, and that he signed his name thereto by like order.

(Seal) _____
Notary Public

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



**BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS**

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP:

State of: (_____)

County of: (_____)

On this _____ day of _____ 20____ , before me

personally, came and appeared _____ to me known and known to me to described in and who executed the foregoing instrument and he acknowledged to me that he executed the same as and for the act and deed of said firm.

(Seal) _____
Notary Public

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL:

State of: (_____)

County of: (_____)

On this _____ day of _____ 20____ , before me

personally, came and appeared _____ to me known and known to me to be the person described in and who executed the forgoing instrument and acknowledged that he executed the same.

(Seal) _____
Notary Public

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



**BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS**

ADDENDA ACKNOWLEDGMENT

The vendor has examined and carefully studied the Request for Bids and the following Addenda, receipt of all of which is hereby acknowledged:

Addendum No. _____

Addendum No _____

Addendum No. _____

Addendum No. _____

Authorized Representative (Signature)

Date

Authorized Representative/Title (Print)

Vendors must acknowledge any issued addenda. Proposals which fail to acknowledge the vendor's receipt of any addendum will result in the rejection of the offer if the addendum contained information which substantively changes the Owner's requirements or pricing.

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



**BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS**

REFERENCES

The vendor must list a minimum of three (3) references along with pictures of the completed work.

1. Organization: _____
Address: _____
Contact: _____
Phone Number: _____ Email address: _____
Services provided: _____
Years of Service: _____

2. Organization: _____
Address: _____
Contact: _____
Phone Number: _____ Email address: _____
Services provided: _____
Years of Service: _____

3. Organization: _____
Address: _____
Contact: _____
Phone Number: _____ Email address: _____
Services provided: _____
Years of Service: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS
CERTIFICATION

Company Name

Authorized Signature (As registered with the IRS)

Address

E-Mail Address(print)

City, State, Zip

Fax Number

Telephone Number

Toll Free Number

Federal Tax ID Number

Sales Tax Number

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS
INDEMNIFICATION

The Bidder/Proposer will indemnify and hold harmless the Owner, Colleton County and their agents and employees from and against all claims, damages, losses and expenses, including attorney's fees, arising out of or resulting from the performance of the Work provided that any such claims, damages, loss, or expense is attributable to bodily injury, sickness, disease or death, injury to or destruction of tangible property, including the loss of use resulting there from, and is caused by any negligent or willful act or omission of the Bidder / Proposer, and anyone directly or indirectly employed by him/her or anyone for whose acts any of them may be liable.

In any and all claims against the Owner, Colleton County or any of their agents and / or employees by an employee of the Bidder / Proposer, and anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way to the amount or type of damages, compensation or benefits payable by or for the Bidder / Proposer under the Worker's Compensation Acts, Disability Benefit Acts, or other employee benefit acts.

The obligation of the Bidder / Proposer under this paragraph shall not extend to the liability of Colleton County or its agents and / or employees arising out of the reports, surveys, Change Orders, designs or Technical Specifications.

BIDDER/PROPOSER: _____

BY: _____

DATE: _____

TELEPHONE NO.: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS
MATERIAL/PRODUCT SUBSTITUTION REQUEST

Date: _____

We hereby submit for your review, the following PRODUCT SUBSTITUTION of the specified material for the above listed project.

Section: _____

Paragraph: _____

Specified Material: _____

Attached is complete technical data of the PRODUCT SUBSTITUTION. Included is complete information on changes to the Project Manual Documents required by the proposed PRODUCT SUBSTITUTION for its proper installation.

A request constitutes a representation that Trade Contractor:

1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
2. Will provide same warranty for Substitution as for specified product.
3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension which may subsequently become apparent.
5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities having jurisdiction or additional time expended by Architect/Engineer to review information.

It is understood that if the Architect or Engineer approves an approved substitution prior to receipt of bids in accordance with the project timeline, such approval will be set forth in an addendum. Bidders shall not rely upon approvals made in any other manner. If substitution requests are not addressed in the addendum, the substitution request shall be considered not approved. Architect's or Engineers decision of approval or disapproval of proposed substitution shall be final without dispute.

THE UNDERSIGNED Trade Contractor states that the function, appearance, and quality of the PRODUCT SUBSTITUTION are equivalent or superior to the specified item. In addition, I, as the Trade Contractor will assume all responsibility for any impact or delay the review and evaluation of the alternate product may cause. Your approval of the Substitute Product in no way will relieve me as the Trade Contractor of my responsibilities to conform with all requirements of the Contract Documents.

Submitted by: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS
LIST OF PRIME AND SUBCONTRACTORS

The undersigned states that the following is a full and complete list of proposed prime contractor and subcontractors on this Project and the class of work to be performed by each, and that such list will not be added to nor altered without the written consent of the Owner.

	Class of Work to be Performed	Subcontractor
1)	Site Work	_____
2)	Concrete	_____
3)	Asphalt	_____
4)	Horizontal Directional Drilling	_____
5)	Jack and Bore	_____
6)	Sediment and Erosion Control	_____
7)	Grassing	_____
8)	Plumbing	_____

Listed subcontractors must meet all qualifications including documented experience set forth in specifications, including those sections specifying single source contractor requirements.

Firm Name: _____ **Date:** _____

Signed: _____ **Title:** _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



**BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS**

CERTIFICATE OF FAMILIARITY

The undersigned, having fully familiarized him/her with the information contained within this entire solicitation and applicable amendments, submits the attached response, and other applicable information to the County, which I verify to be true and correct to the best of my knowledge. I further certify that this response is made without prior understanding, agreement, or connection with any corporation, Offeror or person submitting a response for the same materials, supplies or equipment, and is in all respects, fair and without collusion or fraud. I agree to abide by all conditions set forth in this solicitation and certify that I have signature authority to bind the company listed herein.

MAILING ADDRESS

_____ Mailing Address

_____ Printed Name

_____ City, State, Zip

_____ Title

_____ Date

_____ Phone Number/Fax Number

REMITTANCE ADDRESS

_____ Company Name

_____ Authorized Signature

_____ Address

_____ E-Mail Address

_____ City, State, Zip

_____ Phone Number

_____ Federal Tax ID Number

_____ SC Sales Tax Number

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



**BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS
MINORITY BUSINESS CERTIFICATE**

Are you a minority business?

▶ **Yes** ____ (Women-owner ____ / ____ Disadvantaged) If yes, please submit a copy of your certificate with your response.

▶ **No** ____

MAILING ADDRESS

Mailing Address

Printed Name

City, State, Zip

Title

Date

Phone Number/Fax Number

REMITTANCE ADDRESS

Company Name

Authorized Signature

Address

E-Mail Address

City, State, Zip

Phone Number

Federal Tax ID Number

SC Sales Tax Number

PLEASE COMPLETE AND SUBMIT AS A PART OF YOUR BID IF YOU ARE A MINORITY BUSINESS



BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS
DEBARMENT

The vendor is certifying that they are not currently debarred from responding to any request for qualifications by any agency or subdivision of the State of South Carolina or the United States Federal Government, nor are they an agent of any person or entity that is currently debarred from submitting qualifications on contracts by any agency or subdivision of the State of South Carolina or the United States Federal Government.

SAM's No. _____

Cage Code. _____

DUN's No. _____

Authorized Representative(Signature)

Date

Authorized Representative/Title (Print)

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID



BID: CPST-12
TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS
CONTRACTOR/SUBCONTRACTOR QUALIFICATIONS

PART 1 - GENERAL

1.01 The following information and completed forms may be requested by the Owner of the three (3) lowest bidders. The request will be made the day of the Bid Opening or within five (5) days following the Bid Opening. If requested, this data must be submitted to the Construction Coordinator or Owner within five (5) days of the request. Failure to provide the data in this section, upon request, will subject bidder to disqualification.

1.02 DESCRIPTION

- A. Information provided will be used by the Construction Coordinator or Owner to determine the competency and ability of the Contractor and/or Subcontractor to perform the scheduled work in a manner that is satisfactory to the Construction Coordinator or Owner. The Construction Coordinator or Owner's decision shall be final.
- B. Any Subcontractor being used by the General Contractor, whose portion of the project exceeds 5% of the total bid price amount, will be required to provide the same information as the General Contractor.
- C. The Contractor and Subcontractor shall include with this section a detailed financial statement indicating the Contractor's or Subcontractor's financial resources. The information on that statement shall be certified by a Certified Public Accountant and shall be submitted on the Associated General Contractors of America form "Standard Questionnaires and Financial Statement for Bidders".
- D. The Contractor and Subcontractor shall certify by attaching his signature to this Section as provided that all information contained herein is complete and all statements and answers are accurate and true. Providing misinformation, incomplete information, inaccurate information, or failure to certify the information, will subject bidder to disqualification.

1.03 QUALIFICATIONS

A. Complete the following for General Contractor and any Subcontractors (attach additional sheets as required):

- 1. Name: _____
- 2. Address: _____
- 3. City, State, Zip: _____
- 4. Principle: _____

B. Number of years the company has been in business: _____

C. List and describe at least five (5) projects that have been completed, that are similar in size and type, and that has been completed within the last ten (10) years:

- 1. _____

2. _____

3. _____

4. _____

5. _____

D. For the projects listed above provide the following:

1. Project Owner: _____
Contact Name and Title: _____
Telephone Number: _____
2. Project Owner: _____
Contact Name and Title: _____
Telephone Number: _____
3. Project Owner: _____
Contact Name and Title: _____
Telephone Number: _____
4. Project Owner: _____
Contact Name and Title: _____
Telephone Number: _____
5. Project Owner: _____
Contact Name and Title: _____
Telephone Number: _____

E. For each of the projects listed in Items C & D provide the following:

1. Original Bid Amount: _____
Final Construction Cost: _____
Contract Period: _____
Actual Contract Period: _____
Explanation: _____

2. Original Bid Amount: _____
 Final Construction Cost: _____
 Contract Period: _____
 Actual Contract Period: _____
 Explanation: _____

3. Original Bid Amount: _____
 Final Construction Cost: _____
 Contract Period: _____
 Actual Contract Period: _____
 Explanation: _____

4. Original Bid Amount: _____
 Final Construction Cost: _____
 Contract Period: _____
 Actual Contract Period: _____
 Explanation: _____

5. Original Bid Amount: _____
 Final Construction Cost: _____
 Contract Period: _____
 Actual Contract Period: _____
 Explanation: _____

F. Provide the following for any portion of the work that is being subcontracted (5% or more of the Bid Amount):

1. Name of Subcontractor: _____
 Address: _____
 Telephone Number: _____
 Work being Completed: _____

2. Name of Subcontractor: _____
 Address City/State/Zip: _____
 Telephone Number: _____
 Work being Completed: _____

3. Name of Subcontractor: _____
 Address City/State/Zip: _____
 Telephone Number: _____
 Work being Completed: _____

4. Name of Subcontractor: _____
Address City/State/Zip: _____
Telephone Number: _____
Work being Completed: _____

5. Name of Subcontractor: _____
Address City/State/Zip: _____
Telephone Number: _____
Work being Completed: _____

G. Provide a list of equipment that is owned by the Contractor and is available for this project.

H. Provide a list of equipment that will be purchased, leased or rented for this project.

I. Provide a list of the superintendent(s) or others that will be in charge of this project (Provide resumes and qualifications):

J. Provide the following for current projects being completed:

1. Project Name: _____
Owner: _____
Current Status: _____
Estimated Schedule of Completion: _____

2. Project Name: _____
Owner: _____
Current Status: _____
Estimated Schedule of Completion: _____

3. Project Name: _____
Owner: _____
Current Status: _____
Estimated Schedule of Completion: _____

4. Project Name: _____
 Owner: _____
 Current Status: _____
 Estimated Schedule of Completion: _____

5. Project Name: _____
 Owner: _____
 Current Status: _____
 Estimated Schedule of Completion: _____

K. Provide a list of projects that has been completed with the Owner over the past fifteen (15) years:

1. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____

2. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____

3. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____

4. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____

5. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____

L. Provide a list of projects that Bid with the Owner over the past fifteen (15) years:

1. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____

2. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____

3. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____
4. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____
5. Project Name: _____
 Contact Name and Title: _____
 Telephone Number: _____

M. Provide a list of projects completed with the Construction Coordinator over the past fifteen (15) years:

1. Project Name: _____
 Project Engineer: _____
 Original Bid Amount: _____
 Final Construction Cost: _____
 Contract Period: _____
 Actual Contract Period: _____
 Explanation: _____
2. Project Name: _____
 Project Engineer: _____
 Original Bid Amount: _____
 Final Construction Cost: _____
 Contract Period: _____
 Actual Contract Period: _____
 Explanation: _____
3. Project Name: _____
 Project Engineer: _____
 Original Bid Amount: _____
 Final Construction Cost: _____
 Contract Period: _____
 Actual Contract Period: _____
 Explanation: _____
4. Project Name: _____
 Project Engineer: _____
 Original Bid Amount: _____
 Final Construction Cost: _____

Contract Period: _____
Actual Contract Period: _____
Explanation: _____

5. Project Name: _____
Project Engineer: _____
Original Bid Amount: _____
Final Construction Cost: _____
Contract Period: _____
Actual Contract Period: _____
Explanation: _____

N. Provide a list of projects involved with litigation, arbitration and/or mediation over the past twenty (20) years:

1. Project Name: _____
Project Owner: _____
Project Engineer: _____
Date: _____
Explanation: _____

2. Project Name: _____
Project Owner: _____
Project Engineer: _____
Date: _____
Explanation: _____

3. Project Name: _____
Project Owner: _____
Project Engineer: _____
Date: _____
Explanation: _____

4. Project Name: _____
Project Owner: _____
Project Engineer: _____
Date: _____
Explanation: _____

5. Project Name: _____
Project Owner: _____
Project Engineer: _____

Date: _____

Explanation: _____

O. Attach a rate schedule associated with equipment that includes labor, overhead and profit.

_____ Rate Schedule Attached.

P. Additional information if Necessary.

1. _____

**1.04 I HEREBY CERTIFY that as a duly authorized representative of _____
_____ (bidder), the information provided is to the best of
my knowledge accurate and that failure to provide accurate information will result in disqualification of
my bid.**

Signature

Name (Please Print)

Title

Date

Notary Public for South Carolina

My Commission Expires: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED AS A PART OF YOUR BID

SECTION 2016-1714 – BID FORMS

ARTICLE 1 – BID RECIPIENT

- 1.01 This Bid is submitted to: Colleton County
Kaye B. Syfrett, Procurement Manager
113 Mable T. Willis Boulevard
Walterboro, SC 29488
- 1.02 Bids are to be delivered to: Colleton County
Kaye B. Syfrett, Procurement Manager
113 Mable T. Willis Boulevard
Walterboro, SC 29488
- 1.03 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGEMENTS

- 2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for ninety (90) days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.
- 2.02 For additional work authorized after signing the Contract, the amount of overhead and the amount of profit to be added to base costs of labor and materials shall be limited to; fifteen percent (15%) total for overhead and profit on work performed by the General Contractor's own forces. The amount of overhead and the amount of profit to be added to base costs of labor and materials shall be limited to; fifteen percent (15%) total for overhead and profit on work performed by the Subcontractors own forces. The general contractor is limited to a total of ten percent (10%) mark up of overhead and profit to a subcontractor quote. Request of additional charges for site supervision, utilities, rentals, general conditions or administrative services will not be approved. All request for additional work authorization shall have as an attachment, an itemized breakdown of the subcontractor and/or General Contractors work to be performed. Were applicable, the itemized list should reference the established unit price cost as submitted with the bid documents. The itemized list shall be shown on the subcontractors and/or General Contractors letter head and signed by the head officer or owner of the said company.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:
- A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged with the attached Addendum form, dated and signed.
 - B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
 - D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities), which have been identified in Paragraph 4.02 of General Conditions, and (2) reports and drawings of Hazardous Environmental Conditions that have been identified in Paragraph 4.06 of General Conditions.

- E. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site, which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific
- F. Means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.
- G. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
- H. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- I. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
- J. Bidder has given the Owner written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by the Owner is acceptable to Bidder.
- K. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.
- L. Bidder will submit written evidence of its authority to do business in the state where the Project is located not later than the date of its execution of the Agreement.

ARTICLE 4 - FURTHER REPRESENTATIONS

4.01 Bidder further represents 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 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.
- D. The bidder affirms that in making such Bid, neither he/she nor any company that they may represent, nor anyone in behalf of him/her or their company, directly or indirectly, has entered into any combination, collusion, undertaking or agreement with any other Bidder or Bidders to maintain the prices of said work, or any compact to prevent any other Bidder or Bidders from Bidding on said Contract or work and further affirms that such bid is made without regard or reference to any other Bidder or Proposer and without any agreement or understanding or combination either directly or indirectly with any other person or persons with reference to such Bidding in any way or manner whatsoever.
- E. Any attempt by the vendor to influence the opinion of the Owners Staff or The Town of Smoaks, Town Council by discussion, promotion, advertising, or misrepresentation of the submittal or purchasing process or any procedure to promote their offer will constitute a violation of the vendor submittal conditions and will cause the vendor's submittal to be declared null and void.

ARTICLE 5 - TIME OF COMPLETION

- 5.01 **Bidder agrees that the Work: Installation of new water mains that will allow for the flow and pressure necessary for fire protection and customer use. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all necessary appurtenances is to be completed within One Hundred Eighty (180) calendar days after the Notice to Proceed has been issued.**
- 5.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the form of a penalty, in the event of failure to complete the Work within the Contract dates in the amount of \$500 per day for each calendar day required to complete the work in the manner and within the dates as stated in Paragraph 5.01 above.

ARTICLE 6 - ATTACHMENTS TO THIS BID

- 6.01 The following documents are attached to and made a condition of this Bid:
 - A. Required Bid security in the form of five percent (5%) of the total bid amount.
 - B. Power of Attorney.
 - C. All forms listed in section 2016-1714

ARTICLE 7 - DEFINED TERMS

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

ARTICLE 8 - BID SUBMITTAL

8.01 This Bid submitted by:

An Individual

Name (typed or printed): _____

By: _____ (SEAL)

(Individual's signature)

Title: _____

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____ (SEAL)

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

Title: _____

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____

(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____ (CORPORATE SEAL)

Attest _____

Date of Authorization to do business in [South Carolina] is ____/____/____.

A Joint Venture

Name of Joint Venture: _____

First Joint Ventures Name: _____ (SEAL)

By: _____

(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Ventures Name: _____ (SEAL)

By: _____

(Signature of second joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venture must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____

Telephone No.: _____ Fax No.: _____

SUBMITTED on _____, 2017.

State Contractor License No. _____

***NOTE: If NOT BIDDING, Complete the attached "No Bid" Response Form and return to Colleton County.

Remainder of this page intentionally left blank

ARTICLE 9 – BASIS OF BID

BASE BID, UNIT PRICE & ALTERNATE BID UNIT PRICE

When changes in the work are ordered by the Owner, and such changes involve the following items, the following unit prices will be used to calculate adjustments to the Contract Sum. These unit prices shall be for the Work as specified, and shall include all labor, supervision, administrative support, materials, equipment, accessories, shipping, preparation, insurance, testing, overhead, profit, applicable taxes, permits, fees, warranties and all other associated costs for the finished and completed Work. All unit prices for utility conduits shall include sweeps, bends, couplings, caps, fittings, etc. which shall be included in the unit price per linear foot. Unit prices for undercut soils shall include material in place, surveyed and compacted pursuant to the Contract Documents.

Submit unit price amount for the following items. This list may not include all components necessary to provide a completed product, therefore any applicable items necessary to provide a completed product should be considered in your unit price response.

In case of errors in the extension of prices, unit price governs. In case of error in summations, corrected bid amounts will be totaled and will govern.

Contractor shall be responsible for all necessary electric and water hookups.

Contractor shall make quantity take-offs using drawings to determine quantities to his satisfaction, reporting promptly any discrepancies which may affect bidding.

The Owner shall have the right to accept Alternates in any order or combination, and to determine the low bidder on the basis of the sum of the Base Bid and alternates accepted.

This is not a comprehensive list of items included in the contract documents, and represents only a portion of the project total.

9.01 Bidder will complete the Work in accordance with the Contract Documents and the following unit prices are established for this project.

Remainder of this page intentionally left blank

Unit Prices – CPST-12 Town of Smoaks Water System Improvements, 176 New Street, Smoaks South Carolina					
Item No.	Description	Unit	Estimated Quantity	Unit Price	Bid Price
1	Mobilization	LS	1	\$	\$
2	Supervision	HR	1	\$	\$
3	Bonding	%	1	%	\$
4	Insurance	LS	1	\$	\$
5	Rental Equipment	LS	1	\$	\$
6	OHP	%	1	%	\$
7	6" PVC	LF	7,440	\$	\$
8	8" PVC	LF	10,345	\$	\$
9	10" PVC	LF	1,220	\$	\$
10	12" Jack & Bore 6" DIP	LF	275	\$	\$
11	16" Jack & Bore 8" DIP	LF	185	\$	\$
12	10" Gate Valve	Each	2	\$	\$
13	8" Gate Valve	Each	5	\$	\$
14	6" Gate Valve	Each	10	\$	\$
15	8" Directional Drilling	LF	200	\$	\$
16	Connect to Existing Water Line	Each	1	\$	\$
17	Fire Hydrant	Each	22 (incl. GV's)	\$	\$
18	6" Blow off Valve	Each	1	\$	\$
19	Long Water Service	Each	31	\$	\$
20	Short Water Service	Each	41	\$	\$
21	Remove and Replace Concrete Sidewalk	LF	3,690	\$	\$
22	Remove and Replace Asphalt Driveway	LF	1,250	\$	\$
23	Remove and Replace Concrete Driveway	LF	440	\$	\$
24	Remove and Replace Gravel Driveway	LF	25	\$	\$
25	Remove and Replace Asphalt Road	LF	500	\$	\$
26	3" Commercial Meter and Backflow Preventer	Each	1	\$	\$
27	Fire Service Backflow Preventer	Each	1	\$	\$
28	Owners Allowance	LS	1	\$5,000.00	\$5,000.00

Total	\$
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Base Bid

BASE BID PROPOSAL: Bidder/Proposer agrees to perform all of the work, described in the specifications, shown on the drawings and including allowances, for the sum of:

_____ \$ _____

TABLE OF CONTENTS

(2 OF 2)

DIVISION 001 – GENERAL CONDITIONS

PART 1 - DEFINITIONS AND TERMINOLOGY	4
1.01 Defined Terms	4
1.02 Terminology	7
PART 2 - PRELIMINARY MATTERS	9
2.01 Delivery of Bonds and Evidence of Insurance	9
2.02 Copies of Documents	9
2.03 Commencement of contract times; Notice to Proceed	9
2.04 Starting the Work	9
2.05 Before Starting Construction	9
2.06 Preconstruction Conference	9
2.07 Initial Acceptance of Schedules	10
PART 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE.....	10
3.01 Intent	10
3.02 Referenced Standards	10
3.03 Reporting and Resolving Discrepancies	11
3.04 Amending and Supplementing Contract Documents	11
3.05 Reuse of Documents	12
3.06 Electronic Data	12
PART 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS;	
HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS	12
4.01 Availability of Lands	12
4.02 Subsurface and Physical Conditions	13
4.03 Differing Subsurface of Physical Conditions	13
4.04 Underground Facilities	14
4.05 Reference Points	15
4.06 Hazardous Environmental Conditions at Site	15
PART 5- BONDS AND INSURANCE	15
5.01 Performance, Payment, and Other Bonds	15
5.02 Licensed Sureties and Insurers	16
5.03 Certificates of Insurance	16
5.04 Contractor’s Liability Insurance	16
5.05 Owner’s Liability Insurance	19
5.06 Property Insurance	19
5.07 Waiver of Rights	20
5.08 Receipt and Application of Insurance Proceeds	20
5.09 Acceptance of Bonds and Insurance, Options to Replace	21
5.10 Partial Utilization, Acknowledgement of Property Insurer	21
PART 6 - CONTRACTOR’S RESPONSIBILITIES	21
6.01 Supervision and Superintendence	21
6.02 Labor; Working Hours	22
6.03 Services, Materials, and Equipment	22
6.04 Progress Schedule	22
6.05 Substitutes and “Or-Equals”	22
6.06 Concerning Subcontractors, Suppliers, and Others	25
6.07 Patent Free and Royalties	26
6.08 Permits	26
6.09 Laws and Regulations	26

6.10	Taxes	27
6.11	Use of Site and Other Areas	27
6.12	Record Documents	27
6.13	Safety Protection	28
6.14	Safety Representative	28
6.15	Hazard Communication Program	28
6.16	Emergencies	29
6.17	Shop Drawings and Samples	29
6.18	Continuing the Work	31
6.19	Contractor's General Warranty and Guarantee	31
6.20	Indemnification	32
6.21	Delegation of Professional Design Services	32
PART 7 - OTHER WORK AT THE SITE.....		33
7.01	Related Work at Site	33
7.02	Coordination	33
7.03	Legal Relationships	34
7.04	Claims Between Contractors	34
PART 8 - OWNER'S RESPONSIBILITIES.....		34
8.01	Communications to Contractor	34
8.02	Replacement of Construction Coordinator	35
8.03	Furnish Data	35
8.04	Pay When Due	35
8.05	Lands and Easements; Reports and Test	35
8.06	Insurance	35
8.07	Change Orders	35
8.08	Inspections, Test, and Approvals	35
8.09	Limitations on Owner's Responsibilities	35
8.10	Undisclosed Hazardous Environmental Conditions	35
8.11	Evidence of Financial Arrangements	35
PART 9 - CONSTRUCTION COORDINATOR'S STATUS DURING CONSTRUCTION		36
9.01	Owner's Representative	36
9.02	Visits to Site	36
9.03	Project Representative	36
9.04	Authorized Variations in Work	36
9.05	Rejecting Defective Work	37
9.06	Shop Drawings, Change Orders and Payments	37
9.07	Determinations for Unit Price Work	37
9.08	Decisions on Requirements of Contract Documents and Acceptability of Work	37
9.09	Limitations on Construction Coordinators Authority and Responsibility	38
PART 10 - CHANGES IN THE WORK; CLAIMS.....		38
10.01	Authorized Changes in Work	38
10.02	Unauthorized Changes in Work	38
10.03	Execution of Change Orders	39
10.04	Notification of Surety	39
10.05	Claims	39
PART 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK.....		40
11.01	Cost of the Work	40
11.02	Allowances	42
11.03	Unit Price Work	43
PART 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES.....		43
12.01	Change of Contract Price	43
12.02	Change of Contract Times	44
12.03	Delays	44
PART 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF		

DEFECTIVE WORK	45
13.01 Notice of Defects	45
13.02 Access to Work	45
13.03 Test and Inspections	45
13.04 Uncovering Work	46
13.05 Owner May Stop the Work	46
13.06 Correction or Removal of Defective Work	47
13.07 Correction Period	47
13.08 Acceptance of Defective Work	48
13.09 Owner may Correct Defective Work	48
PART 14 - PAYMENTS TO CONTRACTOR AND COMPLETION	49
14.01 Schedule of Values	49
14.02 Progress Payment	49
14.03 Contractor's Warranty of Title	51
14.04 Substantial Completion	51
14.05 Partial Utilization	52
14.06 Final Inspection	53
14.07 Final Payment	53
14.08 Final Completion Delayed	54
14.09 Waiver of Claims	54
PART 15 - SUSPENSION OF WORK AND TERMINATION	54
15.01 Owner May Suspend Work	54
15.02 Owner May Terminate for Cause	55
15.03 Owner May Terminate for Convenience	56
15.04 Contractor May stop Work or Terminate	56
PART 16 - DISPUTE RESOLUTION.....	56
16.01 Methods and Procedures	56
PART 17 - MISCELLANEOUS	57
17.01 Giving Notice	57
17.02 Access to Work	57
17.03 Test and Inspections	57
17.04 Uncovering Work	57
17.05 Owner May Stop the Work	57
17.06 Computation of Times	57

END OF SECTION

DIVISION 001 – GENERAL CONDITIONS

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

PART 1 - DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified Parts and paragraphs, and the titles of other documents or forms.
1. Addenda – Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. Agreement – The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. Application for Payment – The form acceptable to the Construction Coordinator which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. Asbestos – Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. Bid – The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. Bidder – The individual or entity who submits a Bid directly to Owner.
 7. Bidding Documents – The Bidding Requirements, Contract Documents and the General Conditions (including all Addenda).
 8. Bidding Requirements – The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. Change Order – A document recommended by the Construction Coordinator which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. Claim – A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. Construction Coordinator - The person or firm in charge of the project. The person or firm will be selected by the owner and in some instances, the owner will self-perform, acting as the Construction Coordinator. The firm could be an Architectural Firm, Engineering Firm, or third party as so designated by the owner.

12. Contract – The entire and integrated written agreement between the Owner and Contractor including the General Conditions concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
13. Contract Documents – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement Are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
14. Contract Price – The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
15. Contract Times – The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
16. Contractor – The individual or entity with whom Owner has entered into the Agreement.
17. Cost of the Work – See Paragraph 11.01.A for definition.
18. Drawings – That part of the Contract Documents prepared or approved by the Construction Coordinator which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
19. Effective Date of the Agreement – The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
20. Field Order – A written order issued by the Construction Coordinator which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. General Requirements – Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.
22. Hazardous Environmental Condition – The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.
23. Hazardous Waste – The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. Laws and Regulations; Laws or Regulations – Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. Liens – Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. Milestone – A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. Notice of Award – The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. Notice to Proceed – A written notice given by Owner or Construction Coordinator to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. Owner – The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. PCBs – Polychlorinated biphenyls.
31. Petroleum – Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. Progress Schedule – A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. Project – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. Project Manual – The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. Radioactive Material – Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. Related Entity – An officer, director, partner, employee, agent, consultant, or subcontractor.
37. Resident Project Representative – The authorized representative of the Construction Coordinator who may be assigned to the Site or any part thereof.
38. Samples – Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
39. Schedule of Submittals – A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
40. Schedule of Values – A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
41. Shop Drawings – All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
42. Site – Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for

access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. Specifications – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
44. Subcontractor – An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
45. Substantial Completion – The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of the Construction Coordinator, 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.
46. Successful Bidder – The Bidder submitting a responsive Bid to whom Owner makes an award.
47. Supplementary Conditions – That part of the Contract Documents which amends or supplements these General Conditions.
48. Supplier – A manufacturer, fabricator, supplier, distributor, material man, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.
49. Underground Facilities – All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
50. Unit Price Work – Work to be paid for on the basis of unit prices.
51. Work – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
52. Work Change Directive – A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by the Construction Coordinator ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

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

B. Intent of Certain Terms or Adjectives

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

C. Day

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
2. The wording “business day” means any day Monday thru Friday.

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 the Construction Coordinator recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

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

PART 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. Evidence of Insurance: Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the General Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Part 5.

2.02 Copies of Documents

- A. Owner shall furnish to Contractor up to two (2) printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

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

2.04 Starting the Work

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

2.05 Before Starting Construction

- A. *Preliminary Schedules:* Within ten (10) days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to the Construction Coordinator for timely review:
 - 1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 Preconstruction Conference

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

2.07 Initial Acceptance of Schedules

- A. At least ten (10) days before submission of the first Application for Payment a conference attended by Contractor, the Construction Coordinator, and others as appropriate will be held to review for acceptability to the Construction Coordinator as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional ten (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 the Construction Coordinator.
 - 1. The Progress Schedule will be acceptable to the Construction Coordinator if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on the Construction Coordinator 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 the Construction Coordinator if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to the Construction Coordinator as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

PART 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by the Construction Coordinator as provided in Part 9.

3.02 Reference Standards

- A. Standards, Specifications, Codes, Laws, and Regulations
 - 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or the Construction Coordinator, or any of their subcontractors, consultants, agents, employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or the Construction Coordinator, or any of, their Related Entities, any duty or authority to supervise or direct the performance of

the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to the Construction Coordinator any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from the Construction Coordinator before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to the Construction Coordinator in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or the Construction Coordinator for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Amending and Supplementing Contract Documents

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;
 2. Construction Coordinator approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or

3. Construction Coordinator written interpretation or clarification.

3.05 Reuse of Documents

- A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:
 1. Have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Architects, Engineer or Architects and or Engineer's consultants, including electronic media editions; or
 2. Reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Architect or Engineer and specific written verification or adaption by Architect or Engineer.
- B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 Electronic Data

- A. Copies of data furnished by Owner or the Construction Coordinator to Contractor or Contractor to Owner or the Construction Coordinator that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

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

4.01 Availability of Lands

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

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 Subsurface and Physical Conditions

- A. Reports and Drawings: Reports of explorations and tests of subsurface conditions at or contiguous to the Site have not been conducted. The contractor should insure that capable soils are found for any and all compacted surfaces.

4.03 Differing Subsurface or Physical Conditions

- A. Notice: If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:
 - 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
 - 2. is of such a nature as to require a change in the Contract Documents; or
 - 3. differs materially from that shown or indicated in the Contract Documents; or
 - 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and the Construction Coordinator in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.
- B. Construction Coordinator Review: After receipt of written notice as required by Paragraph 4.03.A, Construction Coordinator will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of the Construction Coordinator findings and conclusions.
- C. Possible Price and Times Adjustments
 - 1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
 - 2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

- a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and the Construction Coordinator, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 Underground Facilities

- A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or the Construction Coordinator by the owners of such Underground Facilities, including Owner, or by others:
1. Owner and Construction Coordinator shall not be responsible for the accuracy or completeness of any such information or data; and
 2. The cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data,
 - b. locating all Underground Facilities shown or indicated in the Contract Documents,
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
- B. Not Shown or Indicated
1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and the Construction Coordinator. Construction Coordinator will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the

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

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

4.05 Reference Points

- A. Owner shall provide engineering surveys to establish reference points for construction which in the Construction Coordinator 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 the Construction Coordinator 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.

PART 5 - BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and the Construction Coordinator and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

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

5.03 Certificates of Insurance

- A. Contractor shall deliver to Owner, with copies to each additional insured, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of full compliance with these insurance requirements or failure of Owner to identify a deficiency from evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. By requiring such insurance and insurance limits herein, Owner does not represent that coverage and limits will necessarily be adequate to protect contractor and such coverage and limits shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 Contractor's Liability Insurance

- A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Construction Coordinator, and any other individuals or entities, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
 2. include at least the specific coverages and be written for not less than the limits of liability provided or required by Laws or Regulations, whichever is greater;
 3. include completed operations insurance;
 4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
 5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days' prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
 6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
 7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.
 - a. Contractor shall furnish Owner and each other additional insured to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.
- C. The limits of liability for the insurance required by Paragraph 5.04 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 5.04.A.1 and A.2 of the General Conditions:
 - a. State: South Carolina
Statutory Benefits
 - b. Applicable Federal (e.g., Longshoreman's): Statutory
 - c. Employer's Liability:

Each Accident	\$1,000,000
Disease-Policy Limit	\$500,000
Disease-Each Employee	\$500,000
 2. Contractor's General Liability under Paragraphs 5.04.A.3 through A.6 of the General

Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor and for this project only:

- a. General Aggregate \$2,000,000
 - b. Products - Completed Operations Aggregate \$2,000,000
 - c. Personal and Advertising Injury \$1,000,000
 - d. Each Occurrence (Bodily Injury and Property Damage) \$1,000,000
 - e. Fire Damage (any one (1) fire) \$50,000
 - f. Medical Expense (any one (1) person) \$5,000
 - g. Property Damage liability insurance will provide Explosion, Collapse, and Under-ground coverages where applicable.
 - h. Excess or Umbrella Liability
 - 1) General Aggregate \$2,000,000
 - 2) Each Occurrence \$2,000,000
3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:
- a. Include coverage for all owned, hired and non-owned automobiles.
 - b. Combined Single Limit of \$1,000,000
 - c. Each Occurrence \$1,000,000
 - d. Limits Medical Expense \$5,000
4. The Contractual Liability coverage required by Paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:
- a. Bodily Injury:
 - Each Accident \$2,000,000
 - Annual Aggregate \$2,000,000
 - b. Property Damage:
 - Each Accident \$2,000,000
 - Annual Aggregate \$2,000,000
5. Flood Insurance: The Contractor is required to carry flood insurance for projects located in designated flood hazard areas in which Federal Flood Insurance is available.

5.05 Owner's Liability Insurance

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

5.06 Property Insurance

- A. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof.
1. This insurance shall:
 - a. includes the interests of Owner, Contractor, Subcontractors, Construction Coordinator and any other individuals or entities identified herein, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
 - b. in addition to the individuals and entities specified, include as additional insureds, the following:
 - c. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and 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, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, 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;
 - d. includes expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 - e. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by the Construction Coordinator;
 - f. allows for partial utilization of the Work by Owner;
 - g. includes testing and startup; and
 - h. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor and the Construction Coordinator with 30 days' written notice to each other additional insured to whom a certificate of insurance has been issued.
 2. Contractor shall be responsible for any deductible or self-insured retention.
 3. The policies of insurance required to be purchased and maintained by Contractor in accordance with this Paragraph SC-5.06 A, shall comply with the requirements of paragraph 5.06.C of the General Conditions.
- B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Construction Coordinator, and any other individuals or entities identified, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or

renewal refused until at least thirty (30) days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.07 Waiver of Rights

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Construction Coordinator, and all other individuals or entities identified to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and the Construction Coordinator, and all other individuals or entities identified to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or the Construction Coordinator, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 Receipt and Application of Insurance Proceeds

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary

shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 Acceptance of Bonds and Insurance; Option to Replace

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Part 5 on the basis of nonconformance with the Contract Documents, the objecting party shall so notify the other party in writing within ten (10) days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 Partial Utilization, Acknowledgment of Property Insurer

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

PART 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 Supervision and Superintendence

- A. **When working is being performed on site the superintendent must be present, without exception.**
- B. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or the Construction Coordinator in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- C. 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 the Construction Coordinator except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

6.02 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed on business days during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to the Construction Coordinator.

6.03 Services, Materials, and Equipment

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, startup, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by the Construction Coordinator, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 Progress Schedule

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to the Construction Coordinator for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Part 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 Substitutes and "Or-Equals"

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

1. "Or-Equal" Items: If in the Construction Coordinators sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,
 - 3) it has a proven record of performance and availability of responsive service; and
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times, and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
2. Substitute Items
 - a. If in the Construction Coordinators sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
 - b. Contractor shall submit sufficient information as provided below to allow the Construction Coordinator to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by the Construction Coordinator from anyone other than Contractor.
 - c. The requirements for review by the Construction Coordinator will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as the Construction Coordinator may decide is appropriate under the circumstances.
 - d. Contractor shall make written application to the Construction Coordinator for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:

- a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;
 - b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services;
 - 4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,
- B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by the Construction Coordinator. Contractor shall submit sufficient information to allow the Construction Coordinator, in the Construction Coordinator's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by the Construction Coordinator will be similar to those provided in Paragraph 6.05.A 2.
- C. Construction Coordinator Evaluation: The Construction Coordinator will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. The Construction Coordinator may require Contractor to furnish additional data about the proposed substitute item. The Construction Coordinator will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until the Construction Coordinator's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or-equal." The Construction Coordinator will advise Contractor in writing of any negative determination.
- D. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. Cost Reimbursement: The Construction Coordinator will record the Architect or Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not the Construction Coordinator approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of the Architect or Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of the Architect or Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. The identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or the Construction Coordinator to reject defective Work.
- C. Contractor shall be fully responsible to Owner and the Construction Coordinator for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or the Construction Coordinator and any such Subcontractor, Supplier or other individual or entity, nor
 - 2. shall anything in the Contract Documents create any obligation on the part of Owner or the Construction Coordinator to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with the Construction Coordinator through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Construction Coordinator. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Construction Coordinator,, and all other individuals or entities to be listed as insureds or additional insureds (and the officers,

directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

- H. Owner or Construction Coordinator may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor or Supplier.

6.07 Patent Fees and Royalties

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. 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 Construction Coordinator its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Construction Coordinator, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 Permits

- A. Contractor shall obtain and pay for all construction permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement.

6.09 Laws and Regulations

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Construction Coordinator shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or

extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 Taxes

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 Use of Site and Other Areas

- A. Limitation on Use of Site and Other Areas
 - 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
 - 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
 - 3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Construction Coordinator, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by party against Owner, Construction Coordinator, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work, Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work, Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 Record Documents

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Construction Coordinator for reference.

Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Construction Coordinator for Owner in digital format as an as-built file.

6.13 Safety and Protection

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Construction Coordinator or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Construction Coordinator has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 Safety Representative

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

6.15 Hazard Communication Programs

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations. All MSDS Sheets shall be kept on site in good order as outlined in OSHA, laws, rules and regulations.

6.16 Emergencies

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Construction Coordinator 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.

6.17 Shop Drawings and Samples

- A. Contractor shall submit Shop Drawings and Samples to Construction Coordinator for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Construction Coordinator may require.
 - 1. Shop Drawings
 - a. Submit number of copies specified in the General Requirements.
 - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Construction Coordinator the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.
 - 2. Samples: Contractor shall also submit Samples to Construction Coordinator for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.
 - a. Submit number of Samples specified in the Specifications.
 - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Construction Coordinator may require to enable Construction Coordinator to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Construction Coordinator's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. Submittal Procedures
 - 1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:
 - a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

- c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and
 - d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
 3. With each submittal, Contractor shall give Construction Coordinator specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separated from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Construction Coordinator for review and approval of each such variation.

D. Construction Coordinator's Review

1. Construction Coordinator will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Construction Coordinator. Construction Coordinator'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. Construction Coordinator's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Construction Coordinator's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Construction Coordinator has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Construction Coordinator's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C 1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Construction Coordinator 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 the Construction Coordinator on previous submittals.
- F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three (3) submittals. Construction Coordinator will record the Architect or Engineer's time for reviewing subsequent submittals of Shop Drawings, samples or other items requiring approval and Contractor shall reimburse Owner for the Architect or Engineer's charges for such time.

- G. In the event that Contractor requests a substitution for a previously approved item, Contractor shall reimburse Owner for the Architect or Engineer's charges for such time unless the need for such substitution is beyond the control of Contractor.

6.18 Continuing the Work

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Construction Coordinator and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 - 1. observations by Construction Coordinator;
 - 2. recommendation by Construction Coordinator or payment by Owner of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by Construction Coordinator or any payment related thereto by Owner;
 - 4. use or occupancy of the Work or any part thereof by Owner;
 - 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Construction Coordinator;
 - 6. any inspection, test, or approval by others; or
 - 7. any correction of defective Work by Owner.
- D. The Contractor's General Warranty and Guarantee shall be for a period of one (1) year after work has been accepted and final payment made to the Contractor. In the case of Water and Wastewater lines, the warranty period will start after acceptance of these lines into the utility provider's system for ownership, operation, and maintenance. The Contractor accepts the transference of all warranties and guarantees to the utility provider owning and operating the new lines.

6.20 Indemnification

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Construction Coordinator, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .
- B. In any and all claims against Owner or Construction Coordinator or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Construction Coordinator and Construction Coordinator's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 Delegation of Professional Design Services

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Construction Coordinator will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Construction Coordinator.
- C. Owner and Construction Coordinator 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 Construction Coordinator have specified to Contractor all performance and design criteria that such services must satisfy.

- D. Pursuant to this Paragraph 6.21, Construction Coordinator'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. Construction Coordinator's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D 1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

PART 7 - OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Construction Coordinator and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Part 7, Contractor shall inspect such other work and promptly report to Construction Coordinator 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.

7.02 Coordination

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.
- B. Owner shall have sole authority and responsibility for such coordination.

7.03 Legal Relationships

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

7.04 Claims Between Contractors

- A. Should Contractor cause damage to the work or property of any other contractor at the Site, or should any claim arising out of Contractor's performance of the Work at the Site be made by any other contractor against Contractor, Owner, Construction Coordinator, or Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law.
- B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, the Construction Coordinator and the officers, directors, partners, employees, agents and other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any other contractor against Owner, Construction Coordinator, Construction Coordinator's Consultants to the extent said claim is based on or arises out of Contractor's performance of the Work. Should another contractor cause damage to the Work or property of Contractor or should the performance of work by any other contractor at the Site give rise to any other Claim, Contractor shall not institute any action, legal or equitable, against Owner, or the Construction Coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, or the Construction Coordinator on account of any such damage or Claim.
- C. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of another contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a Claim for an extension of times in accordance with Part 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, and construction coordinator for any delay, disruption, interference, or hindrance caused by any other contractor. This paragraph does not prevent recovery from Owner, or construction coordinator for activities that are their respective responsibilities.

PART 8 - OWNER'S RESPONSIBILITIES

8.01 Communications to Contractor

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

8.02 Replacement of Construction Coordinator

- A. In case of termination of the employment of the Construction Coordinator, Owner shall appoint a Construction Coordinator to whose status under the Contract Documents shall be that of the former Construction Coordinator.

8.03 Furnish Data

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

8.04 Pay When Due

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 Lands and Easements; Reports and Tests

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by the Architect or Engineer in preparing the Contract Documents.

8.06 Insurance

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Part 5.

8.07 Change Orders

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 Inspections, Tests, and Approvals

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 Limitations on Owner's Responsibilities

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 Undisclosed Hazardous Environmental Condition

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 Evidence of Financial Arrangements

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth.

PART 9 - Construction Coordinator's STATUS DURING CONSTRUCTION

9.01 Owner's Representative

- A. Construction Coordinator will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Construction Coordinator as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Construction Coordinator.

9.02 Visits to Site

- A. Construction Coordinator 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, Construction Coordinator, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Construction Coordinator will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Construction Coordinator'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, Construction Coordinator will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Construction Coordinator's visits and observations are subject to all the limitations on Construction Coordinator's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Construction Coordinator's visits or observations of Contractor's Work Construction Coordinator will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 Project Representative

- A. If Owner and Construction Coordinator agree; Construction Coordinator will furnish a Resident Project Representative to assist Construction Coordinator in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Construction Coordinator's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in Paragraph 9.09.

9.04 Authorized Variations in Work

- A. Construction Coordinator may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 Rejecting Defective Work

- A. Construction Coordinator will have authority to reject Work, which Construction Coordinator believes to be defective, or that Construction Coordinator believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Construction Coordinator will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 Shop Drawings, Change Orders and Payments

- A. In connection with Construction Coordinator's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Construction Coordinator's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Construction Coordinator's authority as to Change Orders, see Parts 10, 11, and 12.
- D. In connection with Construction Coordinator's authority as to Applications for Payment, see Part 14.

9.07 Determinations for Unit Price Work

- A. Construction Coordinator will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Construction Coordinator will review with Contractor the Construction Coordinator's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Construction Coordinator's written decision thereon will be final and binding (except as modified by Construction Coordinator to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

- A. Construction Coordinator will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to the Construction Coordinator in writing within 30 days of the event giving rise to the question
- B. Construction Coordinator will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Construction Coordinator's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Construction Coordinator's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Construction Coordinator will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 Limitations on Construction Coordinator's Authority and Responsibilities

- A. Neither Construction Coordinator's authority or responsibility under this Part 9 or under any other provision of the Contract Documents nor any decision made by Construction Coordinator 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 Construction Coordinator shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Construction Coordinator 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. Construction Coordinator 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. Construction Coordinator will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Construction Coordinator 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. Construction Coordinator's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

PART 10 - CHANGES IN THE WORK; CLAIMS

10.01 Authorized Changes in the Work

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 Unauthorized Changes in the Work

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Construction Coordinator covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Construction Coordinator pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 Notification to Surety

- A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 Claims

- A. Construction Coordinator's Decision Required: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Construction Coordinator for decision. A decision by Construction Coordinator shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. Notice: Written notice stating the general nature of each Claim shall be delivered by the claimant to Construction Coordinator and the other party to the Contract promptly (but in no event, later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Construction Coordinator and the other party to the Contract within 60 days after the start of such event (unless Construction Coordinator allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Construction Coordinator and the claimant within 30 days after receipt of the claimant's last submittal (unless Construction Coordinator allows additional time).
- C. Construction Coordinator's Action: Construction Coordinator will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,
 2. approve the Claim, or
 3. notify the parties that the Construction Coordinator is unable to resolve the Claim if, in the Construction Coordinator's sole discretion, it would be inappropriate for the Construction Coordinator to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Construction Coordinator does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Non-withstanding anything herein final approval rests with the Owner.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

PART 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

- A. Costs Included: The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of 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 Construction Coordinator, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis

of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, Architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
 5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Construction Coordinator, 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.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.
- B. Costs Excluded: The term Cost of the Work shall not include any of the following items:
1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers,

architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.
- C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Construction Coordinator.
- B. Cash Allowances
1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. Contingency Allowance

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

11.03 Unit Price Work

- A. 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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by the Owner subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 2. there is no corresponding adjustment with respect any other item of Work; and
 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

PART 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Construction Coordinator and the other party to the Contract in accordance with the provisions of Paragraph 10.05. Final approval of all change orders rests with the owner.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on

the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

- C. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 Change of Contract Times

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Construction Coordinator and the other party to the Contract in accordance with the provisions of Paragraph 10.05. Final approval of all change orders rests with the owner.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Part 12.

12.03 Delays

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Part 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Construction Coordinator, or other contractors or utility owners performing other work for Owner as contemplated by Part 7, or anyone for whom Owner is responsible,

delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Construction Coordinator and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, Architects, Attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.
- F. All claims for delays shall be submitted at the submission of any application for payment or within fifteen (15) days of the event causing the delay. Any claims made after the allowable time shall be denied.

PART 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

- A. Prompt notice of all defective Work of which Owner or Construction Coordinator has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Part 13.

13.02 Access to Work

- A. Owner, Construction Coordinator, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

- A. Contractor shall give Construction Coordinator timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Contractor shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents.

- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Construction Coordinator the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Construction Coordinator's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by third party organizations acceptable to Owner and Construction Coordinator.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Construction Coordinator, it must, if requested by Construction Coordinator, be uncovered for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Construction Coordinator timely notice of Contractor's intention to cover the same and Construction Coordinator has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

- A. If any Work is covered contrary to the written request of Construction Coordinator, it must, if requested by Construction Coordinator, be uncovered for Construction Coordinator's observation and replaced at Contractor's expense.
- B. If Construction Coordinator considers it necessary or advisable that covered Work be observed by Construction Coordinator or inspected or tested by others, Contractor, at Construction Coordinator's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Construction Coordinator may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of Construction Coordinator, Engineers, Architects, Attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 Owner May Stop the Work

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of

Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

- A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Construction Coordinator, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of construction coordinator, engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 Correction Period

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of construction coordinator, engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 Acceptance of Defective Work

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Construction Coordinator's recommendation of final payment, Construction Coordinator) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of construction coordinator, engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Construction Coordinator as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Construction Coordinator's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Construction Coordinator to correct defective Work or to remove and replace rejected Work as required by Construction Coordinator in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven (7) days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Construction Coordinator and Construction Coordinator's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of construction coordinator, engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

PART 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to the Construction Coordinator. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payments

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to the Construction Coordinator 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. The date of the pay application must be the last day of the month. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, 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.

B. Review of Applications

1. Construction Coordinator will, within fifteen (15) days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Construction Coordinator's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Construction Coordinator's recommendation of any payment requested in an Application for Payment will constitute a representation by Construction Coordinator to Owner, based on Construction Coordinator's observations on the Site of the executed Work as an experienced and qualified design professional and on Construction Coordinator's review of the Application for Payment and the accompanying data and schedules, that to the best of Construction Coordinator's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;

- b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Construction Coordinator's responsibility to observe the Work.
 3. By recommending any such payment Construction Coordinator 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 Construction Coordinator in the Contract Documents; or
 - b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
 4. Neither Construction Coordinator's review of Contractor's Work for the purposes of recommending payments nor Construction Coordinator's recommendation of any payment, including final payment, will impose responsibility on Construction Coordinator:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Construction Coordinator may refuse to recommend the whole or any part of any payment if, in Construction Coordinator's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B 2. Construction Coordinator may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Construction Coordinator's opinion to protect Owner from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

- d. Construction Coordinator has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

1. Fifteen (15) days after presentation of the Application for Payment to Owner with Construction Coordinator's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Construction Coordinator because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended;
or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Construction Coordinator, Owner will give Contractor immediate written notice (with a copy to Construction Coordinator) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.
3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C 1.

14.03 Contractor's Warranty of Title

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Construction Coordinator in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Construction Coordinator issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Construction Coordinator shall make an inspection of the Work to determine the status of completion. If Construction Coordinator does not consider the Work substantially complete, Construction Coordinator will notify Contractor in writing giving the reasons therefor.

- C. If Construction Coordinator considers the Work substantially complete, the Construction Coordinator will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven (7) days after receipt of the tentative certificate during which to make written objection to Construction Coordinator as to any provisions of the certificate or attached list. If, after considering such objections, Construction Coordinator concludes that the Work is not substantially complete, Construction Coordinator will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, the Construction Coordinator considers the Work substantially complete, the Construction Coordinator will within be said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Construction Coordinator believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Construction Coordinator will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so informs the Construction Coordinator in writing prior to Construction Coordinator's issuing the definitive certificate of Substantial Completion, Construction Coordinator's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 Partial Utilization

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Construction Coordinator, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.
 - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work Which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Construction Coordinator that such part of the Work is substantially complete and request Construction Coordinator to issue a certificate of Substantial Completion for that part of the Work.
 - 2. Contractor at any time may notify Owner and Construction Coordinator in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Construction Coordinator to issue a certificate of Substantial Completion for that part of the Work. Said work should have, at a minimum, a temporary Certificate of Occupancy from the authority having jurisdiction.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Construction Coordinator shall make an inspection of that part of the Work to determine its status of completion. If Construction Coordinator does not consider that part of the Work to be substantially complete, Construction Coordinator will notify Owner and Contractor in writing giving the reasons therefor. If Construction Coordinator considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with

respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 Final Inspection

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Construction Coordinator will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 Final Payment

A. Application for Payment

1. After Contractor has, in the opinion of Construction Coordinator, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance, training and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents to include digital as-builds of the project (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Construction Coordinator's Review of Application and Acceptance

1. If, on the basis of Construction Coordinator's observation of the Work during construction and final inspection, and Construction Coordinator's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Construction Coordinator is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Construction Coordinator will, within ten (10) days after receipt of the final Application for Payment,

indicate in writing Construction Coordinator's recommendation of payment and present the Application for Payment to Owner for payment. At the same time, Construction Coordinator will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Construction Coordinator will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty (30) days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Construction Coordinator, less any sum Owner is entitled to set off against Construction Coordinator's recommendation, including but not limited to liquidated damages, will become due and, will be paid by Owner to Contractor.

14.08 Final Completion Delayed

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Construction Coordinator so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Construction Coordinator, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to the Construction Coordinator with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

PART 15 - SUSPENSION OF WORK AND TERMINATION

15.01 Owner May Suspend Work

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Construction Coordinator which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 Owner May Terminate for Cause

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's disregard of the authority of the Construction Coordinator; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven (7) days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of construction coordinator, engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by the Construction Coordinator as to their reasonableness and, when so approved by the Construction Coordinator, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven (7) days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 Owner May Terminate for Convenience

- A. Upon fifteen (15) days written notice to Contractor and Construction Coordinator, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 - 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Construction Coordinator fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven (7) days written notice to Owner and Construction Coordinator, and provided Owner or Construction Coordinator do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Construction Coordinator 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 (7) days after written notice to Owner and Construction Coordinator, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

PART 16 - DISPUTE RESOLUTION

16.01 Methods and Procedures

- A. Either Owner or Contractor may request mediation of any Claim submitted to Construction Coordinator for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Mediation Rules of the South Carolina Supreme Court in effect as of the Effective Date of the Agreement. The request for mediation shall stay the effect of paragraph 10.05.E.

- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of the request.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. agrees with the other party to submit the Claim to another dispute resolution process, or
 - 2. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

PART 17 - MISCELLANEOUS

17.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 Cumulative Remedies

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 Survival of Obligations

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

17.05 Controlling Law

- A. This Contract is to be governed by the law of the State of South Carolina.

17.06 Headings

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

DAVIS & FLOYD

SINCE 1954

“Technical Specifications” for

Town of Smoaks Water Line Improvements

OWNER:

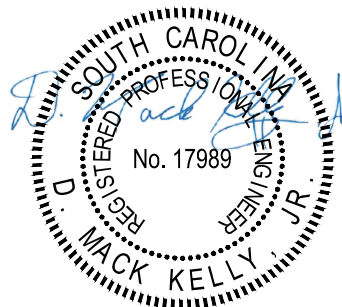
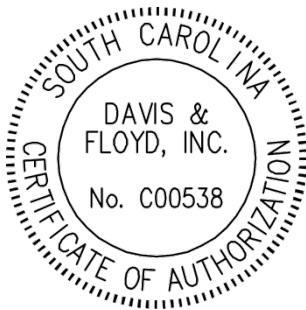
Town of Smoaks
176 New Street
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PREPARED BY:

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August 2017

JOB NO. 013498.00



October 23, 2017

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TABLE OF CONTENTS

Division 1 – General Requirements

01230	General Conditions	6
01232	Supplemental Conditions	6
01250	Measurement and Payment	6

Division 2 – Site Construction

02110	Site Clearing	4
02122	Tree Protection and Trimming	6
02203	Erosion Control	4
02205	Soil Materials	4
02207	Aggregate Materials	4
02222	Excavating	4
02223	Filling, Backfilling and Finish Grading	6
02225	Trenching	8
02261	Rip Rap	2
02300	Boring and Tunneling	4
02310	Horizontal Directional Drilling (HDD)	14
02485	Valves, Hydrants and Appurtenances	10
02510	Asphalt Concrete Paving	4
02515	Cutting and Replacing Pavement	4
02556	Water Meter, Service Connections and Service Pipe	10
02667	Water Lines	10
02672	Pressure and Leakage Testing	2
02675	Disinfection	6
02936	Seeding	6

Division 3 - Concrete

03300	Cast-in-Place Concrete	16
Appendix A	SCDOT Encroachment Permit	6
Appendix B	SCDHEC Permit to Construct Water Line	1
Appendix C	SCDHEC Land Disturbing Permit	9
Appendix D	SCDHEC OCRM Coastal Zone Consistency Determination	2

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SECTION 01230

GENERAL CONDITIONS

1. GENERAL

1.1. **CONTRACT DOCUMENTS:** The Contract Documents consist of the Advertisement for Bids, Information for Bidders, Bid, Bid Bond, Agreement, Payment Bond, Performance Bond, Conditions of the Contract (General, Supplemental and Other Conditions), Drawings, Specifications, Addenda, Notice of Award, Notice to Proceed, and Change Orders.

1.2. CORRELATION AND INTENT OF DOCUMENTS:

1.2.1. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all.

1.2.2. The intent of the Drawings and Specifications is that the Contractor shall furnish all labor, supplies and materials, tools, machinery, equipment, transportation, supervision, temporary construction of any nature, and all other services, facilities and means necessary for the proper execution and completion of the Work in accordance with the Contract Documents and all incidental work necessary to complete the Project in an acceptable manner, and fully complete the Work or improvement ready for use, occupancy and operation by the Owner.

1.2.3. Any mention in the Specifications or indication on the Drawings of articles, materials, methods or operations shall require the Contractor to furnish such item or service as if it was fully specified unless it is noted or specified. All workmanship, methods of assembly, and erection shall be first class in every respect.

1.3. CONFLICT OR INCONSISTENCY:

1.3.1. If there is any conflict or inconsistency between the provisions of the Supplemental Conditions and the provisions of the other Contract Documents, the provisions of the Supplemental Conditions shall prevail. If there is any conflict or inconsistency between the provisions of the General Conditions and the provisions of any of the Contract Documents other than the Supplemental Conditions, the provisions of the General Conditions shall prevail.

1.3.2. In case of conflict between the Drawings and Specifications, the Specifications shall govern. Figure dimensions on Drawings shall govern over scale dimensions, and detail Drawings shall govern over general Drawings.

1.3.3. In case of difference between small-scale and large-scale Drawings, the large-scale Drawings shall govern. Schedules on any Contract Drawing shall take precedence over conflicting information on that or any other Contract Drawing. On any of the Drawings where a portion of the Work is detailed or drawn out and the remainder is shown in outline, the parts detailed or drawn out shall apply also to all other like portions of the Work. Where the word

“similar” occurs on the Drawings, it shall have a general meaning and not be interpreted as being identical, and all details shall be worked out in relation to their location and connection with other parts of the Work.

1.3.4. Any discrepancies found between the Drawings and Specifications and site conditions or any inconsistencies or ambiguities in the Drawings or Specifications shall be immediately reported to the Engineer, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor’s risk.

1.3.5. Should a conflict be discovered within the Contract Documents, the Contractor shall be deemed to have estimated the higher quality way of doing the Work unless he shall have asked for and obtained a decision in writing from the Engineer before entering into this Contract.

1.4. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS: The Contractor may be furnished additional instructions and detail drawings, by the Engineer, as necessary to carry out the Work required by the Contract Documents. The additional Drawings and instructions thus supplied will become a part of the Contract Documents. The Contractor shall carry out the Work in accordance with the additional detail Drawings and instructions.

1.5. SPECIFICATION HEADINGS:

1.5.1. For convenience of reference, these Specifications are divided into various Divisions, Sections, Subsections and Paragraphs. The titles of these headings shall not be taken as a correct or complete segregation of the various types of material and labor nor as an attempt to outline jurisdictional procedures. The headings shall not be deemed to limit or restrict the content, meaning or effect of such section, subsection, paragraph, provision or part.

1.5.2. The organization of the Specifications into the various headings, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. Each subcontract shall be dependent upon its own definite confines, regardless of Divisions of these Specifications. No responsibility, either direct or implied, is assumed by the Owner for omissions or duplications by the Contractor or by any of his subcontractors due to real or alleged errors in arrangement of matter in Contract Documents.

1.6. DRAWINGS AND SPECIFICATIONS FOR CONSTRUCTION PURPOSES: The Contractor will be furnished 6 complete sets of Drawings and Specifications to be used during the course of construction. If more than 6 sets are needed, the Contractor will be required to pay the actual cost of printing and handling.

1.7. DEFINITIONS: Wherever the words hereinafter defined or pronouns used in their stead occur in the Contract Documents, they shall have the following meanings:

1.7.1. ADDENDA: Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the Contract Documents, Drawings and Specifications by

additions, deletions, clarifications or corrections. Such addenda or addendums will take precedent over the position of the general drawings and specifications concerned and will be considered as part of the Contract Documents.

1.7.2. AGREEMENT: The Agreement represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations or agreements, either written or oral, including the bidding documents. The Agreement may be amended or modified by a Change Order

1.7.3. BID: The written offer or proposal of the Bidder, submitted on the prescribed form, properly signed and guaranteed, to perform the Work at the prices quoted by the Bidder.

1.7.4. BID BOND: The security furnished by the Bidder with his proposal for the Project is guaranty he will enter into a contract for the Work if his proposal is accepted.

1.7.5. BIDDER: Any individual, firm or corporation or combination of same submitting a bid for the Work contemplated, acting directly or through a duly authorized representative.

1.7.6. BONDS: Bid, Performance and Payment Bonds and other instruments of security furnished by the Contractor and his Surety in accordance with the Contract Documents.

1.7.7. CALENDAR DAY: Every day shown on the calendar, Sundays and holidays included.

1.7.8. CHANGE ORDER: A written order to the Contractor authorizing an addition, deletion or revision in the Work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time.

1.7.9. CONTRACT: The Contract Documents form the Contract. The Contract represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations or agreements, either written or oral, including the bidding documents. The Contract may be amended or modified by a Change Order.

1.7.10. CONTRACT DOCUMENTS: The Contract Documents consist of the Advertisement for Bids, Information for Bidders, Bid, Bid Bond, Agreement, Payment Bond, Performance Bond, the Conditions of the Contract (General, Supplemental, and other Conditions), the Drawings, the Specifications, Addenda issued prior to execution of the Contract, Notice of Award, Notice to Proceed and Change Orders.

1.7.11. CONTRACT PRICE: The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

1.7.12. CONTRACTOR:

1.7.12.a. The individual, firm or corporation with whom the Owner has executed the Agreement by which the Contractor is obligated directly, or through Subcontractors, to perform work in connection with the Project.

1.7.12.b. The Contractor is the person or organization identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Contractor means the Contractor or his authorized representative.

1.7.13. CONTRACT TIME: The number of calendar days stated in the Contract Documents for the completion of the Work.

1.7.14. DRAWINGS: The part of the Contract Documents which show the characteristics and scope of the Work to be performed and which have been prepared or approved by the Engineer.

1.7.15. EARTH: An excavated material or materials to be excavated; all kinds of material other than rock.

1.7.16. ELEVATION: The figures given on the Drawings or in the other Contract Documents after the word "elevation" or abbreviation of it shall mean the distance in feet above the datum adopted by the Engineer.

1.7.17. ENGINEER: The person, firm or corporation named as such in the Contract Documents and duly appointed by the Owner to undertake the duties and powers herein assigned to the Engineer, acting either directly or through duly authorized representatives.

1.7.18. EQUIPMENT: All machinery, together with the necessary supplies for upkeep and maintenance, and all tools and apparatus necessary for the proper construction and acceptable completion of the Work.

1.7.19. FIELD ORDER: A written order effecting a change in the Work not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the Engineer to the Contractor during construction.

1.7.20. FURNISH: Furnish and install complete, in place, and ready for use.

1.7.21. INFORMATION FOR BIDDERS: The Notice to Contractors containing all necessary information as to provisions, requirements, date, place, and time of submitting bids.

1.7.22. LATEST EDITION: The current printed document issued eight weeks or more prior to date of receipt of bid.

1.7.23. MATERIALS: Any substance specified for use in the construction of the Project and its appurtenances.

1.7.24. NET COST: The cost to the Contractor after application of all credits and discounts (excepting only cash discounts) and without the addition of any factor for burden, overhead or indirect cost or profit.

1.7.25. NOTICE OF AWARD: The written notice of the acceptance of the Bid from the Owner to the successful Bidder.

1.7.26. NOTICE TO PROCEED: Written communication issued by the Owner to the Contractor authorizing him to proceed with the Work and establishing the date of the commencement of the Work.

1.7.27. OPTIMUM MOISTURE CONTENT FOR COMPACTION: The moisture content of a soil calculated on the basis of dry weight of soil at which the soil can be compacted to the approximate maximum density under a specified standard method of compaction.

1.7.28. OWNER: A public or quasi-public body or authority, corporation, association, partnership, or individual for whom the Work is to be performed.

1.7.29. PAYMENT BOND: The approved form of security furnished by the Contractor to guarantee the payment to all persons supplying labor and materials in the prosecution of the Work in accordance with the terms of the Contract.

1.7.30. PERFORMANCE BOND: The approved form of security furnished by the Contractor to guarantee the completion of the Work in accordance with the terms of the Contract.

1.7.31. PRE-CONSTRUCTION CONFERENCE: A conference following award and prior to start of construction to be attended by a duly authorized representative of the Engineer and by the responsible officials of the Contractor and other affected parties.

1.7.32. PROJECT: The undertaking to be performed as provided in the Contract Documents.

1.7.33. PROPOSAL: The written offer of the Bidder, submitted on the prescribed form, properly signed and guaranteed, to perform the Work at the prices quoted by the Bidder.

1.7.34. PROPOSAL FORM: The approved form on which the Owner requires formal bids to be prepared and submitted for the work.

1.7.35. PROPOSAL GUARANTY: The security furnished by the Bidder with his proposal for a Project, as guaranty he will enter into a contract for the Work if his proposal is accepted.

1.7.36. PROVIDE: Furnish and install complete, in place, and ready for use.

1.7.37. RESIDENT PROJECT REPRESENTATIVE: The authorized representative of the Owner who is assigned to the Project site or any part thereof.

1.7.38. ROCK: An excavated material or materials to be excavated; only boulders and pieces of concrete or masonry exceeding ½ cu. yd. in volume, or solid ledge rock which, in the opinion of the Engineer, requires, for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed with hand pick or power-operated excavator or shovel, no loose shaken, or previously blasted

rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits of measurement allowed, which may fall into the excavation will be classified as rock.

1.7.39. SHOP DRAWINGS: All drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by the Contractor, a Subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

1.7.40. SPECIALIST: An individual or firm of established reputation which is regularly engaged in, and which maintains a regular force of workmen skilled in either manufacturing or fabricating items required by the Contract, installing items required by the Contract, or otherwise performing work required by the Contract. Where the Contract Specifications require installation by a specialist, that term shall also be deemed to mean either the manufacturer of the item, an individual or firm licensed by the manufacturer, or an individual or firm who will perform the Work under the manufacturer's direct supervision.

1.7.41. SPECIFICATIONS: A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

1.7.42. STRUCTURES: Bridges, culverts, catch basins, drop inlets, manholes, retaining walls, cribbing, endwalls, buildings, sewers, service pipes, underdrains, foundation drains, and other miscellaneous items which may be encountered in the Work, and which are not otherwise classified herein.

1.7.43. SUBBASE: The layer or layers of specified or selected material of designated thickness or rate of application placed on a subgrade to comprise a component of the pavement structure to support the base course, pavement or subsequent layer of the construction.

1.7.44. SUBCONTRACTOR: An individual, firm or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the site. The term Subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative.

1.7.45. SUB-SUBCONTRACTOR: An individual, firm or corporation having a direct or indirect contract with a Subcontractor to perform any of the Work at the site. The term Sub-subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Sub-subcontractor or an authorized representative thereof.

1.7.46. SUBGRADE: The top surface of a roadbed upon which the pavement structure and shoulders are constructed.

1.7.47. SUBSTANTIAL COMPLETION: That date as certified by the Engineer when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it is intended.

1.7.48. SUPPLEMENTAL CONDITIONS: Conditions of the Contract other than the General Conditions.

1.7.49. SUPERINTENDENT: The Contractor's authorized representative in responsible charge of the Work.

1.7.50. SUPPLIER: Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

1.7.51. SURETY: The corporation, partnership or individual bound with and for the Contractor for the full and complete performance of the Contract, and payment of all debts pertaining to the Work.

1.7.52. TITLES (OR HEADINGS): The titles or headings of the sections and subsections herein are intended for convenience of reference and shall not be considered as having any bearing on their interpretation.

1.7.53. WORK: All labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the Project.

1.7.54. WRITTEN NOTICE: Any notice to any part of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the Work.

1.7.55. ADDITIONAL DEFINITIONS:

1.7.55.a. Wherever in the Specifications or on the Drawings, the words "as designated", "as detailed", "as directed", "as ordered", "as permitted", "as prescribed", "as provided", "as requested", "as required", or words of like import are used, it shall be understood that the designation, detail, direction, order, permission, prescribed, provision, request or requirement of the Engineer is intended.

1.7.55.b. Similarly, the words "approved", "acceptable", "satisfactory", and words of like import shall mean approved by, acceptable to, or satisfactory to the Engineer.

1.8. ABBREVIATIONS: Where any other following abbreviations are used in the Specifications, they shall have the meaning set forth opposite each.

AA	Aluminum Association
AALN	American Association of Landscape and Nurserymen
AAMA	Architectural Aluminum Manufacturers Association
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute

ACPA	American Concrete Pipe Association
AED	American Equipment Dealers
AFI	American Filter Institute
AGA	American Gas Association
AGC	Associated General Contractors of America, Inc.
AHDGA	American Hot Dip Galvanizers Association
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
ANSI	American Iron and Steel Institute
AMA	Acoustical Materials Association
AMCA	Air Moving and Conditioning Association
ANS	American Nuclear Society
ANSI	American National Standards Institute
APA	American Plywood Association
ARI	Air Conditioning and Refrigeration Institute
ASA	Acoustical Society of America
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning

Engineers

ASLA	American Society of Landscape Architects
ASME	American Society of Mechanical Engineers
ASQC	American Society for Quality Control
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preserver' Association
AWPI	American Wood Preservers' Institute
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
CGA	Compressed Gas Association
CNU	Congress for New Urbanism
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards, U. S. Department of Commerce
CSI	Construction Specification Institute
EIA	Electronic Industries Association
FS	Federal Specification
FSPT	Federation of Societies for Paint Technology
FSS	Federal Specifications, General Services Administration
FHWA	Federal Highway Administration
GA	Gypsum Association
IBI	Insulation Board Institute
IBR	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electric and Electronics Engineers
IES	Illuminating Engineers Society

ISA	Instrument Society of America
ISA	International Society of Arboriculture
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
LIA	Lead Industries Association
MBMA	Metal Building Manufacturers Association
MIA	Marble Institute of America
MPTA	Mechanical Power Transmission Association
MS	Military Specification
MSTD	Military Standard
NAAMM	National Association of Architectural Metal Manufacturers
NAFM	National Association of Fan Manufacturers
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NECA	National Electrical Contractors Association, Inc.
NEMA	National Electrical Manufacturers Association
NFC	National Fire Code
NFPA	National Fire Protection Association
NHLA	National Hardware Lumber Association
NLMA	National Lumber Manufacturers Association
NPC	National Plumbing Code
NRCA	National Roofing Contractors Association
NRDC	Natural Resource Defense Council
NRMCA	National Ready Mixed Concrete Association
NSF	National Sanitation Foundation
NTMA	The National Terrazzo and Mosaic Association
NWMA	National Woodwork Manufacturers Association
OSHA	Occupational Safety and Health Act
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PEI	Porcelain Enamel Institute
RTI	Resilient Tile Institute
RWMA	Resistance Welder Manufacturers Association
SBI	Steel Boiler Institute
NCDOT	North Carolina Department of Transportation
SCPI	Structural Clay Products Institute
SDI	Steel Deck Institute
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSBC	Southern Standard Building Code
SSGC	Southern Standard Gas Code
SSPC	Steel Structures Painting Council

TAPPI	Technical Association of the Pulp and Paper Industry
TCA	Tile Council of America
TRB	Transportation Research Board
UL	Underwriters' Laboratories, Inc.
USGBC	United States Green Building Council

2. OWNER'S RIGHTS AND RESPONSIBILITIES

2.1. CHANGES IN THE WORK:

2.1.1. The Owner, without invalidating the Contract, may make changes in the Work and in the Drawings and Specifications therefor by making alterations therein, additions thereto, or omissions therefrom.

2.1.2. All work resulting from such changes shall be performed and furnished under and pursuant to the terms and conditions of the Contract. If such changes result in an increase or decrease in the work to be done hereunder, or increase or decrease the quantities thereof, adjustment in compensation shall be made therefor as provided in Subsection 7.12. entitled PAYMENT FOR EXTRA WORK.

2.1.3. Except in an emergency endangering life or property, no change shall be made unless in pursuance of a written order from the Engineer authorizing the change, and no claim for additional compensation shall be valid unless the change is so ordered.

2.1.4. The Contractor agrees that he shall neither have nor assert any claim for, or be entitled to, any additional compensation for damages or for loss of anticipated profits on work that is eliminated.

2.2. PROJECT ENGINEER: As Engineer for this project the Owner has retained:

Davis & Floyd, Inc.
101 North Main Street, Suite 901
Greenville, SC 29601

2.3. ENGINEER'S AUTHORITY:

2.3.1. The Engineer will be the Owner's representative during the construction period and he will observe the work in progress on behalf of the Owner in the following matters consistent with Owner's rights and obligations as set forth in these Contract Documents:

2.3.1.a. Interpretation of Contract Documents.

2.3.1.b. Approval of samples and shop drawings.

2.3.1.c. Preparation of supplementary details and instructions.

2.3.1.d. Inspection and approval of construction work.

2.3.1.e. Preliminary approval of progress payment applications.

2.3.2. Any instructions which the Engineer may issue the Contractor shall be adjudged an interpretation of the Contract requirements and not an act of supervision. The Engineer has no

authority, nor accepts any responsibility, either direct or implied, to direct and superintend the construction operations.

2.3.3. The Contractor shall proceed without delay to perform the Work as directed, instructed, determined, or decided by the Engineer and shall comply promptly with such directions, instructions, determinations, or decisions. If the Contractor has any objection thereto, he may require that any such direction, instruction, determination, or decision be put in writing and within 10 days after receipt of any such writing, he may file a written protest with the Owner stating clearly and in detail his objections, the reasons therefor, and the nature and amount of additional compensation, if any, to which he claims he will be entitled thereby. A copy of such protest shall be filed with the Engineer at the same time it is filed with the Owner. Unless the Contractor files such written protest with the Owner and Engineer within such 10 day period, he shall be deemed to have waived all grounds for protest of such direction, instruction, determination, or decision and all claims for additional compensation or damages occasioned thereby, and shall be deemed to have accepted such direction, instructions, determination, or decision as being fair, reasonable, and finally determinative of his obligations and rights under the Contract.

2.4. **LIABILITY OF OWNER:** No person, firm, or corporation, other than the Contractor, who signed this Contract as such, shall have any interest herein or right hereunder. No claim shall be made or be valid either against the Owner or any agent of the Owner and neither the Owner nor any agent of the Owner shall be liable for or be held to pay any money, except as herein provided. The acceptance by the Contractor of the payment as fixed in the final estimate shall operate as and shall be a full and complete release of the Owner and of every agent of the Owner of and from any and all claims, demands, damages and liabilities of, by or to the Contractor for anything done or furnished for or arising out of or relating to or by reason of the Work or for or on account of any act or neglect of the Owner or of any agent of the Owner or of any other person, arising out of, relating to or by reason of the Work, except the claim against the Owner for unpaid balance, if any there be, of the amount retained as herein provided.

2.5. **RIGHTS-OF-WAY AND SUSPENSION OF WORK:** The Owner shall furnish all land and rights-of-way necessary for the carrying out of this contract and the completion of the Work herein contemplated and will use due diligence in acquiring said land and rights-of-way as speedily as possible. But it is possible that all lands and rights-of-way may not be obtained as herein contemplated before construction begins, in which event the Contractor shall begin his work upon such land and rights-of way as the Owner may have previously acquired and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of way. Should the Owner be prevented or enjoined from proceeding with the Work, or from authorizing its prosecution, either before or after the commencement, by reason of any litigation, or by reason of its inability to procure any lands or rights-of-way for the said work, the Contractor shall not be entitled to make or assert claim for damage by reason of said delay or to withdraw from the Contract except by consent of the Owner; but time for completion of the Work will be extended to such time as the Owner determines will compensate for the time lost by such delays, such determination to be set forth in writing.

2.6. **SURVEYS, PERMITS AND REGULATIONS:**

2.6.1. The Owner will furnish all boundary surveys and establish all base lines for locating the principal component parts of the Work together with a suitable number of bench marks adjacent to the Work as shown in the Contract Documents. From the information provided by the Owner, unless otherwise specified in the Contract Documents, the Contractor shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines, elevations and cut sheets.

2.6.2. The Contractor shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

2.6.3. Permits and licenses of a temporary nature necessary for the prosecution of the Work shall be secured and paid for by the Contractor unless otherwise stated in the Supplemental Conditions. Encroachment permits, easements for permanent structures and permits for permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in Subsection 2.1. entitled CHANGES IN THE WORK. The Contractor is responsible for obtaining any and all necessary construction placards from the permitting agencies. Placard(s) must be obtained prior to construction and must be posted on-site at all times during construction. The Engineer will provide a set of plans as stamped "Approved" by respective permitting agencies. The Contractor is responsible for keeping these plans at the job site and making them available to any inspector representing the Owner, Engineer, or Agency upon request.

2.7. LINES, GRADES AND MEASUREMENTS:

2.7.1. The Owner's Engineer will set sufficient base lines and elevations as shown on the Drawings for location of the Work. The Contractor shall employ a registered civil engineer, or land surveyor and shall require said Engineer to establish all lines, elevations, reference marks, batter boards, etc., needed by the Contractor during the progress of the Work, and from time to time to verify such marks by instrument or other appropriate means.

2.7.2. The Owner's Engineer shall be permitted at all times to check the lines, elevations, reference marks, batter boards, etc., set by the Contractor, who shall correct any errors in lines, elevations, reference marks, batter boards, etc., disclosed by such check. Such check shall not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibility of the Contractor for accurate and satisfactory construction and completion of the Work.

2.7.3. The Contractor shall make, check and be responsible for all measurements and dimensions necessary for the proper construction of, and the prevention of misfittings in, the Work.

2.8. OWNER'S RIGHT OF AUDIT: In case the Owner agrees that a Contractor perform work on a cost plus basis, the Owner is to have a full and complete right to audit and make copies of Contractor's or Subcontractor's records with respect to any payment the Owner may be requested to make, or may make, for any work done on a cost plus basis.

2.9. OWNER'S RIGHT TO SEPARATE CONTRACTS:

2.9.1. The Owner reserves the right to let other contracts in connection with the Work under similar General Conditions. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and execution of their work, and shall properly connect and coordinate his work with theirs.

2.9.2. The Owner may perform additional Work related to the Project by himself, or he may let other contracts containing provisions similar to these. The Contractor will afford the other contractors who are parties to such Contracts (or the Owner, if he is performing the additional Work himself), reasonable opportunity for the introduction and storage of materials and equipment and execution of Work and shall properly connect and coordinate his Work with theirs.

2.10. OWNER'S RIGHT TO DO WORK:

2.10.1. If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the Owner, after three days' written notice to the Contractor may, without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor. If such expense shall exceed the unpaid balance, the Contractor shall pay the difference to the Owner on demand.

2.10.2. The Engineer's certificate setting forth the fair and reasonable cost of repairing, replacing, rebuilding or restoring any damaged or defective work or equipment when performed by one other than the Contractor shall be binding and conclusive as to the amount thereof upon the Contractor.

2.11. OWNER'S RIGHT TO TERMINATE CONTRACT: If the Contractor should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver or trustee should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if he should fail to make prompt payment to Subcontractors of for material or labor, or persistently disregard laws, ordinances or the instructions of the Owner and his representatives, or otherwise be guilty of substantial violation of any provision of the Contract then the Owner, may, without prejudice to any other right or remedy and after giving the Contractor, and his surety, if any, seven days' written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, as it may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price shall exceed the expense of finishing the work including compensation for additional

engineering, managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner.

2.12. **SUSPENSION OF WORK, TERMINATION AND DELAY:** The Owner may suspend the Work or any portion thereof for a period of not more than 90 days or such further time as agreed upon by the Contractor, by written notice to the Contractor and the Engineer, which shall fix the date on which Work shall be resumed. The Contractor will resume the Work on the date so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension.

2.13. **INSPECTIONS AND TESTING:** If the Contract Documents, Owner's instructions, laws, ordinances or any public authority having jurisdiction require any work to be specially tested or approved, the Contractor shall give the Owner timely notice of its readiness for observation by the Owner or inspection by another authority, and if the inspection is by another authority rather than the Owner, of the date fixed for such inspection. The required certificates of such inspection shall be secured by the Contractor. Observations by the Owner shall be promptly made, and where practicable, at the source of supply. If any work should be covered up without approval or consent of the Owner, it must, if required by the Owner, be uncovered for examination, at the Contractor's expense.

2.14. **INSPECTION OF WORK AWAY FROM THE SITE:** If the work to be done away from the construction site is to be inspected on behalf of the Owner during its fabrication, manufacture, or testing, or before shipment, the Contractor shall give notice to the Engineer of the place and time where such fabrication, manufacture, testing, or shipping is to be done. Such notice shall be in writing and delivered to the Engineer in ample time so that the necessary arrangements for the inspection can be made.

2.15. **PIPE LOCATION:** Exterior pipelines will be located substantially as indicated on the Drawings, but the right is reserved to the Owner acting through the Engineer, to make such modifications in location as may be found desirable to avoid interference with structures or for other reasons. Where fittings, etc., are noted on the Drawings such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

2.16. **PRIOR USE OR OCCUPANCY:** The Owner reserves the right to use or occupy the Work or portion thereof, and to use equipment installed under the Contract, prior to final acceptance. Such use or occupancy will not constitute acceptance of the Work or any part thereof. Despite such use or occupancy, guarantee periods will not begin until the completion of all Work under the Contract, unless agreement to the contrary is made in writing between the parties.

2.17. **WEATHER CONDITIONS:** In the event of temporary suspension of work, or during inclement weather, or whenever the Engineer shall direct, the Contractor will, and will cause his subcontractors to, protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the Engineer, any work or materials shall have been

damaged or injured by reason of failure on the part of the Contractor or any of his subcontractors to so protect its work, such materials shall be removed and replaced at the expense of the Contractor.

2.18. OWNER'S RIGHT TO CLEAN UP: If a dispute arises between the separate contractors as to their responsibility for cleaning up, the Owner may clean up and charge the cost thereof to the Contractor and the Engineer shall determine to be just.

3. CONTRACTOR'S RIGHTS AND RESPONSIBILITIES

3.1. **ACCESS TO WORK:** The Owner, the Engineer, and their officers, agents, servants, and employees plus representatives of the various participating Federal or State agencies may at any and all times and for any and all purposes, enter upon the Work and site thereof and premises used by the Contractor, and the Contractor shall at all times provide safe and proper facilities therefor.

3.2. **ACCIDENT PREVENTION:** In the performance of the Contract the Contractor shall comply with the applicable provisions of the regulations issued by the Secretary of Labor pursuant to section 107 of the Contract Work Hours and Safety Standards Act entitled "Safety and Health Regulations for Construction" (29 CFR 1518, renumbered as Part 1926). Occupational Safety and Health Standards (29 CFR Part 1910) issued by the Secretary of Labor pursuant to the Williams-Steiger Occupational Safety and Health Act of 1970 are applicable to work performed by the Contractor subject to the provisions of the Act.

3.3. **STATED ALLOWANCES:** The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. These allowances shall cover the net cost of the materials and equipment delivered and unloaded at the site, and all applicable taxes. The Contractor's handling costs on the site, labor, installation costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the Contract Sum and not in the allowance. If the cost, when determined, is more than or less than the allowance, the Contract Sum shall be adjusted accordingly by Change Order which will include additional handling costs on the site, labor, installation costs, overhead, profit and other expenses resulting to the Contractor from any increase over the original allowance.

3.4. **ARCHAEOLOGICAL RIGHTS:** There is a possibility that items of archaeological significance may be found during the excavation of the site. In such event, the Contractor shall stop excavation in the vicinity of the find and notify the Engineer immediately; subsequent excavation work shall proceed as directed by the Engineer. All items found which are considered to have archaeological significance are the property of the Owner.

3.5. **AS-BUILT DRAWINGS:** The Contractor shall designate one set of Drawings for "As-Built Drawings". The Contractor shall indicate on these drawings all field changes affecting various mechanical, electrical, piping and other items as well as locations as actually installed. The "As-Built Drawings" shall be kept current by the Contractor. The "As-Built Drawings" shall be delivered to the Engineer upon completion and acceptance of the Work. Final payment for the Work will not be made until the "As-Built Drawings" have been completed and delivered as indicated above.

3.6. **OBLIGATIONS OF CONTRACTOR:**

3.6.1. The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and materials, tools, machinery, equipment, transportation, supervision, temporary construction of any nature, and all other services, means and facilities except as herein otherwise expressly specified, necessary or proper to perform and complete all work required by

this Contract, within the time herein specified, in accordance with the provisions of this Contract and in accordance with the Drawings and Specifications and in accordance with the direction of the Engineer as given from time to time during the progress of the Work. He shall furnish, erect, maintain and remove such construction plant and temporary works as may be required.

3.6.2. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the Contract and Specifications, and shall do, carry on, and complete the entire work to the satisfaction of the Engineer and the Owner.

3.6.3. The Contractor shall check all dimensions, elevations, quantities and instructions shown on the Drawings or given in the Specifications and shall notify the Engineer should any discrepancy of any kind be found in the Drawings, Specifications or conditions at the site. He will not be allowed to take advantage of any discrepancy, error or omission in the Contract Documents. If any discrepancy is discovered, the Engineer will issue full instructions pertaining thereto and the Contractor shall carry out these instructions as if originally specified.

3.7. CLAIMS FOR ADDITIONAL COST: If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property, in which case the Contractor shall proceed in accordance with Subsection 3.27. entitled PROTECTION OF WORK, PROPERTY AND PERSONS IN AN EMERGENCY. No such claim shall be valid unless so made. If the Owner and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined by the Engineer. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

3.8. CLAIMS FOR DAMAGE:

3.8.1. If the Contractor makes claim for any damages alleged to have been sustained by breach of contract or otherwise, he shall, within 10 days after occurrence of the alleged breach or within 10 days after such damages are alleged to have been sustained, whichever date is the earlier, file with the Engineer a written, itemized statement in triplicate of the details of the alleged breach and the details and amount of the alleged damages. The Contractor agrees that unless such statement is made and filed as so required, his claim for damages shall be deemed waived, invalid and unenforceable, and that he shall not be entitled to any compensation for any such alleged damages. Within 10 days after the timely filing of such statement, the Engineer shall file with the Owner one copy of the statement together with his recommendations for action by the Owner.

3.8.2. The Contractor shall not be entitled to claim any additional compensation for damages by reason of any direction, instruction, determination or decision of the Engineer, nor shall any such claims be considered, unless the Contractor shall have complied in all respects with the last paragraph of Subsection 2.a. entitled ENGINEER'S AUTHORITY, including, but not limited to, the filing of written protest in the manner and within the time therein provided.

3.9. CUTTING AND PATCHING:

3.9.1. The Contractor shall leave all chases or openings for the installation of his own or any other contractor's subcontractor's work, or shall cut the same in existing work, and shall see that all sleeves or forms are at the Work and properly set in ample time to prevent delays. He shall see that all such chases, openings, and sleeves are located accurately and are of proper size and shape and shall consult with the Engineer and the contractors and subcontractors concerned in reference to this work.

3.9.2. In case of his failure to leave or cut all such openings or have all such sleeves provided and set in proper time, he shall cut them or set them afterwards at his own expense, but in so doing he shall confine the cutting to the smallest extent possible consistent with the work to be done. In no case shall piers or structural members be cut without the written consent and approval of the Engineer.

3.9.3. The Contractor shall carefully fit around, close up, repair, patch, and point around the Work specified herein to the satisfaction of the Engineer.

3.9.4. All of this work shall be done by careful workmen competent to do such work and with the proper small hand tools. Power tools shall not be used except where, in the opinion of the Engineer, the type of tool proposed can be used without damage to any work or structure and without inconvenience or interference with the operation of any facility. The Engineer's approval of the type of tool shall not in any way relieve or diminish the responsibility of the Contractor for such damage, inconvenience or interference resulting from the use of such tools.

3.9.5. The Contractor shall not cut or alter the work of any subcontractor or any other contractor, nor permit any of his subcontractors to cut or alter the work of any other contractor or subcontractor except with the written consent of the contractor or subcontractor whose work is to be cut or altered or with the written consent of the Engineer. All cutting and patching or repairing made necessary by the negligence, carelessness, or incompetence of the Contractor or any of his subcontractor shall be done by or at the expense of the Contractor and shall be the responsibility of the Contractor.

3.10. CLEANING UP:

3.10.1. The Contractor at all times shall keep the site of the Work free from rubbish and debris caused by his operation under the Contract. When the work has been completed, the Contractor shall remove from the site of the Work all of his plant, machinery, tools, construction equipment, temporary work and surplus materials so as to leave the Work and the site clean and ready for use.

3.10.2. All public streets adjacent to the site and all private ways at the site shall be kept clean of debris, spilled materials, and wet and dry earth at all times and shall be cleaned at the end of each working day. When wet earth is encountered, it shall be cleaned from the vehicles before they leave the site and enter streets and private ways.

3.11. NON-COMPLIANCE WITH CONTRACT REQUIREMENTS: In the event the Contractor, after receiving written notice from the Owner of non-compliance with any requirement of this Contract, fails to initiate promptly such action as may be appropriate to comply with the specified requirement within a reasonable period of time, the Owner shall have the right to order the Contractor to stop any or all work under the Contract until the Contractor has complied or has initiated such action as may be appropriate to comply within a reasonable period of time. The Contractor will not be entitled to any extension of Contract Time or payment for any costs incurred as a result of being ordered to stop work for such cause.

3.12. OVERALL PROJECT COORDINATION: The Contractor shall coordinate all Work of his Contract to produce the required finished Project in accordance with the Contract Documents. Special attention shall be given to the submission of shop drawings, samples, color charts, and requests for substitution within the specified time; furnishing the proper shop drawings to Subcontractors and material suppliers, whose work and equipment is affected by and related thereto; and the furnishing of all information concerning location, type, and size of built-in equipment and materials and equipment utilities. This coordination is in addition to all other coordination requirements called for in the technical sections of the Specifications.

3.13. COMMUNICATIONS; The Contractor shall forward all communications to the Owner through the Engineer.

3.14. NO DISCRIMINATION IN EMPLOYMENT: In connection with the performance of work under this Contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin. The aforesaid provision 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.

3.15. DRAWINGS AND SPECIFICATIONS AT THE SITE: The Contractor shall maintain at the site one complete set of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders and other Modifications, in good and readable condition and marked to record all changes made during construction. These shall be available to the Engineer. The Drawings, marked to record all changes made during construction, shall be delivered to the Engineer for the Owner upon completion of the Work.

3.16. EMPLOY COMPETENT PERSONS: The Contractor shall endeavor to employ only competent persons on the Work. Whenever the Engineer notifies the Contractor in writing that in his opinion any person on the Work is incompetent, unfaithful, disorderly, or otherwise unsatisfactory, or not employed in accordance with the provisions of the Contract, such person shall be discharged from the Work, and shall not again be employed on it, except with the written consent of the Engineer. Provided, however, that the failure of the Owner or Engineer to object to an employee is not to be considered acknowledgement or approval of the employee's competence by the Engineer or Owner.

3.17. EMPLOY SUFFICIENT LABOR AND EQUIPMENT: If, in the judgement of the Engineer, the Contractor is not employing sufficient labor, plant, equipment or other means to complete the Work within the time specified, the Engineer may, after giving written notice, require the Contractor to employ such additional labor, plant, equipment and other means as the Engineer may deem necessary to enable the Work to progress properly.

3.18. EXISTING STRUCTURES: Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the Work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

3.19. INDEMNIFICATION:

3.19.1. The Contractor will indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses and expenses, including attorney's fees, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable.

3.19.2. In any and all claims against the Owner or the Engineer, or any of their agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by a limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workmen's compensation acts, disability benefits acts or other employee benefits acts.

3.20. INTOXICATING LIQUORS: The Contractor shall not sell and shall neither permit nor suffer the introduction or use of intoxicating liquors upon or about the Work.

3.21. LEGAL ADDRESS OF CONTRACTOR: The Contractor's business address and his office at or near the site of the Work are both hereby designated as places to which communications may be delivered. The depositing of any letter, notice, or other communication in a postpaid wrapper directed to the Contractor's business address in a post office box regularly maintained by the U. S. Postal Service or the delivery at either designated address of any letter,

notice, or other communication by mail or otherwise shall be deemed sufficient service thereof upon the Contractor, and the date of such service shall be the date of receipt. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by the Contractor and delivered to the Engineer. Service of any notice, letter or other communication upon the Contractor personally shall likewise be deemed sufficient service.

3.22. MUTUAL RESPONSIBILITY OF CONTRACTORS:

3.22.1. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall properly connect and coordinate his work with theirs.

3.22.2. If any part of the Contractor's Work depends for proper execution or results upon the work of any other separate contractor, the Contractor shall inspect and promptly report to the Owner any apparent discrepancies or defects in such work that render it unsuitable for such proper execution and results. Failure of the Contractor so to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper to receive his Work, except as to defects which may develop in the other separate contractor's work after the execution of the Contractor's Work. To ensure proper execution of the subsequent work, the Contractor shall measure work already in place and shall at once report to the Owner any discrepancy between the executed work and the Contract Documents.

3.22.3. Should the Contractor cause damage to any separate contractor on the Work, the Contractor agrees, upon due notice, to settle with such contractor by agreement or arbitration, if he will so settle. If such separate contractor sues the Owner on account of any damage alleged to have been so sustained, the Owner shall notify the Contractor, who shall defend such proceedings at the Contractor's expense, and if any judgement against the Owner arises therefrom, the Contractor shall pay or satisfy it and pay all costs incurred by the Owner.

3.23. NIGHT AND SUNDAY WORK:

3.23.1. No work shall be done at night or on Sunday except:

3.23.1.a. Usual protective work, such as pumping and the tending of lights and fires;

3.23.1.b. Work done in case of emergency threatening injury to persons or property;

3.23.1.c. When provided for under Supplemental Conditions as herein specified;

3.23.1.d. If all of the conditions set forth in the next paragraph below are met.

3.23.2. No work other than that included in (3.23.1.a.), (3.23.1.b.), and (3.23.1.c.) above, shall be done at night except when:

3.23.2.a. In the judgement of the Engineer, the work will be of advantage to the Owner and can be performed satisfactorily at night;

3.23.2.b. The work will be done by a crew organized for regular and continuous night work;

3.23.2.c. The Engineer has given written permission for such night work.

3.23.3. Any work necessary to be performed after regular hours, on Sundays, or Legal Holidays, shall be performed without additional expense to the Owner.

3.24. OCCUPYING PRIVATE LAND: The Contractor shall not (except after written consent from the proper parties) enter or occupy with men, tools, materials, or equipment, any land outside the rights-of-way or property of the Owner. A copy of the written consent shall be given to the Engineer prior to occupation of private land.

3.25. PERMITS AND RESPONSIBILITIES: The Contractor shall, without additional expense to the Owner, be responsible for obtaining any necessary licenses and permits, and for complying with any applicable Federal, State and municipal laws, codes, and regulations, in connection with the prosecution of the Work. He shall be similarly responsible for all damages to persons or property that occur as a result of his fault or negligence. He shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire construction work, except for any completed unit of construction thereof which theretofore may have been accepted.

3.26. PRECAUTIONS DURING ADVERSE WEATHER:

3.26.1. During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other approved means.

3.26.2. During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by approved means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will warm throughout when used.

3.26.3. The Engineer may suspend construction operations at any time when, in his judgement, the conditions are unsuitable or the proper precautions are not being taken, whatever the weather may be, in any season. The Contractor agrees that he shall not have or assert any claim for or be entitled to any additional compensation or damages on account of such suspension.

3.27. PROTECTION OF WORK, PROPERTY AND PERSONS:

3.27.1. The Contractor will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the Work and other persons who may be affected thereby, all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

3.27.2. The Contractor will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He will erect and maintain as required by the conditions and progress of the Work, all necessary safeguards for safety and protection. He will notify owners of adjacent utilities when prosecution of the Work may affect them. The Contractor will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, except damage or loss attributable to the fault of the Contract Documents or to the acts or omissions of the Owner or the Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor.

3.28. PROTECTION OF WORK, PROPERTY AND PERSONS IN AN EMERGENCY: In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or Owner,

shall act to prevent threatened damage, injury or loss. He will give the Engineer prompt Written Notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved.

3.29. PROTECTION AGAINST WATER AND STORM: The Contractor shall take all precautions necessary to prevent damage to the Work by storms or by water entering the site of the Work directly or through the ground. In case of damage by storm or water, the Contractor shall at his own cost and expense make such repairs or replacements or rebuild such parts of the Work as the Engineer may require in order that the finished work may be completed as required by the Contractor.

3.30. PROTECTION OF EXISTING VEGETATION, STRUCTURES, UTILITIES AND IMPROVEMENTS:

3.30.1. The Contractor will preserve and protect all existing vegetation such as trees, shrubs, and grass on or adjacent to the site of the Work which is not to be removed and which does not reasonably interfere with the construction work. Care shall be taken in removing trees authorized for removal to avoid damage to vegetation to remain in place. Any limbs or branches of trees broken during such operations or by the careless operation of equipment or by workmen, shall be trimmed with a clean cut and painted with an approved tree pruning compound as approved by the Engineer.

3.30.2. The Contractor will protect from damage all existing improvements or utilities at or near the site of the Work, the location of which is made known to him, and will repair or restore any damage to such facilities resulting from failure to comply with the requirements of this Contract or the failure to exercise reasonable care in the performance of the Work. If the Contractor fails or refuses to repair any such damage promptly, the Owner may have the necessary work performed and charge the cost thereof to the Contractor.

3.30.3. The Contractor shall enclose the trunks of trees adjacent to his work and not to be cut, with substantial wooden boxes of such height as may be necessary to protect them from injury from piled material, from equipment, from his operation, or otherwise due to his work. Excavating machinery and cranes shall be of suitable type and shall be operated with care to prevent injury to trees not to be cut and particularly to overhanging branches and limbs.

3.30.4. On paved surfaces, the Contractor shall not use or operate tractors, bulldozers or other power—operated equipment, the treads or wheels of which are so shaped as to cut or otherwise injure such surfaces.

3.31. RESTORATION OF PROPERTY; All existing surfaces, including lawns, grassed and planted areas which have been injured by the Contractor's operations, shall be restored to a condition at least equal to that in which they were found immediately before work was begun. Suitable materials and methods shall be used for such restoration. All restored plantings shall be maintained by cutting, trimming, fertilizing, etc., until acceptance. The restoration of existing property or structures shall be done as promptly as practicable and shall not be left until the end of construction period.

3.32. INTERFERENCE WITH AND PROTECTION OF STREETS:

3.32.1. The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefor from the proper authorities. If any street, road or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.

3.32.2. Streets, roads, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefor.

3.32.3. The Contractor shall, at least 24 hours in advance, notify the highway, police and fire departments in writing, with a copy to the Engineer, if the closure of a street or road is necessary. He shall cooperate with the police department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion.

3.33. TRAFFIC CONTROL: Where control of traffic is required for public safety, the Contractor shall provide an adequate number of flagmen employed at his own expense.

3.34. CONSTRUCTION DRAINAGE:

3.34.1. The Contractor shall furnish all labor, materials and necessary equipment for the temporary control of surface water and seepage water during construction and keep all excavations, pits and trenches free from water at all times.

3.34.2. The Contractor shall furnish and operate pumps and other equipment required. Dikes and ditches shall be constructed around excavations and elsewhere as necessary to prevent surface water from flooding the excavations or standing in areas adjacent to excavations, in work areas or in material storage areas. The Contractor shall take all necessary precautions to protect adjacent areas and properties at points other than that which would be considered the natural flow, prior to construction, without the expressed consent of the Owner in writing with a copy to the Engineer. He shall take steps to prevent the erosion of soil, earth and other material and the conduction of the eroded materials onto adjacent properties and shall be responsible for the removal of such materials and the restoration of adjacent areas to their original condition.

3.35. RETURN OF DRAWINGS: All copies of Drawings, Specifications and other Documents furnished by the Owner or the Engineer to the Contractor may be used only in connection with the prosecution of the Work and shall be returned by the Contractor upon completion of the Work.

3.36. SITE INVESTIGATION: The Contractor acknowledges that he has investigated and satisfied himself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, water table, tides or similar physical conditions at the site, the confirmation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The Contractor further acknowledges that he has satisfied himself as to character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Owner, as well as from information presented by the Drawings and Specifications made a part of this Contract. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner.

3.37. SOIL EROSION AND SEDIMENT CONTROL: The Contractors attention is directed to the fact that unless exposed earth areas are properly cared for during construction, they may result in substantial sedimentation damage downstream from the construction area. The Contractor shall be responsible for conducting his site grading and drainage operations in such manner as to prevent excessive soil erosion of the construction site work areas. He shall at all times provide satisfactory means to prevent the movement and washing of soil onto pavement or into adjacent ditches, swales, inlets, and drainage pipes, to avoid the possibility of these structures becoming clogged with soil. He shall promptly repair all areas which may become eroded and shall clear drainage ditches, swales, and structures of siltation. The Contractor will

indemnify and save harmless the Owner and Engineer from and against any and all claims, demands, fines, or assessments, including attorneys' fees and cost of defense arising out of or caused by the Contractor's failure to provide soil erosion and sediment control.

3.38. SUBSURFACE CONDITIONS:

3.38.1. The Contractor shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the Owner by Written Notice of:

3.38.1.a. Subsurface or latent physical conditions of the site differing materially from those indicated in the Contract Documents.

3.38.1.b. Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

3.38.2. The Owner shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the Work, an equitable adjustment shall be made and the Contract Documents shall be modified by Change Order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he has given the required Written Notice; provided that the Owner may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

3.39. SUBCONTRACTING:

3.39.1. The Contractor may utilize the services of specialty Subcontractors on those parts of the Work which, under normal contracting practices, are performed by specialty Subcontractors. The Contractor shall, without additional expense to the Owner, utilize the services of specialty subcontractors on those parts of the Work which are specified to be performed by specialty subcontractors.

3.39.2. The Contractor shall not award any work to any subcontractor without prior written approval of the Owner, which approval will not be given until the Contractor submits to the Owner a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Owner may require. No request for payment will be approved before this list has been received and reviewed by the Owner.

3.39.3. The Contractor shall not award Work to Subcontractor(s), in excess of 50 percent of the Contract Price, without prior written approval of the Owner.

3.39.4. The Contractor shall be fully responsible to the Owner for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts or omissions of persons directly employed by him.

3.39.5. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the Work of Subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provisions of the Contract Documents.

3.39.6. If any other contractor or subcontractor of any such other contractor shall suffer or claim to have suffered loss, damage or delay by reason of the acts or omissions of the Contractor or of any of his subcontractors, the Contractor agrees to assume the defense against any such claim and to reimburse such other contractor or subcontractor for such loss or damage. The Contractor agrees to and does hereby indemnify and save harmless the Owner from and against any and all claims by such other contractors or subcontractors alleging such loss, damage or delay and from and against any and all claims, demands, costs and expenses, including attorneys' fees, arising out of, relating to or resulting from such claims.

3.39.7. The Contractor shall be responsible for the coordination of the trades, subcontractors, and material men engaged upon his Work. The Owner or Engineer will not undertake to settle any differences between the Contractor and his subcontractors or between subcontractors. If any Subcontractor on the Project, in the opinion of the Engineer, proves to be incompetent or otherwise unsatisfactory, he shall be replaced if and when directed in writing.

3.40. SUPERVISION:

3.40.1. The Contractor shall keep on his work, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Owner. The superintendent shall not be changed except with the consent of the Owner, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his employ. The superintendent shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor. Important directions shall be confirmed in writing to the Contractor. Other directions shall be so confirmed on written request in each case. The Owner shall not be responsible for the acts or omissions of the superintendent or his assistants.

3.40.2. The Contractor shall give efficient supervision to the Work, using his best skill and attention. He shall carefully study and compare all Drawings, Specifications and other instructions and shall at once report to the Owner any error, inconsistency or omission which he may discover.

3.41. TAXES: The Contractor shall promptly pay federal, state and local taxes which may be assessed against him in connection with the Work or his operations under the Agreement and/or the other Contract Documents, including, but not limited to, taxes attributable to the purchase of materials and equipment, to the performance of services, and the employment of persons in the prosecution of the Work.

3.42. TEMPORARY HEAT:

3.42.1. The Contractor shall provide temporary heat whenever necessary to protect all Work and materials against injury from dampness and cold and to dry out moisture from the building. Fuel, equipment and method of heating shall be satisfactory to the Owner's Insurer and the Engineer.

3.42.2. Temporary heating apparatus shall be installed and operated in such a manner that finished work will not be damaged thereby.

3.43. SANITARY FACILITIES: The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the site of the Work, shall be properly secluded from public observations, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required or approved. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall rigorously prohibit the committing of nuisances on the site of the Work, on the lands of the Owner, or on adjacent property. The Owner and the Engineer shall have the right to inspect such facilities at all times to determine whether or not they are being properly and adequately maintained.

3.44. TEMPORARY UTILITIES:

3.44.1. The Contractor shall make arrangements for and furnish as a part of the Contract, all electricity, water, lighting and other utilities needed to do the Work called for by the Contract.

Any separate contractors having a contract with the Owner shall make arrangements for and share the cost with the Contractor for the use of the required utilities on a pro rated schedule based on an agreed basis. All Electrical Work shall comply with the National Electrical Code.

3.44.2. The Contractor shall provide and pay for all temporary wiring, switches, connections and meters.

3.44.3. The Contractor shall provide sufficient electric lighting so that all work may be done in a workmanlike manner when there is not sufficient daylight.

3.45. UNCOVERING AND CORRECTION OF WORK:

3.45.1. The Engineer shall be furnished by the Contractor with every reasonable facility for examining and inspecting the Work and for ascertaining that the Work is being performed in accordance with the requirements and intent of the Contract, even to the extent of requiring the uncovering or taking down of portions of finished work by the Contractor.

3.45.2. Should the Work thus uncovered or taken down prove satisfactory, the cost of uncovering or taking down and the replacement thereof shall be considered as extra work unless the original work was done in violation of the Contract in point of time or in absence of the Engineer or his inspector and without his written authorization, in which case said cost shall be borne by the Contractor. Should the work uncovered or taken down prove unsatisfactory, said cost shall likewise be borne by the Contractor.

3.45.3. The inspection of the Work shall not relieve the Contractor of any of his obligations to perform and complete the Work as required by the Contract. Defective work shall be corrected and unsuitable materials, equipment, apparatus and other items shall be replaced by the Contractor, notwithstanding that such work, materials, equipment, apparatus and other items may have been previously overlooked or accepted or estimated for payment. If the Work or any part thereof shall be found defective at any time before the final acceptance of the Work, the Contractor shall forthwith make good such defect in a manner satisfactory to the Engineer; if any materials, equipment, apparatus or other items brought upon the site for use or incorporation in the Work, or selected from the same, are condemned by the Engineer as unsuitable or not in conformity with the Specifications or any of the other Contract Documents, the Contractor shall forthwith remove such materials, equipment, apparatus and other items from the site of the Work at his own cost and expense make good and replace the same and any material furnished by the Owner which shall be damaged or rendered defective by the handling or improper installation by the Contractor, his agents, servants, employees or subcontractors.

3.45.4. If the Owner deems it inexpedient to correct work injured or done not in accordance with the Contract, an equitable deduction from the Contract Price shall be made therefor.

3.46. COOPERATION WITH UTILITIES:

3.46.1. The Owner will notify all utility companies, all pipe line owners, or other parties affected, and endeavor to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

3.46.2. Water lines, gas lines, wire lines, sewer lines, water and gas meter boxes, water and gas valve boxes, manholes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the Owners under separate agreement, except as otherwise provided for in the Supplemental Conditions or as noted on the Drawings.

3.46.3. The Drawings will show all known utilities located within the limits of the contract according to information obtained. The accuracy of the Drawings in this respect is not guaranteed by the Owner. The Contractor shall have considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated position. No additional compensation will be allowed for any delays, inconveniences, or damages sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

3.46.4. Unless otherwise provided, the cost of temporary rearrangement of utilities made only in order to facilitate the construction or the Work will be borne by the Contractor.

3.47. VERIFICATION OF DIMENSIONS AND ELEVATIONS:

3.47.1. Dimensions and elevations indicated on the Drawings in reference to existing structures, location of utilities, sewer inverts, or other information on existing facilities, are the best available data obtainable but are not guaranteed by the Engineer. The Engineer will not be responsible for their accuracy. Before proceeding with any work dependent upon the data involved, the Contractor shall field check and verify all dimensions, grades, inverts, lines, elevations, or other conditions or limitations at the site of the Work to avoid construction errors or damage to existing facilities. If any work is performed by the Contractor, or any subcontractors, prior to adequate verification of applicable data, any resultant extra cost for adjustment of work necessary to conform to existing facilities, shall be assumed by the Contractor without reimbursement or compensation by the Owner.

3.47.2. If the Contractor, in the course of the Work, finds any discrepancy between the Drawings and the physical conditions of the locality, or any errors or omissions in the Drawings or in the layout as given by survey points and instructions, he shall immediately inform the Engineer, in writing. The Engineer will promptly investigate the reported conditions and issue such instructions as may be necessary for the proper execution of the Work. Any work done after such discovery and prior to receipt of such instructions shall be at the risk of the Contractor.

4. MATERIALS, EQUIPMENT AND WORKMANSHIP

4.1. CHEMICAL USAGE: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall show approval of either EPA or U.S.D.A. The use of all such chemicals and disposal of residues shall be in strict conformance with manufacturer and U.S.D.A. instructions.

4.2. TITLE TO MATERIALS: No materials or supplies for the Work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him, in the Work, free from all liens, claims or encumbrances.

4.3. CORRECTION OF WORK BEFORE COMPLETION:

4.3.1. The Contractor shall promptly remove from the premises all work condemned by the Owner as failing to conform to the Contract Documents, whether incorporated or not and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement. The fact that the Engineer may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

4.3.2. If the Contractor does not remove such condemned work within a reasonable time, fixed by written notice, the Owner may remove it, and after storing it at the job site for 30 days, due written notice thereof being given the Contractor, the Owner may offer the material for sale and removal from the premises. Net proceeds from such sale shall be for the Contractor's credit against the "Owner's Right to Do Work". If the material has no sale value, the Owner may remove it from the premises and/or otherwise dispose of it. The costs of such disposition shall be deducted from payments to the Contractor as provided in Subsection 2.10. entitled OWNER'S RIGHT TO DO WORK.

4.4. CORRECTION OF WORK AFTER COMPLETION: The Contractor shall remedy any defects due to faulty materials or workmanship and pay for any damage to other work resulting therefrom which shall appear within a period of one year from the date of final acceptance of the Work except where longer periods are specified and in accordance with the terms of any special guarantees provided in the Contract.

4.5. CORRECTIONS OF WORK AFTER GUARANTEE PERIOD: It shall be the responsibility of the Contractor to permanently correct all defective items called to his attention within the guarantee period, whether such correction be made within the guarantee period or not. The Contract shall not be fully performed until such permanent corrections are made.

4.6. GENERAL GUARANTY:

4.6.1. The Contractor warrants to the Owner that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work not so conforming to these standards may be considered defective. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

4.6.2. Neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the Work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of the Work, except where longer periods are specified. If the Contractor shall fail to repair, replace, rebuild or restore such defective or damaged work or equipment promptly after receiving notice, the Owner shall have the right to have the work done by others in the same manner as is provided for in Subsection 2.10. entitled OWNER'S RIGHT TO DO WORK.

4.6.3. The Contractor shall further guarantee for a period of 24 months that any building or buildings, constructed under this Project, shall be watertight and leak proof at every point and in every area, except where leaks can be attributed to damage to the building by external forces other than storm or foundation settlement. He shall, immediately upon notification by the Owner of water penetration, determine the source of water penetration and, at his own expense, do any work necessary to make the building watertight. He shall also, at his own expense, repair or replace any other damaged material to return the building or buildings to the original accepted condition.

4.6.4. In addition to the foregoing stipulations, the Contractor shall comply with all other guarantees and warranties referred to in any portions of the Contract Documents, the more stringent requirement governing. Unless otherwise specifically stated elsewhere in these Specifications, the date of beginning of all guarantee or warranty periods shall be the date of acceptance of the project.

4.6.5. If for any reason, the Contractor cannot guarantee any part of his work using material or construction methods which have been specified, or shown, he shall notify the Engineer in writing before Contracts are signed, giving reasons together with the name of product and data on substitutions he can guarantee. Should the Contractor fail to so notify the Engineer prior to the signing of Contracts, he will be held to have agreed to guarantee all Work specified or shown.

4.7. HANDLING AND DISTRIBUTION:

4.7.1. The Contractor shall handle, haul and distribute all materials and all surplus materials on the different portions of the Work as necessary or required; shall provide suitable and adequate storage room for materials and equipment during the progress of the Work, and be responsible for the protection, loss of, or damage to materials and equipment furnished by him, until the final completion and acceptance of the Work.

4.7.2. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

4.8. MANUFACTURER'S DIRECTIONS:

4.8.1. All manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturers, unless herein specified to the contrary.

4.8.2. If the specifications or plans are contrary to the manufacturer's directions, the manufacturer shall be contacted by the Contractor before proceeding with the Work and the Engineer advised if the manufacturer has any objections to the specified application.

4.9. MATERIALS, SERVICES AND FACILITIES:

4.9.1. It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all labor, supplies and materials, tools, machinery, equipment, transportation, supervision, temporary construction of any nature, and all other services, means and facilities of any nature whatsoever necessary to execute, complete, and deliver the Work within the specified time.

4.9.2. Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the Work. Stored materials and equipment to be incorporated in the Work shall be located so as to facilitate prompt inspection.

4.9.3. Materials, supplies and equipment shall be in accordance with samples submitted by the Contractor and approved by the Engineer.

4.10. MISCELLANEOUS ITEMS:

4.10.1. The work to be done by the Contractor, specified and enumerated under this Contract, shall include any minor details of the Work not specifically mentioned in the Specifications or shown on the Drawings, but obviously necessary for the proper completion of the Work, which shall be considered incidental and as being a part of and included with the Work for which prices are given in the Bid. The Contractor will not be entitled to any additional compensation therefor.

4.10.2. Miscellaneous items and accessories which are not specifically mentioned, but which are essential to produce a complete and properly operating installation or usable structure or plant, providing the indicated function, shall be furnished and installed without change in the Contract Price. Such miscellaneous items and accessories shall be of the same quality standards, including material, style, finish, strength, class, weight and other applicable characteristics as specified for the major component of which the miscellaneous item or accessory is an essential part, and shall be approved by the Engineer before installation. The above requirement is not intended to include major components not covered by or inferable from the Drawings and Specifications.

4.10.3. MISTAKES OF CONTRACTOR: The Contractor shall promptly correct and make good any and all defects, damages, omissions, or mistakes, for which he and/or his agents, servants, employees or subcontractors are responsible, and he shall pay to the Owner all costs, expenses, losses, and damages resulting therefrom or by reason thereof as determined by the Engineer.

4.11. PROTECTION AGAINST ELECTROLYSIS: Where dissimilar metals are used in conjunction with each other, or against concrete surfaces, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact and any resultant electrolysis. The insulation shall be bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other approved materials.

4.12. RIGHT TO MATERIALS: Nothing in the Contract shall be construed as vesting in the Contractor any right of property in the materials, equipment, apparatus and other items furnished after they have been installed or incorporated in or attached or affixed to the Work or the site, but all such materials, equipment, apparatus and other items shall, upon being so installed, incorporated, attached or affixed, become the property of the Owner.

4.13. ROYALTIES AND PATENTS: The Contractor shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has information that the process or article specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Owner in writing.

4.14. SUBMITTAL SCHEDULE:

4.14.1. Within 20 days after execution and delivery of the Contract, the Contractor shall prepare and deliver to the Engineer a Submittal Schedule. This includes a list of all submittals required under the Contract. The list shall identify each major group of shop drawings, coordination drawings and schedules and each sample and the planned submission date for each.

4.14.2. After the Engineer's review of the list of submittals, the Engineer will meet with the Contractor for a joint review and correction and adjustment, as necessary, for agreement on the submittal. In addition, at the meeting the duration of the review period for each submittal will be established. The Contractor's planned submission date for each submittal shall allow no less than 15 working days for review and appropriate action before approval of the submittal becomes critical to the progress of the Contractor's work. Within five calendar days after the joint review, the Contractor shall make any necessary revisions to the list of submittals, including duration of the review periods, in accordance with the agreements reached during the joint review and submit two revised copies to the Engineer. No application for partial payment will be approved until the submitted schedule is approved.

4.15. SHOP DRAWINGS:

4.15.1. Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are prepared by the Contractor or any Subcontractor, manufacturer, supplier or distributor, and which illustrate some portion of the Work. It shall be the Contractor's responsibility to furnish Shop Drawings as required by the technical specifications or as requested by the Engineer. These submittals must be made no later than is required by the submittal schedule.

4.15.2. Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc. depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the Contract.

4.15.3. When so specified or if considered by the Engineer to be acceptable, manufacturer's specifications, catalog data, descriptive manner, illustrations, etc., may be submitted for approval in place of shop drawings and working drawings. In such case the requirements shall be as specified for shop and working drawings, insofar as applicable except that the submission shall be in quadruplicate.

4.15.4. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the Work due to the absence of such drawings.

4.15.5. The Contractor shall check the Shop Drawings, shall coordinate them (by means of coordination drawings wherever required) with the work of all trades involved before submission and shall indicate thereon his approval. Drawings and schedules submitted without evidence of the Contractor's approval may be returned for resubmission.

4.15.6. By approving and submitting Shop Drawings, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so, and that he has checked and coordinated each Shop Drawing with the requirements of the Work and of the Contract Documents.

4.15.7. If drawings or schedules show variations from the contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal. If acceptable, the Engineer may approve any or all such variations and issue an appropriate change order. If the Contractor fails to describe such variations he shall not be relieved of the responsibility for executing the Work in accordance with the Contract, even though such drawings or schedules may have been approved.

4.15.8. Each Shop Drawing or Coordination Drawing shall have a blank area 5 by 5 inches located adjacent to the title block. The title block shall display the following:

- (1) Number and Title of Drawing
- (2) Date of Drawing
- (3) Revision number and date (if applicable)
- (4) Project Title
- (5) Name of project building or facility
- (6) Name of Contractor
- (7) Name of Subcontractor (if applicable)
- (8) Clear identity of contents and location of Work

4.15.9. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer; other drawings shall be returned for correction.

4.15.10. The Contractor shall stamp all drawings which are to be submitted to the Engineer for approval. The rubber stamp shall incorporate the following items:

PROJECT TITLE _____
CONTRACTOR'S NAME _____
APPROVED BY _____ DATE _____
SPECIFICATION SECTION _____ TRANSMITTAL NO. _____

4.15.11. The review of Shop Drawings will be general only and shall not relieve or in any respect diminish the responsibility of the Contractor for details of design, dimensions, etc., necessary for proper fitting and construction of the Work as required by the Contract and for achieving the final result and performance specified thereunder.

4.15.12. Should the Contractor submit for approval equipment that requires modifications to the structures, piping, layout, etc., detailed on the Drawings, he shall also submit for approval details of the proposed modifications. If such equipment and modifications are approved, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications. Required structural changes shall be designed and detailed by an Engineer registered in the state in which the project will be constructed. Drawings shall be signed and show registration numbers or may have seal affixed.

4.15.13. Submission of Shop Drawings shall be accompanied by a copy of a transmittal letter containing Project name, Contractor's name, number of drawings, titles, specifications section, and other pertinent data. The submittal shall include four (4) legible copies of Shop Drawings or printed matter.

4.15.14. The review of Shop Drawings will be performed by the Engineer as follows:

4.15.14.a. When the submittal conforms fully with the Contract Drawings and Specifications, the Engineer will approve it. The reproducible of each drawing or page of approved submittals will be stamped approved, signed, dated and returned to the Contractor. No changes shall be made to approved drawings by the Contractor. If the Contractor desires to make any change from approved drawings, or pages of approved submittals, he shall notify the Engineer in writing that the approved material has been withdrawn and shall submit the substitution set in accordance with the above procedure.

4.15.14.b. When the submittal clearly does not conform with the Contract Drawings and Specifications, the Engineer will disapprove it by stamping it “Rejected”. Rejected submittals shall be corrected and resubmitted within 14 calendar days from the date of rejection. Submittals that are rejected shall not be released for any work.

4.15.14.c. When the submittal has only minor deviations from the Contract Drawings and Specifications, the Engineer will note the deviations and omissions as may be appropriate and approve the submittal subject to the notations by stamping it “Approved as Noted”. Approved as Noted submittals may be released for fabrication of work at the Contractor’s risk; in any event the submittal shall be corrected and resubmitted for approval within 14 calendar days from the date of approval as noted.

4.15.15. The Contractor shall be responsible for delays resulting from the rejection or approval as noted of incomplete, inadequate, incorrect or otherwise unacceptable submittals.

4.15.16. The Contractor shall assure that only drawings and pages of printed material bearing the Engineer’s “Approved” stamp are allowed on the job site.

4.15.17. The Contractor shall submit, at the completion of the Project, one set of all reviewed and correct shop drawings, catalog cuts, and descriptive literature for all Work previously submitted. These sets shall be sent to the Engineer for the Owner before final Certificate of Payment is issued.

4.16. OPERATING AND MAINTENANCE MANUALS: One copy of each required Operating and Maintenance Manual must be submitted to the Engineer with the first submittal of shop drawings. Five additional copies of each required Operating and Maintenance Manual must be submitted to the Engineer within 14 days of the return of approved shop drawings to the Contractor. No payment will be approved on any equipment for which Operating and Maintenance Manuals are required until the Operating and Maintenance Manuals are received by the Engineer. These O&M manuals must be addressed specifically to the piece of equipment supplied and shall not be general in nature; each item must be clearly identified and located. Each page must be printed on 8-1/2” x 11” paper or folded to that size in a manner suitable for insertion in a 3-ring binder.

4.17. SAMPLES:

4.17.1. Samples are physical examples furnished by the Contractor to illustrate materials, equipment or workmanship, and to establish standards by which the Work will be judged. It shall be the Contractor’s responsibility to furnish samples as required by the technical specifications or as required by the Engineer. These samples must be submitted no later than is required by the Submittal Schedule.

4.17.2. Each sample shall have a label indicating:

- (1) Project Title
- (2) Name of project building or facility

- (3) Name of Contractor
- (4) Name of Subcontractor (if applicable)
- (5) Identification of material with specification section
- (6) Name of producer and brand (if any)

4.17.3. Samples shall be submitted in duplicate unless otherwise noted in the technical specifications and shall be accompanied by a copy of a transmittal letter containing Project Name, Contractor's Name, number of samples, specification section and other pertinent data.

4.17.4. If the Engineer so requires, either prior to or after commencement of the work, the Contractor shall submit samples of materials for such special tests as the Engineer deems necessary to demonstrate that they conform to the Specifications. Such samples shall be furnished, taken, stored, packed and shipped by the Contractor as directed. Except as otherwise expressly specified, the Contractor shall make arrangements for, and pay for, the samples.

4.17.5. All samples shall be packed so as to reach their destination in good condition. To insure consideration of samples, the Contractor shall notify the Engineer by letter that the samples have been shipped and shall properly describe the samples in the letter. The letter of notification shall be sent separate from and should not be enclosed with the samples.

4.17.6. The Contractor shall submit data and samples, or place his orders, sufficiently early to provide ample time for consideration, inspection, testing, and approval before the materials and equipment are needed for incorporation in the Work. The consequences of his failure to do so shall be the Contractor's sole responsibility.

4.17.7. In order to demonstrate the proficiency of workmen, or to facilitate the choice among several textures, types, finishes, surfaces, etc., the Contractor shall provide such samples of workmanship of wall, floor, finish, etc., as may be required.

4.17.8. When required, the Contractor shall furnish to the Engineer triplicate sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials, equipment performance ratings, and concrete data.

4.18. STORAGE OF MATERIALS AND EQUIPMENT: All excavated materials, construction equipment, and materials and equipment to be incorporated in the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the Work. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

4.19. INSPECTION AND TESTING:

4.19.1. All materials and equipment used in the construction of the Project shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the Contract Documents.

4.19.2. The Owner shall provide all inspection and testing services not required by the Contract Documents.

4.19.3. The Contractor shall provide at his expense the testing and inspection services required by the Contract Documents.

4.19.4. If the Contract Documents, laws, ordinance, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved by someone other than the Contractor, the Contractor will give the Engineer timely notice of readiness. The Contractor will then furnish the Engineer the required certificates of inspection, testing or approval.

4.19.5. Inspections, tests, or approvals by the Engineer or others shall not relieve the Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

4.19.6. The Engineer and his representatives will at all times have access to the Work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the Work and also for any inspection or testing thereof.

4.19.7. If the Work is covered contrary to the written instructions of the Engineer it must, if requested by the Engineer, be uncovered for his observation and replaced at the Contractor's expense.

4.19.8. If the Engineer considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, at the Engineer's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Engineer may require, that portion or the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such Work is not found to be defective, the Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate Change Order shall be issued.

4.20. SUBSTITUTIONS:

4.20.1. The Contractor may recommend the substitution of a material, article, or piece of equipment of equal function for those referred to in the Contract Documents by reference to brand name or catalogue number, and if, in the opinion of the Engineer, such material, article, or piece of equipment is of equal function to that specified, the Engineer may approve its substitution and use by the Contractor. Any cost differential shall be deductible from the Contract Price and the Contract Documents shall be appropriately modified by Change Order.

4.20.2. The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the Project will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract Price or Contract Time.

4.21. "OR EQUAL" CLAUSE:

4.21.1. The phrase "or equal" shall be construed to mean that material or equipment will be acceptable only when in the judgement of the Engineer they are composed of parts of equal quality, or equal workmanship and finish, designed and constructed to perform or accomplish the desired result as efficiently as the indicated brand, pattern, grade, class, make or model.

4.21.2. Whenever a material, article or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard of quality and function; and, any material, article, or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed, is, in the opinion of the Engineer, of equal substance and function. It shall not be purchased or installed by the Contractor without the Engineer's written approval.

4.22. WAGES AND OVERTIME COMPENSATION: The Contractor and each of his subcontractors shall comply with all applicable State and local laws or ordinances with respect to the hours worked by laborers and mechanics engaged in work on the Project and with respect to compensation for overtime.

4.23. NO WAIVER: Neither the inspection by the Owner or the Engineer, nor any order, measurement, approval, determination, decision or certificate by the Engineer, nor any order by the Owner for the payment of money, nor any payment for or use, occupancy, possession or acceptance of the whole or any part of the Work by the Owner, nor the extension of time, nor any other act or omission of the Owner or of the Engineer shall constitute or be deemed to be an acceptance of any defective or improper work, materials, or equipment nor operate as a waiver of any requirement or provision of the Contract, or of any remedy, power or right of or herein reserved to the Owner, nor of any right to damages for breach of contract. Any and all rights and/or remedies provided for in the Contract are intended and shall be construed to be cumulative; and, in addition to each and every other right and remedy provided for herein or by law, the Owner shall be entitled as of right to a writ of injunction against any breach or threatened breach of the Contract by the Contractor, by his Subcontractors or by any other person or persons.

4.24. WORK TO CONFORM: During its progress and on its completion, the Work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in strict accordance with the Drawings, Specifications, and other Contract Documents and the directions given from time to time by the Engineer. All work done without instruction having been given therefor by the Engineer, without prior lines or levels, or performed during the absence of the Engineer, will not

be estimated or paid for except when such work is authorized by the Engineer in writing. Work so done may be ordered uncovered or taken down, removed, and replaced at the Contractor's expense.

4.25. WORKING HOURS:

4.25.1. It is contemplated that all work will be performed during the customary working hours of the trades involved unless otherwise specified in this Contract. Work performed by the Contractor at his own volition outside such customary working hours shall be at no additional expense to the Owner.

4.25.2. Any requests received by the Contractor from occupants of existing buildings to change the hours of work shall be referred to the Owner for determination.

5. INSURANCE, LEGAL RESPONSIBILITY AND SAFETY

5.1. LITIGATION OF DISPUTES; JURISDICTION: The Owner and Contractor agree that this Contract shall be interpreted according to the Laws of the State of North Carolina, and that the appropriate forum and jurisdiction for resolving any disputes and claims shall be the North Carolina Court of Common Pleas for Catawba County.

5.2. ASSIGNMENTS: The Contractor shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without written consent of the Owner. In case the Contractor assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to prior claims of all persons, firms, and corporations for services rendered or materials supplied for the performance of the Work called for in this Contract.

5.3. PERFORMANCE BOND AND PAYMENT BOND: Unless otherwise noted in the Supplemental Conditions, a Performance Bond and a Payment Bond are required. The Contractor shall obtain a Performance Bond and Payment Bond, acceptable to the Owner in a surety company authorized to do business in the state in which the Project is constructed, each for the full amount of the Contract Sum. The bonds shall guarantee the Contractor's faithful performance of the Contract and the payment of all obligations arising thereunder. The bonds shall remain in force until:

5.3.1. The Project has been completed and accepted by the Owner.

5.3.2. The provisions of all guarantees required by these Contract Documents have been fulfilled or the time limitations for all guarantees has expired, or

5.3.3. The time for the filing of all mechanics' liens has expired, whichever is longer, after which it shall become void.

5.3.4. The Contractor shall pay all charges in connection with the bonds as a part of the Contract. One executed copy of the bonds shall be attached to each copy of the Contract before they are returned to the Engineer for the Owner's signature.

5.3.5. If the Contractor defaults, the Contractor or his Surety shall reimburse the Owner for any additional Engineering fees for additional services made necessary because of the Contractor's default.

5.4. ADDITIONAL OR SUBSTITUTE BOND: If at any time the Owner for justifiable cause, shall be or become dissatisfied with the surety or sureties for the Performance and/or Payment Bonds, the Contractor shall within 5 days after notice from the Owner to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premium on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished such an acceptable bond to the Owner.

5.5. CHANGES NOT TO AFFECT BONDS: It is distinctly agreed and understood that any changes made in the Work or the Drawings or Specifications therefor (whether such changes increase or decrease the amount thereof or the time required for its performance) or any changes in the manner or time of payments made by the Owner to the Contractor, or any other modifications of the Contract, shall in no way annul, release, diminish or affect the liability of the Surety on the Contract Bonds given by the Contractor, it being the intent hereof that notwithstanding such changes the liability of the Surety on said bonds continue and remain in full force and effect.

5.6. COMPLIANCE WITH LAWS:

5.6.1. The law of the place where the Project is located shall govern the Contract. The Contractor shall abide by all local and State Laws or ordinances to the extent that such requirements do not conflict with Federal Laws or regulations. The Contractor shall keep himself fully informed of all existing and future Federal, State and local laws, ordinances, rules and regulations affecting those engaged or employed on the Work, the materials and equipment used in the Work or the conduct of the Work, and of all orders, decrees and other requirements of bodies or tribunals having any jurisdiction or authority over the same, including, but not limited to the U. S. Department of Labor and Bureau of Standards Safety and Health Regulations for Construction and its amendments as set up under the Williams-Steiger Occupational Safety and Health Act of 1970. If any discrepancy or inconsistency is discovered in the Drawings, Specifications or other Contract Documents in relation to any such law, ordinance, rule, regulation, order, decree or other requirement, the Contractor shall forthwith report the same to the Engineer in writing.

5.6.2. The Contractor shall at all times observe and comply with, and cause all his agents, servants, employees, and subcontractors to comply with all such existing requirements, and he shall protect, indemnify and save harmless the Owner, its officers, agents, servants, and employees, from and against any and all claims, demands, suits, proceedings, liabilities, judgements, penalties, losses, damages, costs and expenses, including attorney's fees, arising from or based upon any violation or claimed violation of any such law, ordinance, rule, regulations, order, decree, or other requirement, whether committed by the Contractor or any of his agents, servants, employees, or subcontractors.

5.7. REQUIRED PROVISIONS DEEMED INSERTED: Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

5.8. LIENS: If at any time any notice of liens are filed for labor performed or materials or equipment manufactured furnished or delivered to or for the Work, the Contractor shall, at its own cost and expense, promptly discharge, remove or otherwise dispose of the same, and until such discharge, removal or disposition, the Owner shall have the right to retain from any monies payable hereunder an amount which, in its sole judgement, it deems necessary to satisfy such liens and pay the costs and expenses, including attorney's fees, of defending any action brought to enforce the same, or incurred in connection therewith or by reason thereof.

5.9. CLAIMS: If at any time there be any evidence of any claims for which the Contractor is or may be liable or responsible hereunder, the Contractor shall promptly settle or otherwise dispose of the same, and until such claims are settled or disposed of, the Owner may retain from any monies which would otherwise be payable hereunder so much thereof as, in its judgement, it may deem necessary to settle or otherwise dispose of such claims and to pay the costs and

expenses, including attorney's fees, of defending any actions brought to enforce such claims, or incurred in connection therewith or by reason thereof.

5.10. INSURANCE:

5.10.1. The Contractor shall not commence any work until he obtains, at his own expense, all required insurance. Such insurance must have the approval of the Owner as to limit, form, and amount. The Contractor will not permit any Subcontractor to commence work on this project until such Subcontractor has complied with the same insurance requirements.

5.10.2. The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. Such certificates shall also contain substantially the following statement: “The insurance covered by this certificate will not be canceled or materially altered, except after 10 days notice in writing and delivered by registered mail to the Owner.” Should any policy be canceled before final payment by the Owner to the Contractor, and the Contractor fails immediately to procure other insurance as specified, the Owner reserves the right to procure such insurance and to deduct the cost thereof from any sum due the Contractor under this Contract.

5.10.3. Any insurance bearing on adequacy of performance shall be maintained after completion of the project for the full guaranty period. Should such insurance be canceled before the end of the guaranty period and the Contractor fails immediately to procure other insurance as specified. The Owner reserves the right to procure such insurance and to charge the cost thereof to the Contractor.

5.10.4. Nothing contained in these insurance requirements is to be construed as limiting the extent of the Contractor’s responsibility for payment of damages resulting from his operations under this Contract.

5.10.5. The Contractor is required to obtain and maintain for the full period of the Contract the following types of insurance coverage with limits not less than stated below:

5.10.6. WORKMEN’S COMPENSATION INSURANCE

5.10.6.a. As required by applicable State or territorial law for all of his employees to be engaged in work at the site of the project under this Contract and, in case of any such work sublet, the Contractor shall require the subcontractor similarly to provide Workmen’s Compensation Insurance for all of the latter’s employees to be engaged in such work unless employees are covered by the protection afforded by the Contractor’s Workmen’s Compensation Insurance. In case any class of employees engaged in hazardous work on the project under this Contract is not protected under the Workmen’s Compensation Statute, the Contractor shall provide and shall cause each subcontractor to provide adequate employer’s liability insurance for the protection of such of his employees as are not otherwise protected.

5.10.7. COMPREHENSIVE GENERAL LIABILITY

	<u>Bodily Injury Per Person</u>	<u>Bodily Injury Per Accident</u>	<u>Property Damage</u>
Premises and Operations	1,000,000	2,000,000	1,000,000
Elevator Liability	1,000,000	2,000,000	1,000,000
Products Liability, Including Completed Operations Coverage	1,000,000	2,000,000	1,000,000

5.10.8. COMPREHENSIVE AUTOMOBILE LIABILITY

All Owner Automobiles	1,000,000	2,000,000	1,000,000
Non-Owned Automobiles	1,000,000	2,000,000	1,000,000
Hired Car Coverage	1,000,000	2,000,000	1,000,000

5.10.9. SUBCONTRACTOR’S LIABILITY INSURANCE

5.10.9.a. Same limits as required of the General Contractor.

5.11. ORAL AGREEMENTS: No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing, and no evidence shall be introduced in any proceeding of any other waiver or modification.

5.12. SAFETY:

5.12.1. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property affected directly or indirectly by his operations during the performance of the Work. This requirement will apply continuously 24 hours per day until acceptance of the Work by the Owner and shall not be limited to normal working hours.

5.12.2. The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

5.12.2.a. All employees on the Work and all other persons who may be affected thereby;

5.12.2.b. All the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of Subcontractors or Sub-subcontractors; and

5.12.2.c. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

5.12.3. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. He shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities.

5.12.4. When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel. The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Owner and the Engineer.

5.12.5. The Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety.

6. PROGRESS AND COMPLETION OF WORK

6.1. NOTICE TO PROCEED: Following the execution of the Agreement by the Owner and the Contractor, written Notice to Proceed with the Work shall be given by the Owner to the Contractor. The Contractor shall begin and shall prosecute the Work regularly and uninterruptedly thereafter (except as provided for herein) with such force as to secure the completion of the Work within the Contract Time.

6.2. CONTRACT TIME: The Contractor shall complete, in an acceptable manner, all of the work contracted for in the time stated in the Agreement. Computation of Contract Time shall commence the day to be specified in the Notice to Proceed and every calendar day following, except as herein provided shall be counted as Contract Time.

6.3. SCHEDULE OF COMPLETION: The Contractor shall submit, at such times as may reasonable be requested by the Engineer, schedules showing the order in which the Contractor proposed to carry on the Work, with dates at which the Contractor will start the various parts of the Work, and estimated date of completion of each part.

6.4. WORK CHANGES: The Owner may, as the need arises, order changes in the Work through additions, deletions, or modifications to the extent of 25 percent of the Contract Amount, without invalidating the Contract. Compensation and time of completion affected by the change shall be adjusted at the time of ordering such change.

6.5. EXTRA WORK: New and unforeseen items of work found to be necessary, and which cannot be covered by an item or combination of items for which there is a Contract Price, shall be classed as Extra Work. The Contractor shall do such Extra Work and furnish such materials as may be required for the proper completion or construction of the whole work contemplated, upon written order from the Owner as approved by the Engineer. In the absence of such written order, no claim for Extra Work shall be considered. Extra Work shall be performed in accordance with these Contract Documents where applicable and work not covered by such shall be done in accordance with the best construction practice and in a workmanlike manner. Extra Work required in an emergency to protect life and property shall be performed by the Contractor as required.

6.6. EXTENSION OF CONTRACT TIME:

6.6.1. A delay beyond the Contractor's control occasioned by an Act of God, by act or omission on the part of the Owner or by strikes, lockouts, fire, etc., may entitle the Contractor to an extension of time in which to complete the Work as agreed by the Owner, provided, however, that the Contractor shall immediately give written notice to the Owner of the cause of such delay.

6.6.2. Act of God shall mean an earthquake, flood, cyclone or other cataclysmic phenomenon of nature. Rain, wind, flood, or other natural phenomenon of normal intensity for the locality shall not be construed as an Act of God and no reparation shall be make to the Contractor or damages to the Work resulting therefrom.

6.6.3. All claims for extension of time shall be made in writing to the Engineer no more than 20 days after the occurrence of the delay; otherwise they shall be waived. In the case of continuing cause of delay only one claim is necessary. Any claim should include complete justification for the extent of the delay claimed.

6.6.4. This Subsection does not exclude the recovery of damages for delay for either party under other provisions of the Contract Documents.

6.7. ENGINEER'S CERTIFICATE OF SUBSTANTIAL COMPLETION: When the Work to be performed under this Contract is substantially completed in accordance with the Contract Documents, the Engineer shall prepare an Engineer's Certificate of Substantial Completion to be acknowledged and accepted by the Owner and the Contractor. The Certificate may list items to be completed or corrected but such Certificate shall not relieve the Contractor of his obligation to complete all Work, whether listed or not, in accordance with the Contract Documents nor will it preclude any right the Owner may have for recourse in accordance with the Contract Documents.

6.8. TERMINATION OF CONTRACTOR'S RESPONSIBILITY: The Contract will be considered complete when all Work has been finished, the final review made up by the Engineer, and the project accepted in writing by the Owner. The Contractor's responsibility shall then cease, except as set forth in his Performance Bond, as provided in Subsection 4.6. entitled GENERAL GUARANTY, and as provided in Subsection 6.9. entitled CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT.

6.9. CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT: The making of the final payment by the Owner to the Contractor shall not relieve the Contractor of responsibility for faulty materials or workmanship. The Contractor shall promptly replace any such defects discovered within one year, except where longer periods are specified, from the date of written acceptance of the Work.

6.10. PROGRESS SCHEDULE:

6.10.1. Within 20 days after execution and delivery of the Agreement and not less than 10 days prior to making an application for partial payment, the Contractor shall prepare and deliver to the Engineer a Progress Schedule on forms approved by the Engineer.

6.10.2. The schedule shall be set up in a Critical Path format and shall show the proposed dates of commencement and completion of the various subdivisions of work required under the Contract Documents.

6.10.3. The schedule shall show the dates of commencement and completion of the various subdivisions of work required by the Contract Documents and all activities required to accomplish the Work. No activity included in the schedule shall have a duration greater than 15 days. After approval of the Submit Schedule, the Contractor shall incorporate this schedule into the CPM schedule.

6.10.4. The schedule shall be updated monthly. No progress payments will be made unless application is accompanied by the updated schedule.

6.11. SCHEDULES, REPORTS AND RECORDS:

6.11.1. The Contractor shall submit to the Owner such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the Contract Documents for the Work to be performed.

6.11.2. The Contractor shall also submit, in a format approved by the Engineer, a schedule of payments that he anticipates he will earn during the course of the Work.

6.12. ABANDONMENT OF WORK OR OTHER DEFAULT:

6.12.1. If the Work shall be abandoned, or any part thereof shall be sublet without previous written consent of the Owner, or the Contract or any monies payable hereunder shall be assigned otherwise than as herein specified, or if at any time the Engineer shall be of the opinion, and shall so certify in writing, that the conditions herein specified as to rate of progress are not being complied with, or that the Work or any part thereof is being unnecessarily or unreasonably delayed, or that the Contractor has violated or is in default under any of the provisions of the Contract, or is the Contractor becomes bankrupt or insolvent or goes or is put into liquidation or dissolution, either voluntarily or involuntarily, or petitions for an arrangement or reorganization under the Bankruptcy Act, or makes a general assignment for the benefit of creditors or otherwise acknowledges insolvency, the happening of any of which shall be and constitute a default under the Contract, the Owner may notify the Contractor in writing, with a copy of such notice mailed to the Surety, to discontinue such work or any part thereof; thereupon the Contractor shall discontinue such work or such part thereof as the Owner may designate; and the Owner may, upon giving notice, by contract or otherwise as it may determine, complete the Work or such part thereof and charge the entire cost and expense of so completing the Work or such part thereof to the Contractor. In addition to the said entire cost and expense of completing the Work, the Owner shall be entitled to reimbursement from the Contractor and the Contractor agrees to pay the Owner any losses, damages, costs, and expenses, including attorney's fees, sustained or incurred by the Owner by reasons of any of the foregoing causes. For the purposes of such completion the Owner may for itself or for any contractors employed by the Owner take possession of any and use or cause to be used any and all materials, equipment, plant, machinery, appliances, tools, supplies and such other items of every description that may be found or located at the site of the Work, No equipment or materials may be removed from the Work without the written consent of the Owner.

6.12.2. All costs, expenses, losses, damages, attorney's fees and any and all other charges incurred by the Owner under this Subsection shall be charged against the Contractor and deducted and/or paid by the Owner out of any monies due or payable or to become due or payable under the Contract to the Contractor; in computing the amounts chargeable to the Contractor, the Owner shall not be held to a basis of the lowest prices for which the completion of the Work or any part thereof might have been accomplished, but all sums actually paid or obligated therefor to effect its prompt completion shall be charged to and against the account of the Contractor. In case the costs, expense, losses, damages, attorney's fees and other charges together with all payments theretofore made to or for the account of the Contractor are less than the sum which would have been payable under the Contract if the Work had been properly performed and completed by the Contractor, the Contractor shall be entitled to receive the difference and, in case such costs, expenses, losses, damages, attorney's fees and other charges, together with all payments theretofore made to or for the account of the Contractor, shall exceed the said sum, the Contractor shall pay the amount of the excess to the Owner.

7. PAYMENTS TO THE CONTRACTOR

7.1. PRICES FOR WORK: The Owner shall pay and the Contractor shall receive the prices stipulated in the Bid made a part hereof as full compensation for everything performed and furnished and for all risks and obligations undertaken by the Contractor under and as required by the Contract.

7.2. SCHEDULE OF VALUES: Except in cases where unit prices form the basis for payment under the Contract, the Contractor shall, within 20 days of the execution of the Contract and not less than 10 days prior to making an application for partial payment, submit to the Owner in a form approved by the Owner a schedule of values showing a breakdown of the Contract Sum itemized by trade and/or specification sections or as otherwise directed by the Owner and for each item shall show the total value including the Contractor's overhead and profit. Upon approval by the Owner, this schedule will be used in determining the value of the work done for the purpose of partial payments. The costs employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the Contract Price.

7.3. APPLICATIONS FOR PARTIAL PAYMENT:

7.3.1. Before the first day of each month, or as otherwise directed by the Owner, the Contractor shall make applications for the value of the work done and the materials installed and/or delivered to the site for installation in the project during the previous month. Such applications shall show the breakdown of the project into the same items as the schedule of values in Subsection 7.2. entitled SCHEDULE OF VALUES and showing for each item the total value, the value previously reported as complete, the value completed during the month, the cumulative value completed and the value remaining to be done. The application shall also show the value of materials delivered to the site which have not been incorporated into the Work and whose value is not included in the amount shown for the Work of which they are a part. The value of such materials shall be established by attaching copies of invoices covering the materials to the application. The application shall include a summary of value of the work performed during the previous month, plus the value of the material delivered to the job site but not incorporated in the Work, and minus the amount of retainage indicated in Subsection 7.4. entitled RETAINAGE.

7.3.2. The Engineer will, within 10 days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the Owner, or return the partial payment estimate to the Contractor indicating in writing his reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate.

7.4. RETAINAGE: The Owner shall retain 10 percent of the amount of each payment until final completion and acceptance of all work covered by the Contract Documents. The Owner at any time, however, after 50 percent of the Work has been completed, if he finds that satisfactory progress is being made, will make further partial payments in full on the current and remaining estimates, but amounts previously retained shall not be paid to the Contractor at 50 percent or any time thereafter when, in the opinion of the Engineer, the progress of the Work is not

satisfactory, additional amounts may be retained but in no event shall the total retainage be more than 10 percent of the value of the Work completed. Upon substantial completion of the Work, any amount retained may be paid to the Contractor. When the Work has been substantially completed except for Work which cannot be completed because of weather conditions, lack of materials or other reasons which in the judgement of the Owner are valid reasons for non-completion, the Owner may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the Work still to be completed.

7.5. PAYMENTS WITHHELD:

7.5.1. The Owner may withhold payment or, on account of subsequently discovered evidence, nullify the whole or part of any application to the extent necessary to protect himself from loss on account of:

7.5.1.a. Defective work not remedied.

7.5.1.b. Claims filed or reasonable evidence indicating the probable filing of claims.

7.5.1.c. Failure of the Contractor to make payments to Subcontractors, material suppliers, or employees.

7.5.1.d. A reasonable doubt that the Contract Work can be completed for the balance unpaid.

7.5.1.e. Damage to another Contractor.

7.5.2. When the above grounds are removed, payment will be made for the amounts withheld because of them.

7.6. PAYMENT OF APPLICATIONS FOR PARTIAL PAYMENT: Upon verification and approval of the application for partial payment made as specified, the Owner will make payment of the amount found properly due. No payment made to the Contractor nor partial or entire use or occupancy of the Work by the Owner shall be an acceptance of any work or materials not in accordance with this Contract.

7.7. FINAL INSPECTION: Upon receipt of written notice from the Contractor that the work has been completed and finished in accordance with the Contract, the Owner shall cause an inspection to be made of the work by his authorized representatives. A list shall be made of all deviations from the Contract requirements (commonly termed "punch list") and a copy of such list furnished to the Contractor. The Contractor shall with reasonable haste remedy all defects so noted and shall notify the Owner upon the completion of such work. When inspection by the Owner's authorized representatives shows the work to be completed in accordance with the Contract, application for final payment may be made.

7.8. RELEASE OF LIENS: Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver to the Owner a complete and notarized release of all liens arising out of this Contract, or receipts in full in lieu thereof, and if required in either

case, an affidavit that so far as he had knowledge of information the releases and receipts include all the labor and materials for which a lien could be filed; but the Contractor may, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner, to indemnify him against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

7.9. USE OR PARTIAL PAYMENT NOT ACCEPTANCE: It is agreed that this is an entire contract for one whole and complete work or result and that neither the Owner's entrance upon or use of the Work or any part thereof nor any partial payments by the Owner shall constitute an acceptance of the Work or any part thereof before its entire completion and final acceptance.

7.10. PAYMENT FOR UNCORRECTED WORK: Should the Owner direct the Contractor not to correct work that has been damaged or that was not performed in accordance with the Contract Documents, an equitable deduction from the Contract Amount shall be made to compensate the Owner for the uncorrected Work.

7.11. PAYMENT FOR REMOVAL OF REJECTED WORK AND MATERIALS;

7.11.1. The removal of work and materials rejected in accordance with Subsection 4.3. entitled CORRECTION OF WORK BEFORE COMPLETION and the re-execution of acceptable work by the Contractor shall be at the expense of the Contractor, and he shall pay the cost of replacing the work of other contractors destroyed or damaged by the removal of the rejected work or materials and the subsequent replacement of acceptable work.

7.11.2. Removal of rejected work or materials and storage of materials by the Owner, in accordance with Subsection 4.3. entitled CORRECTION OF WORK BEFORE COMPLETION, shall be paid by the Contractor within 30 days after written notice to pay is given by the Owner. If the Contractor does not pay the expenses of such removal and after 10 days' written notice being given by the Owner of his intent to sell the materials, the Owner may sell the materials at auction or at private sale and will pay the Contractor the net proceeds therefrom after deducting all the costs and expenses that should have been borne by the Contractor.

7.12. PAYMENT FOR EXTRA WORK: Written notice of claims for payment for Extra Work shall be given by the Contractor within 10 days after receipt of instructions from the Owner to proceed with the Extra Work and also before any work is commenced, except in emergency endangering life or property. No claim shall be valid unless so made. In all cases, the Contractor's itemized estimate sheets showing all labor and material shall be submitted to the Owner. The Owner's order for Extra Work shall specify any extension of the Contract Time and one of the following methods of payment:

7.12.1. Unit price or combinations of unit prices which form the basis of the original Contract.

7.12.2. A lump sum based on the Contractor's estimate and accepted by the Owner.

7.12.3. Net cost plus a fixed fee. Net costs are defined as follows:

7.12.3.a. Labor costs, including time of foreman while engaged directly upon extra work at rates not greater than the scale of rates for each respective classification of labor customary in the area where the work is performed for each respective job classification.

7.12.3.b. Labor insurance taxes including amounts paid on a percent of such labor rates or on a cents per hour basis for Workmen's Compensation, Public Liability, Contractor's Contingent Liability and Contractual Liability Insurance and all Federal Old Age and Unemployment Taxes and any other taxes applicable as well as fringe benefits as may be approved by the Engineer.

7.12.3.c. Materials and supplies actually used on the Work.

7.12.3.d. Rental charges for necessary equipment, as agreed upon by the Owner and Contractor. Rental charges shall not exceed those published in Rental Rates for Construction Equipment issued by the American Equipment Distributor. Equipment and tools having a value of \$100.00 or less are considered to be "small tools" and, as such, are considered to be part of overhead.

7.12.3.e. To the cost under Subparagraph 7.12.3. there shall be added a fixed fee to be agreed upon but not to exceed 15 percent of the estimated cost of the Work. The fee shall be compensation to cover the cost of supervision, overhead, bond, profit and any other general expenses. On work performed by subcontractors, the fixed fee shall not exceed five percent of the cost of the work.

7.13. PAYMENT FOR WORK SUSPENDED BY THE OWNER: If the Work or any part thereof shall be suspended by the Owner and abandoned by the Contractor as provided in

Subsection 2.12. entitled SUSPENSION OF WORK, TERMINATION AND DELAY, the Contractor will then be entitled to payment for all work done on the portions so abandoned, plus 15 percent of the value of the abandoned work to compensate for overhead, plant expenses, and anticipated profit.

7.14. PAYMENT FOR WORK BY THE OWNER: The cost of the work performed by the Owner, in accordance with Subsection 2.10. entitled OWNER'S RIGHT TO DO WORK, shall be paid by the Contractor.

7.15. PAYMENT FOR WORK BY THE OWNER FOLLOWING TERMINATION OF CONTRACT BY OWNER: Upon termination of the Contract by the Owner in accordance with Subsection 2.11. entitled OWNER'S RIGHT TO TERMINATE CONTRACT, no further payment shall be due the Contractor until the Work is completed. If the unpaid balance of the Contract Amount shall exceed the cost of completing the Work including all overhead costs, the excess shall be paid to the Contractor. If the cost of completing the work shall exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The cost incurred by the Owner, as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Owner.

7.16. PAYMENT FOR SAMPLES AND TESTING OF MATERIALS:

7.16.1. Samples furnished in accordance with Subsection 4.17. entitled SAMPLES, shall be furnished by the Contractor at his expense.

7.16.2. Testing of samples and materials furnished in accordance with Subsection 4.17. entitled SAMPLES, shall be arranged and paid for by the Owner, unless expressly provided for otherwise in the material specifications.

7.17. ACCEPTANCE AND FINAL PAYMENT:

7.17.1. When the Contractor shall have completed the Work in accordance with the terms of the Contract Documents, he shall certify completion of the Work to the Owner and submit a final Request for Payment, which shall be the Contract Amount plus all approved additions, less all approved deductions and less previous payments made. The Contractor shall furnish evidence that he has fully paid all debts for labor, materials, and equipment incurred in connection with the Work, and , upon acceptance by the Owner, the Owner will release the Contractor except as to the conditions of the Performance Bond and the Payment Bond, any legal rights of the Owner, required guaranties, and Correction of Faulty Work after Final Payment, and will pay the Contractor's final Request for Payment. The Contractor shall allow sufficient time between the time of completion of the Work and approval of the final Request for Payment for the Engineer to assemble and check the necessary data.

7.17.2. The Contractor shall deliver to the Owner a complete release of all liens arising out of this Contract before the retained percentage or before the final Request for Payment is paid.

7.18. ACCEPTANCE OF FINAL PAYMENT AS RELEASE: The acceptance by the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor other than claims in stated amounts as may be specifically excepted by the Contractor for all things done or furnished in connection with this Work and for every act and neglect of the Owner and others relating to or arising out of this Work. Any payment, however, final or otherwise, shall not release the Contractor or his sureties from any obligations under the Contract Documents or the Performance Bond and the Payment Bond.

7.19. DELAYS AND DAMAGES:

7.19.1. The date of beginning and the time for completion of the Work are essential conditions of the Contract Documents and the Work embraced shall be commenced on a date specified in the Notice to Proceed.

7.19.2. The Contractor will proceed with the Work at such rate of progress to insure full completion within the Contract Time. It is expressly understood and agreed by and between the Contractor and the Owner that the Contract Time for the completion of the Work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Work. If the Contractor refuses or fails to prosecute the Work, or any separable part thereof, with such diligence as will insure its completion within the time specified in the Contract, or any extension thereof, or fails to complete said Work within such time, the Owner may, by written notice to the Contractor and his Surety, terminate his right to proceed with the Work or such part of the Work as to which there has been delay. In such event the Owner may take over the Work and prosecute the same to completion, by contract or otherwise, and may take possession of and utilize in completing the Work such materials, appliances, and plant as may be on the site of the Work and necessary therefor. Whether or not the Contractor's right to proceed with the Work is terminated, he and his sureties shall be liable for any damage to the Owner resulting from his refusal or failure to complete the Work within the specified time.

7.19.3. If fixed and agreed liquidated damages are provided in the Contract and if the Owner so terminates the Contractor's right to proceed, the resulting damage will consist of such liquidated damages until such reasonable time as may be required for final completion of the Work together with any increased costs occasioned the Owner in completing the Work.

7.19.4. If fixed and agreed liquidated damages are provided in the Contract, and if the Owner does not so terminate the Contractor's right to proceed, the resulting damage will consist of such liquidated damages until the Work is completed or accepted.

7.19.5. The Contractor's right to proceed shall not be so terminated nor the Contractor charged with resulting damage if:

7.19.5.a. The delay in the completion of the Work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, Acts or God, acts of the public enemy, acts of the Government in either its sovereign or contractual capacity, acts of another contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and such subcontractors or suppliers; and

7.19.5.b. The Contractor, within 10 days from the beginning of any such delay (unless the Owner grants a further period of time before the date of final payment under the Contract), notifies the Owner in writing of the causes of delay.

7.19.6. As used in subparagraph 1, above, the term "subcontractors or suppliers" means subcontractors or suppliers at any time.

7.19.7. The Engineer shall ascertain the facts and the extent of the delay and extend the time for completing the Work when, in his judgement, the findings of fact justify such an extension, and

his findings of fact shall be final and conclusive on the parties, subject only to appeal as provided in these General Conditions. The rights and remedies of the Owner provided in this clause are in addition to any other rights and remedies provided by law or under this Contract.

(End of Section 01230)

SECTION 01232

SUPPLEMENTAL CONDITIONS

PART 1 GENERAL

1.1 CONFLICT OF INTEREST:

- A. No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiation, making, accepting, or approving any architectural, engineering, inspecting, construction, or material supply contract, or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner who is in any legislative, executive, supervisory, or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

1.2 CONTRACT MODIFICATION:

- A. All changes which affect the construction of the project must be authorized by means of a contract change order. All change orders and contract modifications must be approved by the Owner prior to becoming effective. [The contract change order will include extra work, work for which quantities have been altered from those shown in the bidding schedule as well as decreases or increases in the quantities of installed units which are different from those shown in the bidding schedule because of final measurements.] All changes should be recorded on a contract change order as they occur so that they may be included in the partial payment estimate.

1.3 COMPUTATION OF QUANTITIES:

- A. For estimating quantities in which the computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas.

JOB NO.: 013498.00

DATE: August 2017

- B. It is further agreed that the computation of the volume of prisms shall be by the method of average end areas.

1.4 LIMITS OF NORMAL EXCAVATION:

- A. In determining the quantities of excavation to which unit prices shall apply, the limits of normal width and depth of excavation shall be as described below, unless other limits are indicated on the Drawings or specified.
- B. For pipes in trenches, the normal width of the trench shall be measured between vertical planes which are a distance apart equal to the sum of 18 inches plus 1-1/3 times the nominal inside diameter of the pipe. If the width so computed is less than 3 feet, a width of 3 feet shall be taken as the normal width for payment. The normal depth shall be measured to a distance of 0.2 foot below the bottom of the pipe in earth and 0.7 foot in rock, unless there be a cradle underneath the pipe; in which case the normal depth shall be measured to the underside of the cradle. The width of trench for the cradle shall be assumed to be that specified above for pipes in trenches.
- C. For concrete placed directly against undisturbed earth, the normal width and depth of the excavation for such concrete shall be measured to the neat lines of the concrete as indicated on the Drawings or, as ordered.
- D. For concrete placed against rock surfaces resulting from rock excavation, the normal width and depth of the excavation shall be measured to 0.4 foot outside the neat lines of the concrete as indicated on the Drawings or as ordered.
- E. For other structures, except manholes as noted below, the normal width shall be measured between vertical planes 1 foot outside the neat lines of the several parts of the structure, except that the width at any elevation shall be measured as not less than the width at a lower elevation. The normal depth shall be measured to the underside of that part of the structure for which the excavation is made.
- F. No additional width or depth of trenches excavated in earth or rock shall be allowed at standard circular manholes.
- G. Wherever bell holes are required for jointing pipe, they shall be provided without additional compensation over and above that resulting from measurements as above described.

JOB NO.: 013498.00
DATE: August 2017

1.5 TEN STATES STANDARDS:

- A. The horizontal and vertical separation of sewer lines and water mains must be in accordance with the "Ten States Standards".
 - 1. Horizontal Separation: Whenever possible, sewers should be laid at least 10 feet, horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of 10 feet, a sewer may be laid closer than 10 feet to a water main if:
 - 1. It is laid in a separate trench.
 - 2. It is laid in the same trench with the water mains located at one side on a bench of undisturbed earth.
 - 3. In either case, the elevation of the crown of the sewer is at least 18 inches below the invert of the water main.
- B. Vertical Separation: Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be buried to meet the above requirement, the water main shall be relocated to provide this separation, or reconstructed with slip-on or mechanical joint cast iron pipe, asbestos-cement pressure pipe or prestressed concrete cylinder pipe for a distance of 10 feet on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible.
- C. Special Conditions: When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the water main should be constructed of slip-on or mechanical-joint cast iron pipe, asbestos-cement pressure pipe, or prestressed concrete cylinder pipe and the sewer constructed of mechanical joint cast iron pipe, and both services should be pressure tested to assure watertightness.

1.6 WORK ON HIGHWAY RIGHT-OF-WAY:

- A. All work performed in roads and street crossings and all work performed on street or road rights-of-way shall be performed in accordance with "Policy and Procedures for Accommodating Utilities on Highway Rights-of-Way", current issue, by the North Carolina Department of Transportation..

1.7 TRAFFIC CONTROL:

JOB NO.: 013498.00
DATE: August 2017

- A. The Contractor shall comply with the manual published by the North Carolina Department of Transportation entitled "Work Zone Traffic Control".
- B. Upon completion and acceptance of the work or as the need for temporary traffic control devices ceases, they shall be removed by the Contractor and shall remain the property of the Contractor.
- C. Signs shall be used where warranted to maintain traffic or to call attention to conditions on, or adjacent to, the construction work. Such signs shall be removed when they are no longer required.

1.8 CONNECTIONS MADE TO EXISTING MAINS:

- A. No existing main shall be cut, tapped, or otherwise disturbed without first obtaining permission in writing from the Owner to make that connection. At least 48 hours notice is required to obtain written approval.
- B. Connections to mains shall be coordinated with the Owner so that they are made during a period of low water demand and with a minimum of service interruption.

1.9 WATER SUPPLY:

- A. It shall be the Contractors responsibility to purchase and convey the necessary water to any location at which it is required on the project.

The Contractor shall install a metering system which complies with AWWA C700 and shall pay the Owner for the water used.

1.10 USE OF PREMISES:

- A. The Contractor shall confine his materials, equipment, and the operations of his employees, subcontractors, and suppliers to minimize interference with the Owners normal operations being carried on in the existing facility and use of yards, roadways, trucking and parking areas.
- B. Where connection between new and existing work is necessary and requires shutting down of any existing facilities, services, or areas, these connections shall be made at such times and in such manner as the Owner may direct.

1.11 PERSONNEL FACILITIES:

JOB NO.: 013498.00

DATE: August 2017

- A. In order to minimize interference with the operations of the existing facility, the Contractor shall provide suitable facilities necessary for his personnel for use as lunch rooms, vending areas, first aid rooms, toilets, etc., and shall instruct and supervise his personnel to ensure that the facilities provided by the Owner for the use of its employees are not used by employees of the Contractor. All such personnel facilities provided by the Contractor shall be located adjacent to or within the area of the work.

1.12 PARKING AREAS

- A. Upon proper agreement with the Owner, the Contractor will be assigned a parking area for his employees by the Owner. The entrance gate shall be kept locked at all times by the Contractor, except during regular working hours.

1.13 STATE AND LOCAL PERMITS, LICENSES, FEES, INSPECTIONS, CERTIFICATES:

- A. The Contractor shall obtain such required documents and pay the fees assessed for each division of work for which such permits, licenses, fees, and inspections are required. The Contractor shall also obtain and pay the fees for general permits such as Building Permits, Business License, and Certificate of Occupancy.

1.14 SIGNS:

- A. The Owner reserves the right to all advertising privileges about the job and no signs shall be posted by the Contractor anywhere on the premises without approval by the Owner except those signs, posters, or bulletins required by Federal, State, or local authorities.
- B. Directional signs identifying offices and/or storage areas of the Contractor may be erected as required to facilitate work, provided:
 - 1. The Contractor shall submit to the Owner for approval a scale drawing or sketch of the proposed sign showing size, type of material, painting, and proposed location. All submittal data shall be in triplicate.
 - 2. The size of the individual sign shall be not greater than 24 inches wide by 12 inches high.
 - 3. Signs shall be neatly painted on weather-resistant materials.
 - 4. The signs will be removed upon completion of the job.

JOB NO.: 013498.00

DATE: August 2017

5. No sign shall be erected prior to approval by the Owner.

1.15 OWNER'S INSURANCE AUTHORITY:

- A. During all phases of construction, the Contractor will be required to perform his operations so as to comply expeditiously with the recommendations of the Owner's Insurance Authority.

1.16 BUILDERS RISK INSURANCE:

- A. The Contractor shall procure and maintain during the life of this Contract, Builders Risk Insurance on an all risk basis, on a 100 percent completed value basis on the insurable portion of the project. The Owner, the Contractor, and Subcontractor (as their interest may appear) shall be named as the Insured.

Contractor Insurance Requirements

Contractor shall maintain at all times during the term of this Agreement, at the contractor's sole expense:

- A. **Commercial General Liability Insurance**
Contractor shall maintain Commercial General Liability insurance, including coverage for products and completed operations liability, contractual liability, liability from independent contractors, property damage liability, bodily injury liability, and personal injury liability with limits of not less than \$250,000 per occurrence, and \$250,000 annual aggregate. The limits may be satisfied by a combination of primary and excess insurance. The coverage shall be written on an occurrence basis.

- B. **Business Automobile Insurance**
At all times while the Contractor's representatives are conducting on-site work, the Contractor shall maintain Business Auto insurance for any owned, hired, rented, or borrowed vehicle with a limit of not less than \$250,000 per occurrence combined single limit for bodily injury and property damage liability. The limit may be satisfied by a combination of primary and excess insurance.

- C. **Workers Compensation & Employers Liability Insurance**
At all times while the Contractor's representatives are conducting on-site work, Contractor shall maintain statutory Workers Compensation insurance in accordance with the laws of North Carolina. Contractor shall

JOB NO.: 013498.00
DATE: August 2017

also maintain Employers' Liability insurance with limits of not less than \$100,000 per accident and \$100,000 each employee for injury by disease.

E. General Requirements

1. Prior to beginning the work, Contractor shall provide written evidence of insurance as requested by the County to confirm that these insurance requirements are satisfied.
2. Catawba County shall be named as an additional insured under Contractor's automobile and general liability insurance. In the event of a loss arising out of, or related to the Contractor's services performed under this Agreement, Contractor's Liability insurance shall be primary (pay first) with respect to any other insurance which may be available to the County, regardless of how the "other insurance" provisions may read.
3. The workers compensation policy must contain a waiver of subrogation in favor of the County
4. Contractor shall be responsible for insuring all of his/her own personal property, improvements, and betterments.
5. All insurance policies put forth to satisfy the above requirements shall require the insurer to provide a minimum of sixty (60) days notice to the County of any material change in coverage, cancellation, or non-renewal.
6. All insurance put forth to satisfy the above requirements shall be placed with insurance companies licensed to provide insurance in the state of North Carolina. Any deductibles or self-insured retentions in the required insurance shall be subject to approval by the County.
7. Contractor shall provide certificates of insurance to the County as evidence of the required coverage. Contractor agrees to provide complete copies of policies if requested. Failure of Contractor to provide timely evidence of insurance, or to place coverage with insurance, or to place coverage with insurance companies acceptable to the County, shall be viewed as Contractor's delaying performance entitling the county to all appropriate remedies under the law including termination of the contract.

1.17 PROPERTY INSURANCE:

- A. In addition to the insurance required by the General Conditions, the Contractor shall submit proof to the Owner that the Contractor's insurance carrier is fully aware of the type of work involved.
- B. The Contractor shall not commence any work until he obtains, at his own expense, all required insurance. The Contractor shall submit complete certificates of insurance indicating mandated coverages to the Owner on standard AIA-G705 or "ACCORD" forms, latest edition.
- C. Property insurance, including Fire, Extended Coverage, Vandalism and Malicious Mischief coverage, to the full insurable value thereof, will be carried and paid for by the Owner. This insurance will be placed with the State Insurance Reserve Fund and a certificate compliance furnished to the contractor through the Engineer. The insurance will have a deductible of \$100.00 on vandalism and malicious mischief. Losses up to that amount and any other losses not specifically covered under the Owners policy shall be borne by the Contractor. The policy will be issued in the name of the "Owner and the Contractor as their interests appear". The Contractor must report any loss to the Owner as soon as the loss occurs in order that damage be assessed before job conditions are disturbed. Formal claims against this policy must be submitted within 21 days after occurrence.
- D. The Owner's Builder's Risk Insurance does not cover any loss from theft or burglary, nor does it cover loss of any tools, equipment, scaffolding, staging, towers, forms, machinery, etc. owned or rented by mechanics, or the contractor or subcontractors, which are not intended to become a part of the project; but does cover damage to the building or contents because of theft or burglary. The Contractor shall bear the cost of losses due to these excluded items in their entirety; and if he wishes coverage, the contractor must obtain such coverage and pay the premiums.

1.18 PUBLICITY:

- A. All prime contractors and their subcontractors shall submit to the Owner for approval all publicity items, including photographs, relating to the work of this project. The Owner shall approve any and all material prior to release for publication.

1.19 OWNER'S OPERATIONS:

JOB NO.: 013498.00
DATE: August 2017

- A. The Owner intends, and reserves the right, to carry on normal operations during normal working hours. The construction work shall not interfere with the Owners operations except as is absolutely necessary. The Contractor shall ascertain the Owner's working hours prior to bidding. At such time (or times) when it is necessary to interfere with Owners operations, the Contractor shall perform such work at a time specified by the Owner, even though the time specified be outside regular working hours.

1.20 PROTECTION OF WORK:

- A. The Contractor shall at all times, until final acceptance of the work, provide protection of the work, either new or previously existing, from all hazards involved in his operations. All damage suffered by any item of work, including, but not limited to, drains, curbs, doors, equipment, and structures, shall be repaired or the item shall be replaced prior to final acceptance.

1.21 SPECIAL PRECAUTIONS:

- A. At all times during the construction of the project and its component parts, the Contractor shall provide, install, and maintain proper temporary supports, shoring, and bracing to prevent any damage to the work due to all causes.

1.22 SMOKING AND FIRE PROTECTION:

- A. Smoking is absolutely forbidden except in such areas as the Owner shall designate. The Contractor shall confer with the Owner to determine the areas in which smoking is permitted. It is the responsibility of the Contractor to enforce "No Smoking" regulations in the restricted areas. The Owner will remove from the premises any person violating the smoking regulations.
- B. Welding, flame cutting, or other operations involving the use of flame, arc, or sparking devices will not be allowed without adequate protection.

1.23 POWDER ACTUATED FASTENERS:

- A. Whether or not permitted by local code or ordinance, powder actuated fasteners may not be used except on specific approval of the Owner or the Engineer in writing.

1.24 COMPRESSED AIR:

JOB NO.: 013498.00
DATE: August 2017

- A. The Contractor shall furnish all compressed air and temporary piping required for the work. Where necessary to locate air compressors within the building, proper ventilation shall be supplied for the compressors. All costs of providing the compressed air shall be borne by the Contractor. No connection or use of the Owners air supply will be permitted.

1.25 PRE-CONSTRUCTION CONFERENCE:

- A. After award of contract, but prior to commencement of work, a pre-construction conference will be held for the purpose of reviewing the contract documents and job conditions. The conference will be held at a time and place as agreed upon by all participants and will be attended by representatives of the Owner and the Contractor.

1.26 LIQUIDATED DAMAGES:

- A. In case of failure on the part of the contractor to complete the work within the time fixed in the Agreement for final completion or any extension thereof, the Owner shall retain from final payment to the contractor, liquidated damages, the amount set forth in the Agreement for each succeeding calendar day of delay, which is agreed upon as a reasonable and proper measure of damages which the Owner will sustain per them by the failure of the contractor to complete work within the time stipulated, it being recognized by the Owner and contractor that the injury to the Owner which could result from failure of the contractor to complete the work on schedule is uncertain and insusceptible of certain computation.

1.27 REQUIREMENTS FOR CHANGE ORDERS AND REQUEST FOR PAYMENTS

- A. Change Orders and Requests for Payment involve several people and departments. In compliance with state and county laws, the Change Order requires approval before any construction is begun, and thus before billing is done. If these procedures are not followed, the Owner cannot be held liable for any expenses incurred.

1. CHANGE ORDER PROCEDURES

- a. The General Contractor submits the Change Order to the Engineer with a list of the changes on a mutually acceptable change order form and the cost of each item. As this is an amendment to the contract, it must be signed first by the General Contractor.

JOB NO.: 013498.00

DATE: August 2017

- b. The Engineer reviews, and if all items are in order, the Engineer presents the Change Order to the Owner with the Engineer's recommendations. The amount that will change the Engineers contract should also be submitted along with the other documents.
- c. The Owner signs the Change Order and sends it to the Finance Department.
- d. If the Change Order increases the cost of the project, additional purchase order must be obtained. If the Change Order decreases the cost of the project, the appropriate purchase order is liquidated for the amount of the decrease.
- e. The "hard copy purchase order will be delivered by the Administrative Services Department to the Engineer, for the Engineer, to give the "notice to proceed" to the General Contractor.

1.28 BILLING FOR CHANGE ORDERS

- A. The General Contractor may include the Change Orders in the project billing once approval of the change order is received from the Owner. Each Change Order must be listed separately on the monthly billing with the appropriate purchase order number cited on the bill (adjacent to the Change Order number).
- B. Requested monthly billings, including all approved Change Orders, are submitted to the Engineer for approval.
- C. After approval, the Engineer submits the General Contractor's billing to the Owner for approval.
- D. Check for payment request is either mailed to or picked up by the Contractor.

1.29 EQUIPMENT BY OWNER:

- A. The following specific major items of equipment will be supplied by the Owner:
 - 1. Not Applicable

1.30 UTILITY LOCATIONS:

JOB NO.: 013498.00
DATE: August 2017

- A. Prior to beginning any excavation, the Contractor shall notify all public utility companies and have their lines located and marked.

1.31 SPECIFICATIONS AND DRAWINGS:

- A. The following Drawings and Specifications form a part of this Contract as set forth in Paragraph 1.1, Section 01230, GENERAL CONDITIONS. **[Town of Smoaks Water System Improvements]**

1. THE DRAWINGS ARE LISTED AS FOLLOWS:

<u>Sheet No.</u>	<u>Title</u>
G-000	Title Sheet
G-001	General Notes & Legend
C-201	Lodge Hwy 0+00 – 13+00
C-202	Lodge Hwy 13+00 – 26+00
C-203	Lodge Hwy 26+00 – 38+45
C-204	Sun Rise Rd 0+00 – 12+50
C-205	Sun Rise Rd 12+50 – 26+00
C-206	Sun Rise Rd 26+00 – 39+50
C-207	Sun Rise Rd 39+50 – 49+98
C-208	Low Country Hwy 0+00 – 12+00
C-209	Low Country Hwy 12+00 – 25+00
C-210	Low Country Hwy 25+00 – 38+50
C-211	Low Country Hwy 38+50 – 51+50
C-212	Low Country Hwy 51+00 – 64+00
C-213	Low Country Hwy 64+00 – 72+10
C-214	New St 0+00 – 11+00
C-215	New St 11+00 – 22+57
C-216	Fireman Lane 0+00 – 5+32
C-501	Water Utility Details Sheet 1 of 3
C-502	Water Utility Details Sheet 2 of 3
C-503	Water Utility Details Sheet 3 of 3
EC-501	Erosion Control Detail Sheet 1 of 3
EC-502	Erosion Control Detail Sheet 2 of 3
EC-503	Erosion Control Detail Sheet 3 of 3

2. THE SPECIFICATIONS ARE LISTED AS FOLLOWS:

Division No.	Title
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JOB NO.: 013498.00
DATE: August 2017

- 1 General Requirements
- 2 Site Work
- 3 Concrete

END OF SECTION

JOB NO.: 013498.00
DATE: August 2017

01232-13

SECTION 01250

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

This section describes the measurement and payment for work to be done under the items listed in the bid.

The price bid in each instance shall constitute full compensation for furnishing, hauling, and installing complete all materials; for clearing, excavation, dewatering, dredging, and all necessary sheeting and bracing; for gravel and earth backfill and compaction; for diversion of stream or sewage flows; for removing and replacing curbs, gutters, sidewalks, property corners, signs, fences, lawns, waterlines, drain lines, and structures; for maintenance of drives and streets, protection of power and communication lines; for providing all barricades, lighting, and flagmen as required for the protection of the public; for all required insurance, taxes, utilities, supplies, services and transportation; for layout and control of the work, cleanup and grassing; and for the furnishing of all equipment, tools, labor and incidentals, and the performance of all work to complete each item in full accordance with the Contract Drawings and Specifications.

1.2 MEASUREMENT AND PAYMENT

Items of work will be paid for as listed in the bid and as described herein. Each unit price or lump sum amount shall include all labor, materials, tools, equipment, transportation, removal, overhead, profit, insurance, taxes and all other costs necessary to complete the work in accordance with the contract documents. No additional compensation will be considered, except for extensions of unit price quantities beyond those shown in the bid or for work classified as extra work or changes.

1.2.1 Mobilization: No separate cost item for mobilization will be allowed. Cost of project signs shall be included in the unit or lump sum item pricing for each division or contract.

1.2.2 Sediment & Erosion Control: No separate cost item for sediment and erosion control will be allowed.

1.2.3 Traffic Control: No separate cost item for traffic control will be allowed.

1.2.4 The Work included shall be paid as described in Paragraph 1.3 below.

1.3 WORK

1.3.1 Water Lines

- a. Method of Measurement: Water lines will be measured by the linear foot of pipe of various sizes and materials, without deduction for the space occupied by valves, fittings or special fittings. Measurement for any section of pipe will be the actual measurement along the centerline from end to end of the section.
- b. Basis of Payment: Water lines, installed and accepted, and measured as provided above, will be paid for at the contract unit price bid, per linear foot, for installing water pipe of the various sizes, types, and classifications. The price and payment shall also constitute full compensation for all costs, including pipe tees, pipe bends, pipe reducers, pipe bedding, preparation of the pipe foundation, backfill, compaction, sediment and erosion control, traffic control, connection to other work, marking tape, tracer wire, testing, and disinfecting.

1.3.2 Fire Hydrants

- a. Method of Measurement: Fire hydrants will be measured by the actual count of each hydrant installed and accepted.
- b. Basis of Payment: Hydrants, installed, accepted, and measured as provided above, will be paid for at the contract unit price bid. The price and payment shall also constitute full compensation for the installation of all necessary fittings and joint adapters, restraints, etc. to connect the hydrants to the main, concrete base, gravel pack, testing and disinfecting. The hydrant tee and lead pipe from main to hydrant, and associated valves will be included in this item.

1.3.3 Blowoffs

- a. Method of Measurement: Blowoffs will be measured by the actual count of each blowoff installed and accepted.
- b. Basis of Payment: Blowoffs, installed, accepted, and measured as provided above, will be paid for at the contract unit price bid. The price and payment shall also constitute full compensation for the installation of all necessary fittings and joint adapters, restraints, gate valve, valve box, valve box marker, meter box, etc. to connect the blowoffs to the main, concrete base, gravel, testing and disinfecting.

1.3.4 Gate Valves and Valve Boxes

- a. Method of Measurement: Gate valves with boxes will be measured by actual count. Each unit for valves consists of one valve of the specified size and type, one concrete valve marker, and one valve box and cover. The unit price shall include the installation of any necessary joint adapters for connections and restraints of the valves into the system, as well as plug stubs where shown on the Drawings.
- b. Basis of Payment: Valves with boxes installed and accepted, and measured as provided above, will be paid for at the contract unit price bid, for the valve and valve box of each size and type. The price and payment shall also constitute full compensation for testing and disinfecting.

1.3.5 Connect to existing water main

- a. Method of Measurement: Connections shall be measured by the actual count of each connection installed and accepted at the interface locations identified on the Plans.
- b. Basis of Payment: Connections, installed, accepted, and measured as provided above, will be paid for at the unit price bid and shall include locating, uncovering and protecting existing main, all materials and labor required to complete the connection, and testing and disinfection.

1.3.6 Pavement Removal & Replacement

- a. Method of Measurement: Removal and replacement of road, street, high-way, driveway, and sidewalk surfaces will be measured by the linear foot for the particular type of surface which is to be replaced. Such actual measurement will be the actual length of trench cutting said surface, for the various pipe sizes measured along the centerline of the pipe laid.
- b. Basis of Payment: Removal and replacement of road, street, highway, driveway, and sidewalk surfaces in place and accepted, and measured as provided above, will be paid for at the unit price bid, per linear foot, for the particular type of surface which is replaced. The price and payment shall also constitute full compensation for removal and disposal of pavement, sub-grade preparation, and finishing and curing.

1.3.7 Directional Drilling

- a. Method of Measurement: The length of piping indicated on the plans shall be the basis of payment for the directional drilled pipe installation including any encasement. Any additional piping required to achieve the required depths or for installation shall be included in the unit price for the directional bore length indicated on the plans.

- b. Basis of Payment: Directional Bores will be paid for at the unit price per linear foot for each type and size, measured horizontally from the points of connections indicated on the plans to the trenched main installation, which includes all cost of setup, unclassified excavation, rock excavation, backfill, dewatering, soil and erosion control requirements, drilling, pipe, fittings, mechanical joint fittings to connect to the trenched piping, handling, placing, hauling, installing, tracer wires, connections, sediment and erosion control, traffic control, testing, cleanup and restoration, complete.

1.3.8 Commercial Meter and Backflow Preventer

- a. Method of Measurement: Commercial meter and backflow preventer water connections from main to existing facility potable water service including capping and abandoning a portion of existing facility potable water service will be measured by an actual count for each unit installed and accepted. Each Commercial Meter and Backflow Preventer service connection shall include the service pipe from the main to meter vault, service pipe from meter vault to backflow preventer vault, backflow preventer vault to connection with existing facility potable water service, tap, tapping saddle, corporation stop, adapters, clamps, fittings, meter vault (vault, vault lid, adapters, restraints, pipe, fittings, valves, valve supports, meter, meter by-pass piping and valve, etc.), backflow preventer (vault, vault lid, adapters, restraints, pipe, fittings, valves, valve supports, backflow preventer, etc.), trenching, backfilling, testing, disinfection and appurtenances as shown on the Drawings.
- b. Basis of Payment: Commercial meter and backflow preventer water service connections and vaults, installed and accepted, measured as provided above, will be paid for at the contract unit price bid and shall include locating, uncovering and protecting existing service, all materials and labor required to complete the connection, testing and disinfection.

1.3.9 Fire Service Backflow Preventer

- a. Method of Measurement: Backflow Preventers will be measured by an actual count for each unit installed and accepted. Each Backflow Preventer shall include vault, vault lid, adapters, restraints, pipe, fittings, valves, valve supports, backflow preventer, etc.
- b. Basis of Payment: Backflow Preventers will be measured by an actual count for each unit installed and accepted, measured as provided above, and will be paid for at the contract unit price bid and shall include locating, uncovering and protecting existing fire service, all materials and labor required to complete the connection, excavation, backfilling, appurtenances, testing, and disinfection as shown on the Drawings.

1.3.10 Jack and Bore

- a. Method of Measurement: Jack and Bore will be paid for at the unit price per linear foot for each type and size measured horizontally from ends of the encasement pipe
- b. Basis of Payment: Jack and Bore will be paid for at the unit price per linear foot for each type and size measured horizontally from ends of the encasement pipe which includes all costs of setup, excavation, rock excavation, dewatering, sheeting, handling, placing, hauling, installing, sediment and erosion control requirements, temporary construction easements, additional permitting, boring and jacking, carrier pipe and accessories, encasement pipe, sealing of encasement pipe, tracer wires, connections, testing, cleanup and restoration, complete.

1.3.11 Long Water Service Connection

- a. Method of Measurement: Long water service connections will be measured by an actual count for each unit installed and accepted. Each service connection shall include the service pipe from the main to meter box, dry directional bore of the service pipe, tap, tapping saddle, corporation stop, adapters, clamps, fittings, meter boxes, meter, backflow prevention devices, connecting to existing house service, trenching, backfilling, testing, disinfecting and appurtenances as shown on the Drawings. The difference between Short Water Service and Long Water Service is that Long Water Service includes a dry directional bore under existing roadways.
- b. Basis of Payment: Long service connections and boxes, installed and accepted, measured as provided above, will be paid for at the contract unit price bid. The price and payment shall also constitute full compensation for installation of the necessary adapters for connecting the service to the main, directional drilling of the service pipe, service pipe, tap, tapping saddle, corporation stop, adapters, clamps, fittings, meter, backflow prevention device, meter boxes, connecting to existing house service, trenching, backfilling, testing, and appurtenances for a complete installation. Contractor shall verify actual distances, and no additional payment will be made for longer service pipe runs.

1.3.12 Short Water Service Connection

- a. Method of Measurement: Short water service connections will be measured by an actual count for each unit installed and accepted. Each service connection shall include the service pipe from the main to meter box, tap, tapping saddle, corporation stop, adapters, clamps, fittings, meter boxes, meter, backflow prevention devices, connecting to existing house service, trenching, backfilling, testing, and appurtenances as shown on the Drawings. The difference between Short Water Service and Long Water Service is that Long Water Service includes a dry directional bore under existing roadways.

- b. Basis of Payment: Short water service connections and boxes, installed and accepted, measured as provided above, will be paid for at the contract unit price bid. The price and payment shall also constitute full compensation for installation of the necessary adapters for connecting the service to the main, service pipe, tap, tapping saddle, corporation stop, adapters, clamps, fittings, meter, backflow prevention device, meter boxes, connecting to existing house service, trenching, backfilling, testing, and appurtenances for a complete installation. Contractor shall verify actual distances, and no additional payment will be made for longer service pipe runs.

END OF SECTION

SECTION 02110
SITE CLEARING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Clearing and grubbing.

1.2 REFERENCED SECTIONS

- A. Section 02225 - Trenching.

1.3 SUBMITTALS

- A. SD-13, Certificates
 - 1. Burning permit.

1.4 REGULATORY REQUIREMENTS

- A. If burning is permitted obtain necessary permits from local governments having jurisdiction over project site. Submit copy of permit to the Owner's Representative.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 CLEARING

- A. Clear area within limits of work with the minimum width reasonably required for access to work and for construction of pipelines. The width of clearing shall be held to a minimum and shall be no more than as follows without written consent of the Engineer.

<u>Cut (ft.)</u>	<u>Width (ft.)</u>
0-12	25
12-18	40
Over 18	50

- B. Fell and dispose of trees and other vegetation in area.
- C. Protect individual trees, groups of trees, and other vegetation adjacent to cleared area, which are not removed, from damage incident to construction operations.
- D. Use clearing operations that prevent damage to trees left standing and that provide for safety of employees and others.
- E. Remove entirely trees and other vegetation to be removed, including roots and stumps.

3.2 PROTECTION OF PROPERTY, EMPLOYEES, AND GENERAL PUBLIC

- A. Provide watchmen, fences, planking, bridges, bracing, sheeting, shoring, lights, barricades, and warning signs as necessary to protect property, adjacent property, employees, and general public, and comply with applicable federal, state, and local regulations. See Section 01500.

3.3 EXISTING UTILITIES

- A. Existing utilities are in accordance with available records. Drawings may not represent utilities that may be encountered or exact locations of utilities shown.
- B. Before work is started, contact corporations, companies, individuals, and local authorities owning, maintaining, or regulating conduits, wires, and pipes running to or on property to make suitable arrangements for handling and disposal of such lines. Notify Utility Company to mark locations of underground utility lines. Perform investigations including scanning the area electronically to field-locate underground utilities.

3.4 GRUBBING

- A. Remove tree stumps and roots larger than 2 inches in diameter and matted roots.
- B. In building and paved areas, excavate stumps, roots, logs and other timber, matted roots, organic material, and debris and remove to a depth not less than 18 inches below any subgrade.
- C. Fill depressions made by grubbing with suitable material and compact to make surface conform to original surface of adjacent ground.

3.5 BLASTING

- A. Use of explosives will not be permitted.

3.6 DISPOSAL OF MATERIAL

- A. Completely remove and dispose of material resulting from clearing as part of the Work. Remove material and dispose of offsite in accordance with applicable laws and regulations including local noise, dust, and erosion control regulations.
- B. Perform burning in accordance with federal, state, and local laws and regulations, and control in manner to prevent damage to nearby property. Attend fires until they have burned out or have been extinguished. Refuse from burning operations and material that cannot be burned and is not indicated to be salvaged is property of Contractor. Remove refuse from site in accordance with applicable laws and regulations including local noise, dust, and erosion control regulations.

END OF SECTION

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SECTION 02122

TREE PROTECTION AND TRIMMING

1. GENERAL

1.1. RELATED DOCUMENTS

1.1.1. Requirements of the General and Supplemental Conditions apply to all Work in this Section. Provide all labor, materials, equipment, and services indicated on the Drawings, or specified herein, or reasonably necessary for or incidental to a complete job.

1.2. DESCRIPTION OF WORK

1.2.1. This section includes trimming and protection of trees that are indicated to remain but are close to new construction, as herein specified.

1.3. SUBMITTALS

1.3.1. CERTIFICATION: Submit written certification by a qualified arborist that trees indicated to remain have been protected during the course of construction in accordance with recognized standards and that where damage did occur, trees were promptly and properly treated. Indicate which damaged trees (if any) are incapable of retaining full growth potential and are recommended to be replaced.

1.4. QUALITY ASSURANCE

1.4.1. ARBORIST QUALIFICATIONS:

1.4.1.a. Engage a qualified arborist who has successfully completed tree protection and trimming, to perform the following work:

1.4.1.b. Remove branches from trees that are to remain, if required.

(1) Recommend procedures to compensate for loss of roots and perform initial pruning of branches and stimulation of root growth where removed to accommodate new construction.

(2) Recommend procedures for excavation and grading work juxtaposed to established plants.

(3) Perform tree repair work for damage incurred by new construction.

1.5. PROJECT CONDITIONS

1.5.1. GENERAL: Provide tree barricades, as detailed, located outside drip-line (outer perimeter of branches) to protect trees and other plants that are to remain from damage. These barricades shall be in place prior to the commencement of the clearing operations.

1.5.2. PROTECT ROOT SYSTEMS: Do not store construction materials, debris, or excavated material within drip line of trees to remain. Do not permit vehicles within drip line. Restrict foot traffic to prevent excessive compaction of soil over root systems within drip line.

1.6. TREE PROTECTION

1.6.1. GENERAL: The intent of this clause is to emphasize the importance of all trees to be saved. All trees to be saved shall be maintained in an undamaged condition. Damage shall be defined as the act of scarring, nailing, cutting, breaking limbs, etc., of any tree or its roots system in such a manner as may cause the tree to be permanently damaged. The Contractor shall be responsible for damage on the part of the operator or operators, whether by method of excavation, use of improper equipment, incompetency of the operator, or failure to properly inform the operator. The Contractor shall remove from the site any trees damaged beyond repair as determined by the Engineer.

1.6.2. DAMAGED TREE REMEDIES:

1.6.2.a. The Contractor agrees to replace existing trees with new in-kind trees in the event of damage, injury, loss or removal of trees designated to be saved under the provisions of this section.

2. PRODUCTS - (Not applicable)

3. EXECUTION

3.1. GENERAL

3.1.1. The Contractor shall be responsible for preventing damage to existing trees designated to remain, and adjacent to, or within, construction area and material and equipment storage areas.

3.1.2. Protect tree root systems from damage due to noxious materials caused by run-off or spillage during mixing, placement, or storage of construction materials. Protect root systems from flooding, eroding, or excessive wetting resulting from dewatering operations.

3.1.3. Do not allow fire under or adjacent to trees or other plants that are to remain.

3.1.4. Remove branches from trees that are to remain, if required to clear new construction.

3.1.4.a. In removing large limbs, the initial cut shall be made on the underside at a safe distance from the trunk or lateral, to prevent ripping of bark.

3.1.4.b. Cut branches and roots, if required, with sharp pruning instruments; do not break or chop.

3.1.4.c. The Contractor shall exercise care to ensure that branches or trimmings do not endanger or cause damage to property when removal occurs. Large branches or limbs that cannot be removed in one piece shall be removed in sections and lowered by ropes. Any damage to property resulting from negligence by the Contractor shall be repaired or replaced without additional compensation. Stubs or improper cuts resulting from former pruning or limbs that have been broken shall be cut off flush in order to promote proper healing.

3.2. EXCAVATION AROUND TREES

3.2.1. Excavate within proximity of trees only where indicated. Do not machine excavate within drip-line.

3.2.2. Where excavating for new construction is required within drip line of trees, hand excavate to minimize damage to root systems. Provide sheeting at excavations if required. Use narrow-tine spading forks and comb soil to expose roots.

3.2.3. Relocate roots in backfill areas wherever possible. If large, main lateral roots are encountered, expose beyond excavation limits as required to bend and relocate without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately 3 inches back from new construction.

3.2.4. Do not allow exposed roots to dry out before permanent backfill is placed; provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in moist condition and temporarily support and protect from damage until permanently relocated and covered with earth.

3.2.5. Where trenching for utilities is required within drip line, tunnel under or around roots by hand digging. Do not cut main lateral roots or tap roots; cut only smaller roots that interfere with installation of new work. Cut roots with sharp pruning instruments; do not break or chop.

3.2.6. Prune branches to balance loss to root system caused by damage or cutting of root system.

3.3. GRADING AND FILLING AROUND TREES

Maintain existing grade within drip line of trees.

3.3.1. LOWERING GRADES:

3.3.1.a. Where existing grade is above new finish grade shown around trees, gradually slope grade away from trees as recommended by arborist. Do not reduce grade within drip line.

3.3.1.b. Prune branches to stimulate root growth and to compensate for loss of roots. Provide subsequent maintenance during the Contract period as recommended by arborist. Provide the Owner with typed instructions for recommended long-range maintenance procedures to be followed after completion of construction operations.

3.4. RAISING GRADES

3.4.1. MINOR FILLS: Where existing grade is 6 inches or less below elevation of finish grade shown, use topsoil fill material specified. Place in single layer and do not compact; hand grade to required finish elevations.

3.4.2. MODERATE FILLS: Where existing grade is more than 6 inches, but less than 12 inches below finish grade elevation, place a layer of drainage fill on existing grade before placing topsoil. Carefully place against trunk of tree approximately 2 inches above finish grade elevation and extend not less than 18 inches from tree trunk on all sides. For balance of area within drip line perimeter, place drainage fill to an elevation 6 inches below grade and complete fill with a layer of topsoil to finish grade elevation. Do not compact drainage fill or topsoil layers; hand grade to required elevations.

3.5. REPAIR AND REPLACEMENT OF TREES

3.5.1. All trees designated to be saved which have been damaged during the construction practices by Contractor shall, upon notification by the Engineer, be inspected and treated by a Tree Surgeon at the Contractor's expense.

3.5.2. Repair trees damaged by construction operations. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.

3.5.3. Remove and replace dead and damaged trees that the Engineer determines to be incapable of restoration to normal growth pattern.

3.5.4. Provide new trees of same size and species as those being replaced. Plant and maintain as specified under Section "Trees and Shrubs".

3.5.5. If trees over 6 inches in caliper measurement (taken 12 inches above grade) are required to be replaced, provide new trees of 6-inch caliper size and of species selected by the Landscape Architect.

3.6. DISPOSAL

Burning on the Owner's property will be permitted only in designated areas and at times directed by the Owner. The Contractor shall be responsible for contacting the appropriate authorities prior to burning. Attend burning materials until fires have burned out or have been extinguished. Burning shall be in compliance with state and local regulations.

(End of Section 02122)

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SECTION 02203
EROSION CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

Erosion and sediment control measures provided during the entire construction period as specified herein.

1.2 REFERENCE

Publication listed below forms part of section to extent referenced. Publication is referenced in text by basic designation only. Refer to Drawings for Seeding and Grassing.

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
(SCDHEC)

Handbook (2005) South Carolina Stormwater Management BMP Handbook

1.3 SUBMITTALS

Submit under provisions of Section 01300.

A. SD-13, Certificates

- (1) Fabric sediment barrier.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. If required, erosion and sediment control plan and Land Disturbance Permit will be prepared, submitted, and paid for by Owner.

PART 2 PRODUCTS

Conform to requirements of Referenced Handbook.

PART 3 EXECUTION

3.1 GENERAL

Job No.: 013498.00

Date: August 2017

02203-1

Contractor shall comply with all local, state, and federal laws, ordinances, rules and regulations pertaining to erosion and sediment control, including those promulgated by the State of South Carolina in accordance with the *South Carolina Stormwater Management and Sediment Control Handbook for Land Disturbing Activities*. Contractor shall indemnify and hold harmless the Owner and Engineer from and against all claims, damages, losses, and expenses resulting from such work.

3.2 EROSION AND SEDIMENT CONTROL MEASURES

Contractor shall take all measures to control erosion and sedimentation along pipeline rights-of-way, at the construction site, including borrow and waste areas and temporary access roads, and at off-site areas especially vulnerable to damage from erosion and sedimentation. Work shall be scheduled so that areas subject to erosion are exposed for the shortest possible time. Temporary protection shall be required for exposed or disturbed areas until permanent vegetation is established, and shall consist of temporary grass cover (see Section 02936), mulch, netting or plastic sheets; except that temporary grass cover shall be provided where specifically noted on the plans. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization is achieved or after the temporary measures are no longer required, unless otherwise directed. Trapped sediment remaining in place after removal of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

Erosion and sediment control measures shown on the drawings are intended to represent the minimum measures required. Based upon site conditions and construction procedures and methods utilized by the Contractor, additional measures may be required. These shall be provided by the Contractor at no additional expense to the Owner.

- 3.2.1 Temporary protection for storm drainage pipes shall be provided as required for construction. This measure shall generally consist of a temporary sediment trap to catch silt and sediments to prevent off-site sedimentation from occurring. After these measures are installed, they shall be seeded and mulched and maintained until ditches are stabilized. Upon stabilization of upstream channels, the temporary traps are to be removed and the area regraded to the final contours or cross-section. The area shall be reseeded, mulched and maintained until permanent vegetative covering is established.

3.3 EMERGENCY CONDITIONS

If unusually intense storms cause planned control measures to fail, prompt restoration and cleanup of sediment deposits shall be made, including damage to adjacent property. If construction is delayed or shut down, temporary cover of exposed and disturbed areas shall be provided.

3.4 MAINTENANCE

- 3.4.1 All erosion and sediment control practices will be checked for stability and operation following every run-off producing rainfall, but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed.
- 3.4.2 Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased, unless activity in that portion of the site will resume within 21 days.
- 3.4.3 Silt/sediment fences, tubes, and protectors will be repaired as necessary to maintain a barrier. Sediment will be removed from behind the fence or protector when it becomes about 0.5 feet deep and/or 1/3 the height of the exposed sediment tube. Removed sediment shall be disposed in a suitable area and stabilized to prevent erosion and sedimentation.
- 3.4.4 All seed areas will be fertilized, reseeded as necessary, and mulched to maintain a vigorous, dense vegetative cover.
- 3.4.5 Additional control devices may be required during construction in order to control erosion and/or off site sedimentation. All temporary control devices shall be removed once construction is completed and the site is stabilized.
- 3.4.6 If water is encountered while trenching, the water should be filtered to remove any sediments before being pumped back to the creek.
- 3.4.7 Where practicable, trenches should be filled, covered, and temporary seeding applied at the end of each day.
- 3.4.8 Contractor must take necessary action to minimize the tracking of mud onto the paved roadway from construction areas. The contractor shall daily remove mud/soil from pavement, as maybe required.
- 3.4.9 All water of the state (WoS), including wetlands, are to be flagged or otherwise clearly marked in the field. A double row of silt fence is to be installed in all areas where a 50-foot buffer can not be maintained between the disturbed areas in all WoS. A 10-foot buffer should be maintained between the last row of silt fence and all WoS.
- 3.4.10 Litter, construction debris, oils, fuels, and building products with significant potential for impact (such as stockpiles of freshly treated lumber) and construction chemicals that could be exposed to storm water must be prevented from becoming a pollutant source in storm water discharges.

END OF SECTION

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SECTION 02205

SOIL MATERIALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Soil Materials

1. Soil classifications.
2. Topsoil.
3. Rock definition.
4. Suitable material.
5. Initial backfill material.
6. Unsuitable material.
7. Stockpiling and stockpile cleanup.

1.2 REFERENCED SECTIONS

None

1.3 REFERENCES

- A. Publications listed below form part of section to extent referenced. Publications are referenced in text by basic designation only.

1. AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)

- | | | |
|----|-------------|---|
| a. | ASTM D 1557 | Laboratory Compaction Characteristics of Soil Using Modified Effort |
| b. | ASTM D 2487 | Classification of Soils for Engineering Purposes |

1.4 SUBMITTALS

Submit under provisions of Section 01300.

- A. SD-10, Test Reports

1. Soil materials.
2. Materials Source: Submit name of imported materials suppliers. Provide materials from same source throughout the Work. Change of source requires Owner's Representative approval.

1.5 DEFINITIONS

- A. Topsoil: Defined as loose loam capable of supporting good growth of grass and free from roots, stones and other undesirable material.
- B. Rock: Defined as a naturally occurring hard inorganic material that is in-situ. Rock may be either of sedimentary, igneous, or metamorphic origin, and is solid, bedded, jointed, or fractured, and cannot be removed without ram hammering or systematic drilling and blasting, and boulder masonry, or concrete, except pavement, exceeding 1 cubic yard in volume.
- C. Suitable Material: Defined as earth free of debris, roots, frozen material, organic matter, slag, cinders, stone, or rock larger in dimension than 2 inches in diameter, or other harmful matter; and capable of compaction specified.

PART 2 PRODUCTS

2.3 SUITABLE MATERIAL FOR BUILDINGS, STRUCTURES, TRENCHES, AND SUBGRADES

- A. Use suitable material for fill and backfill beneath buildings and structures, for backfill adjacent to buildings and structures, for trench backfill and for subgrade preparation that is GW, GP, GM, GC, SW, SP, SM, or SC, CL, or ML as classified by Unified Soil Classification System in accordance with ASTM D 2487. Verify that largest particles in fill and backfill are no greater in dimension than 1/2 thickness of minimum compacted lift thickness required for its intended use. Determine suitability of materials from on-site excavations by soil classification by test procedures outlined in ASTM D 2487, and by compaction characteristics in accordance with ASTM D 1557. Have results of tests approved by Owner's Representative prior to use of material.

2.4 INITIAL BACKFILL MATERIAL

- A. Use suitable material free from rocks 2 inches or larger in dimension or free from rocks of such size as recommended by pipe manufacturer, whichever is smaller.

2.5 SUITABLE MATERIAL FOR GENERAL AND OVERLOT FILL

- A. Use suitable material consisting of unclassified material from excavations. Provide additional material necessary to establish indicated grades, as part of lump-sum contract price for work. Provide additional materials necessary to establish indicated grades, paid for in accordance with contract unit price. Do not use material defined hereinbefore as rock or containing rock fragments of such size that it cannot be placed in layers of thickness prescribed without crushing, pulverizing, or breaking down pieces.

2.6 IMPERVIOUS FILL

- A. Material that is SC, ML, CL, MH, or CH, as classified by Unified Soil Classification in accordance with ASTM D 2487.

2.7 UNSUITABLE MATERIALS

- A. Materials that fail to meet requirements specified hereinbefore for suitable materials and materials which, in opinion of Owner's Representative, contain detrimental quantities of organic material such as leaves, grass, roots, brush, and rubbish. Wet subgrade material meeting other requirements for suitable material is classified as suitable.

PART 3 EXECUTION

3.1 STOCKPILING

- A. Stockpile materials on site at locations designated by Owner's Representative.
- B. Stockpile in sufficient quantities to meet project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- E. Surround base of stockpiled materials with temporary sediment barrier. Do not allow slopes of stockpiled material to exceed material's natural angle of repose and in no event to be steeper than 2 horizontal to 1 vertical.

3.2 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent freestanding surface water.

3.3 TESTS

- A. Submit certified reports of tests to Owner's Representative. Refer to Section 01400 for payment in connection with costs for sampling and testing.

END OF SECTION

SECTION 02207

AGGREGATE MATERIALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Aggregate Materials

1. Pipe bedding material.
2. Aggregate subbase material for paving.
3. Aggregate base material for paving.
4. Select fill material.
5. Flowable fill material.
6. Porous fill material.
7. Source quality control.
8. Stockpiling and stockpile cleanup.

1.2 REFERENCES

A. Publications listed below form part of section to extent referenced. Publications are referenced in text by basic designation only.

1. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
 - a. ASTM C 33 Concrete Aggregates
 - b. ASTM C 127 Test Method for Specific Gravity and Absorption of Coarse Aggregate
 - c. ASTM C 128 Test Method for Specific Gravity and Absorption of Fine Aggregate
 - d. ASTM C 131 Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in Los Angeles Machine

- e. ASTM C 136 Sieve Analysis of Fine and Coarse Aggregates
 - f. ASTM D 448 Sizes of Aggregate for Road and Bridge Construction
 - g. ASTM D 2940 Graded Aggregate Material for Bases or Subbases for Highways or Airports
 - h. ASTM D 4318 Liquid Limit, Plastic Limit, and Plasticity Index of Soils
2. South Carolina Department of Transportation (SCDOT)
- a. SCDOT Standard Specifications for Highway Construction

1.3 SUBMITTALS

A. SD-10, Test Reports

- 1. Aggregate materials.

B. SD-13, Certificates

- 1. Aggregate materials.
- 2. Materials Source: Submit name of imported materials suppliers. Provide materials from same source throughout the Work. Change of source requires Owner's Representative approval.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Bedding Material for Pipe and Manholes: Use bedding materials of well-graded, hard, durable aggregates, conforming to ASTM C 33 Size 56 or 57 unless otherwise noted.
- B. Aggregate Base for Paving: Use material conforming to SCDOT Section 306.
- C. Select Fill: Use where indicated or specified select fill defined in ASTM D2940 except use continuously graded aggregate within the following limits:

<u>Sieve Designation</u>	<u>Percentage by Weight Passing Square-Mesh Sieve</u>
1-1/2 inch	100
1 inch	90-100
3/8 inch	50-85
No. 4	35-65
No. 10	25-50
No. 40	15-30
No. 200	5-10

1. Gradation is based on aggregates of uniform specific gravity. When aggregates of varying specific gravities are used, percentages passing various sieves are subject to appropriate corrections in accordance with ASTM C 127 and ASTM C 128.
- D. Flowable Fill: Mix 1 as described in SCDOT Supplemental Specifications SC-M-210, dated June 2007.
- E. Porous Fill: For porous fill use size No. 57 aggregate as defined in ASTM C33.

2.2 SOURCE QUALITY CONTROL

- A. Perform tests and analysis of aggregate material in accordance with ASTM C 136.
- B. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.1 STOCKPILING

- A. Stockpile materials on site at locations designated by the Owner's Representative.
- B. Stockpile in sufficient quantities to meet project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.
- E. Surround base of stockpiled material with temporary sediment barrier. Do not allow slopes of stockpiled material to exceed materials natural angle of repose, and in no event to be steeper than 2 horizontal to 1 vertical.

3.2 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent freestanding surface water.
- B. Leave unused materials in neat, compact stockpile.
- C. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent freestanding surface water.

3.3 TESTS

- A. Submit certified reports of testing to Owner's Representative. Payment for costs in connection with sampling and testing is specified in Section 01400.

END OF SECTION

SECTION 02222

EXCAVATING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removing and conserving topsoil.
- B. Excavating for building foundations, site structures, slabs-on-grade, and paving.
- C. Dewatering excavations.
- D. Protecting excavations.
- E. Disposing of excavated material.
- F. Controlling quality of excavations.

1.2 REFERENCED SECTIONS

- A. Section 02110 - Site Clearing.
- B. Section 02205 - Soil Materials.
- C. Section 02223 - Filling, Backfilling, and Finish Grading.
- D. Section 02225 - Trenching.

1.3 FIELD MEASUREMENTS

- A. Verify that survey benchmark, existing grade, and intended elevations for Work are as indicated.

1.4 COORDINATION

- A. Locate subsurface utilities before excavating. Refer to Section 02110.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PREPARATION

- A. Field verify site conditions and identify required lines, levels, contours, and datum.
- B. Protect plant life, lawns, pavements, site improvements, and other features not indicated to be removed.
- C. Protect benchmarks and survey control points.
- D. Stake and flag location of utilities.
- E. Protect above and below grade utilities that remain.

3.2 CLASSIFICATION OF EXCAVATION

- A. General: Excavation is part of the lump sum contract price for the complete project. Excavation is not classified, except where rock excavation is authorized.

3.3 CONSERVATION OF TOPSOIL

- A. Carefully remove topsoil as defined in Section 02205 to its full depth from areas to be regraded or where construction will be located. Store topsoil in locations approved by the Owner's Representative, separate from other excavated materials, and protect until needed. Protection includes protection from erosion as hereinbefore specified. Do not strip topsoil from beneath drip line of trees indicated to remain.

3.4 DEWATERING

- A. Where excavations are carried below groundwater table, provide dewatering system to ensure that no fill, backfill, or concrete is placed in standing water. Dewatering method, is Contractor's option, so long as it provides working conditions in dry, stable soil. Maintain erosion control standards.
- B. Be solely responsible for arrangement and location of dewatering system. Reduce hydrostatic head with dewatering systems to provide water level and piezometric water levels in construction area below prevailing excavation surface. Construct system to prevent seepage, boils, quick conditions, softening of foundation strata, and loss of fines; maintain stability of sides and bottom of excavation; and provide dry working conditions for all construction operations. Lower groundwater table prior to excavation and keep minimum of 2 feet below lowest excavation subgrade until structure has sufficient strength and weight to withstand horizontal and vertical soil and water pressures. Survey existing adjacent buildings and structures weekly to detect movement in comparison to

original elevations during dewatering operations, and notify Engineer immediately of any measured movement.

- C. Promptly dispose of water removed in manner to not endanger public health, damage public or private property, or adversely affect Work.
- D. Provide engine exhaust system for gasoline- or diesel-engine-powered dewatering pumps with maximum noise suppression. If Owner considers muffling of gasoline- or diesel-powered dewatering pumps to be unsatisfactory, use electrically powered pumps. If portable generator is used, properly muffle its exhaust system.
- E. Drainage: During construction, arrange excavation and filling to provide proper drainage. Remove water that accumulates in the excavation and dispose of in accordance with laws and regulations.

3.5 EXCAVATION

- A. Perform excavation of every description and of whatever substances encountered to lines and grades indicated. Perform excavation in manner and sequence indicated. Place excavated suitable fill material in fill area, as specified in Section 02223.
- B. On-site Disposal: Adjust final grading, as approved by Owner's Representative, to provide for on-site disposal of excavated suitable fill material. Do not grade within drip line of trees indicated to remain, except as specified in Section 01500, paragraph Tree Sheaths.
- C. Disposal: Dispose of excavated material unsuitable for fill, or suitable but unnecessary for fill, off site, in accordance with laws and regulations.
- D. Waste Areas: Grade areas indicated or directed to be used for disposal of surplus material as directed, cover with topsoil, and seed.
- E. Drainage: During construction, arrange excavation and filling to provide proper drainage. Remove and dispose of water that accumulates in excavation in accordance with dewatering requirements.
- F. Method of Excavation
 - 1. Method of excavation is at option of Contractor, except where otherwise specified or indicated.
- G. Building and Structures: Excavate for buildings and structures to depths indicated and specified. Make bottoms of excavations level, clean, and free of loose material, lower sections true to size. Dry suitable subgrade material that is wet to required moisture content as specified in Section 02223. Excavate so that tops of footings are a minimum

of 18 inches below adjacent exterior finished grade or existing grade, whichever is lower. Where concrete slabs are placed on earth or porous fill, remove loam, organic material, and other material unsuitable for subgrade as specified hereinafter.

- H. Footings: Do not place concrete in footing excavations until footing excavations have been approved by the Owner's Representative.
- I. Paving: Excavate for roadways, parking spaces, and concrete walks to grades and slopes indicated. Remove unsuitable subgrade materials and replace with suitable material. Compact as specified in Section 02223 as directed by Owner's Representative. Where subgrade is in excavated or natural ground, scarify to depth of 12 inches and compact as specified in Section 02223.
- J. Excavations for pipelines, conduits, ductbanks, and direct-burial cable is specified in Section 02225.

3.6 FIELD QUALITY CONTROL

- A. Provide for observation and testing of bearing surfaces. Proof-roll areas as directed by Owner's Representative. Areas that "pump" or displace shall be scarified and compacted.

3.7 PROTECTION

- A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- B. Sheet and brace trenches, excavations, and adjacent structures as required by laws and regulations, and as required for protection of life, property, and work. When close sheeting is required, drive to prevent adjacent soil from entering trench. Remove close sheeting only when such removal would not damage Work or property. Cut off sheeting left in place 18 inches below ground surface.
- C. Protect bottom of excavations and soil adjacent to and beneath foundation, from freezing.

END OF SECTION

SECTION 02223

FILLING, BACKFILLING, AND FINISH GRADING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Site preparation for filling and backfilling.
- B. General and overlot fill.
- C. Backfill beneath and adjacent to buildings and structures.
- D. Consolidation and compaction as scheduled.
- E. Finish site grading.
- F. Spreading topsoil.
- G. Soil treatment.
- H. Cleanup.

1.2 REFERENCED SECTIONS

- A. Section 02203 - Erosion Control.
- B. Section 02205 - Soil Materials.
- C. Section 02207 - Aggregate Materials.
- D. Section 03301 - Cast-in-Place Concrete (Minor Construction).

1.3 REFERENCES

- A. Publications listed below form part of section to extent referenced. Publications are referenced in text by basic designation only.

1. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- a. ASTM D 1556 Density of Soil in Place by Sand-Cone Method

b.	ASTM D 1557	Laboratory Compaction Characteristics of Soil Using Modified Effort
c.	ASTM D 2167	Density and Unit Weight of Soil in Place by Rubber Balloon Method
d.	ASTM D 2922	Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
e.	ASTM D 3017	Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
f.	ASTM D 4355	Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water
g.	ASTM D 4491	Water Permeability of Geotextiles by Permittivity
h.	ASTM D 4533	Trapezoid Tearing Strength of Geotextiles
i.	ASTM D 4632	Grab Breaking Load and Elongation of Geotextiles
j.	ASTM D 4751	Determining Apparent Opening Size of a Geotextile
k.	ASTM D 4833	Index Puncture Resistance of Geotextiles Geomembranes and Related Products

1.4 SUBMITTALS

Submit under provisions of 01300.

A. SD-12, Field Test Reports

1. Field density tests.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. Suitable Material: As specified in Section 02205.

B. Select Fill: As specified in Section 02207.

- C. Concrete: Concrete conforming to Section 03300 with compressive strength of 4000 psi.
- D. Impervious Material: As specified in Section 02205.
- E. Bedding Material: As specified in Section 02207.
- F. Filter Fill: As specified in Section 02207.
- G. Porous Fill: As specified in Section 02207.
- H. Initial Backfill Material: As specified in Section 02205.

2.2 ACCESSORIES

- A. Geotextile Fabric for Subgrade Stabilization:
 - 1. Grab Strength: 180 lbs according to ASTM D 4632.
 - 2. Seam Strength: 160 lbs according to ASTM D 4632.
 - 3. Puncture Strength: 70 lbs according to ASTM D 4833.
 - 4. Trapezoid Tear: 70 lbs according to ASTM D 4533.
 - 5. Permeability: 1×10^{-2} according to ASTM D 4491.
 - 6. Apparent Opening Size: No. 50 U.S. Std Sieve according to ASTM D 4751.
 - 7. Ultraviolet Degradation: 70 at 150 hrs according to ASTM D 4355 (percentage retained strength).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify subdrainage, dampproofing or waterproofing installation has been inspected.
- B. Verify underground tanks are anchored to their own foundation to avoid flotation after backfilling.

3.2 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.

- B. Proofroll areas to receive fill with 20- to 25-ton rubber-tired roller to locate soft areas. Make minimum of four systematic passes over each area, first and third passes perpendicular to other two. Soil that deflects and is not capable of insitu compaction is unsuitable material. Backfill with suitable material and compact to density equal to or greater than requirements for subsequent fill material.
- C. Scarify subgrade surface to depth of (12) twelve inches and compact to density equal to or greater than requirements for subsequent fill material.
- D. Clear and grub area to be filled as specified in Section 02110 before fill is started. In no case will objectionable material be allowed to remain.
- E. Plow, bench, or breakup slopes steeper than 1 vertical to 4 horizontal on which fill is to be placed, so fill material will bond with existing surface. Moisten or dry, and compact prepared surfaces as specified hereinafter.

3.3 FILLING

- A. General and Overlot Fill: Use suitable material removed from excavation for necessary fill. Furnish additional material necessary to establish indicated grades as part of lump-sum contract price for Work. Furnish additional material necessary to establish indicated grades paid for in accordance with contract unit price. Use fill material as specified in paragraph Suitable Material in Section 02205, except do not use material defined hereinbefore as rock or containing rock fragments of such size that it can not be placed in layers of thickness prescribed without crushing, pulverizing, or breaking down pieces. Place top 2 feet of fill material in horizontal layers not exceeding 8 inches of loose material and thoroughly tamp or roll in a manner approved by Owner's Representative. Moisten or dry, and compact each layer as specified hereinafter in paragraph Compaction. Do not use frozen material.
- B. Filling for Buildings and Structures: Where concrete slabs are placed on grade, with or without porous fill, remove and dispose of loam, organic material, and unsuitable material, as specified hereinbefore. Where fill is required to raise subgrade for concrete slabs to elevations indicated, use Suitable Material as specified in Section 02205 and place in horizontal layers not exceeding 6 inches in compacted thickness. Moisten or dry, and compact each layer as specified hereinafter.

3.4 COMPACTION

- A. Method and Requirements: Perform compaction by rolling or tamping with approved compaction equipment. Degree of compaction required is expressed as percentage of maximum density obtained by test procedure presented in ASTM D 1557. Moisten or dry fill and backfill material as necessary to provide a moisture content that falls within 3 percent of either side of optimum, unless otherwise approved in writing by Owner's

Representative. Compaction requirements specified herein apply to fill and backfill materials and to scarified materials under walks. The following are minimum compactions required for various fills, backfills, and subgrades:

<u>Fill, Backfill, and Subgrade Compaction</u>	<u>Percent of Maximum Density</u>
Under structures or adjacent to structures	100
Under exterior concrete slabs, under paving, and under walks including related utility trench backfill and scarified subgrades	95
Under grassed areas, including related utility trench backfill	85
Stormwater management basin embankment	95

- B. Backfill: Compact backfill to density specified for area in which it is located, except minimum compaction required in area shall be density of adjacent undisturbed soil.

3.5 TOLERANCES

- A. Top Surface of Filling and Backfilling Under Paved Areas: Plus or minus 1 inch, 0.08 foot from required elevations.
- B. Top Surface of General Filling and Backfilling: Plus or minus 1 inch 0.08 foot from required elevations.

3.6 FIELD QUALITY CONTROL

- A. Field sampling and testing shall be performed under provisions of Section 01400.
- B. Perform field-density tests in sufficient number to ensure that specified density is being obtained. Perform tests in accordance with ASTM D 1556 or ASTM D 2922 and ASTM D 3017. Promptly submit written reports of each test and its location to Owner's Representative. Perform at least one field-density test per lift for each 10,000 square feet of fill or subgrade under buildings and structures. Perform at least one field-density test per lift for each 50,000 square feet of fill placed in open areas. Perform at least one field-density test per alternate lift for each 25 linear feet of isolated footing perimeter and for each 50 linear feet of walls (both sides) for footing and wall backfill. If tests indicate that required density has not been obtained, remove, replace, and recompact material, and retest for correct density, as specified hereinbefore.

3.7 TESTS

- A. Submit certified reports of tests. See Section 01400 for payment in connection with costs for sampling and testing.

3.8 FINISH GRADING

- A. Finish surface of excavations, fills, embankments, and subgrades to reasonably smooth and compact surface substantially in accordance with lines, grades, and cross sections or elevations indicated. Form grades to smooth contours, sloping away from building or structures. Finish swales, gutters, and ditches to provide effective drainage. Finish surface of areas to be turfed to smoothness. Make proper allowance for depth of topsoil.

3.9 SPREADING TOPSOIL

- A. Scarify compacted subsoil to depth of 2 inches on disturbed areas not occupied by structures or pavement, in order to bond topsoil to subsoil. Spread topsoil evenly and compact to thickness of not less than 4 inches , providing elevations and slopes. Perform compaction by means of cultipacker, roller, or other approved equipment weighing 100 to 160 pounds per linear foot of roller. Protect newly graded areas from action of elements. Repair settlement or washing that may occur prior to acceptance of Work and re-establish grades to required elevations and slopes. Dispose of topsoil not spread as specified hereinbefore on site as directed by Owner's Representative.
- B. Obtain and pay for all additional topsoil required from a source approved by Owner's Representative. Topsoil is defined as loose loam that is capable of supporting good growth of grass and that is free from roots, stones, trash, and other undesirable material.

3.10 CLEANUP

- A. In addition to requirements of Section 02203, keep site cleaned up as work progresses. Broom earth spilled or washed onto paved streets from surfaces daily. Remove promptly earth spilled or washed into drains, pipes, gutters, and ditches or onto adjacent property, and restore area to its original condition.

END OF SECTION

SECTION 02225

TRENCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Excavating trenches for utilities, culverts, and storm sewers from 5 feet outside buildings to connection with municipal utilities.
- B. Backfilling and compaction of materials in trenches.

1.2 REFERENCED SECTIONS

- A. Section 02205 - Soil Materials.
- B. Section 02207 - Aggregate Materials.
- C. Section 02222 - Excavating.
- D. Section 02510 - Asphalt Concrete Pavement.
- E. Section 03300 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. Publications listed below form part of section to extent referenced. Publications are referenced in text by basic designation only.

1. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- a. ASTM A 139 Electric-Fusion (Arc)-Welded Steel Pipe (NSP in 4 in. and Over)
- b. ASTM C 76/C 76M Reinforced Concrete Culvert, Storm Drain and Sewer Pipe
- c. ASTM D 1556 Density of Soil in Place by Sand-Cone Method
- d. ASTM D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort

- e. ASTM D 2922 Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
 - f. ASTM D 3017 Water Content of Soil And Rock In Place By Nuclear Methods (Shallow Depth)
2. AMERICAN WELDING SOCIETY (AWS)
- a. ANSI/AWS D1.1 Structural Welding Code
3. SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION (SCDOT)
- a. SCDOT Standard Specifications for Highway Construction

1.4 DEFINITIONS

- A. Utility: Buried pipe, conduit, ductbank, or cable.
- B. Run of Trench: Utility trench between manholes, cleanouts, and connections.

1.5 SUBMITTALS

- A. SD-10, Test Reports
 - 1. Laboratory compaction tests.
- B. SD-12, Field Test Reports
 - 1. Nuclear density tests.

1.6 FIELD MEASUREMENTS

- A. Verify that survey bench mark, existing elevations, and intended elevations for Work are as indicated.

1.7 COORDINATION

- A. Existing utilities are indicated in accordance with available records. Drawings may not represent utilities that may be encountered or exact locations of utilities shown. Before work is started, contact corporations, companies, individuals, and local authorities owning, maintaining, or regulating utilities, running to or on property to make suitable arrangements for handling and disposal of such lines. Notify the utility company to mark locations of underground utility lines. Excavate to determine exact location of existing underground utilities, prior to pipe laying and other construction to permit

adjustments where required. Perform field investigations, as required, including electronic scanning the area to locate underground utilities.

PART 2 PRODUCTS

2.1 BACKFILL MATERIALS

- A. Suitable Materials for Trenches: As specified in Section 02205.
- B. Bedding Material: As specified in Section 02667, Section 02456, or Section 02466 as applicable. When necessary, stabilize trench bedding with material specified in Section 02207
- C. Initial Backfill Material: As specified in Section 02205.
- D. Concrete: Concrete conforming to Section 03300 with compressive strength of 4000 psi.
- E. Aggregate Base: As specified in Section 02207.

2.2 ACCESSORIES

- A. Marking Tape: Acid- and alkali-resistant polyethylene film, 6 inches wide with minimum thickness of 0.004 inch, minimum strength of 1750 psi lengthwise and 1500 psi crosswise. Use type specifically manufactured for marking and locating underground utilities. Provide tape manufactured with foil core at least 0.35-mil thick or with other means to enable detection by metal detector when tape is buried up to 3 feet deep. Provide tape with metallic core encased in protective jacket or with other means to protect it from corrosion. Provide tape color as specified and which bears continuous printed inscription describing specific utility.

<u>Utility</u>	<u>Color</u>
Electric conduits, ductbanks and cable	Red
Fire protection system	Red
Water systems	Blue
Gas, oil, dangerous materials	Yellow
Telephone, CCTV, fire communications	Orange
Sewer systems	Green

- B. Tracer Wire: Continuous, single strand cooper wire, insulated, 10 AWG diameter.

PART 3 EXECUTION

3.1 PREPARATION

- A. Identify required lines, elevations, contours, and datum.
- B. Protect plant life, lawns, rock outcropping and other features remaining as portion of final landscaping.
- C. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs.
- D. Maintain and protect above and below grade utilities which are to remain.
- E. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with suitable material as specified hereinafter and compact to density equal to or greater than requirements for subsequent backfill material.

3.2 EXCAVATION

- A. Cut trenches as indicated. Avoid high points.
- B. Do not excavate within 45- degree bearing splay of building foundations, or utility pole and guy wire support zones without providing proper support.
- C. Hand trim excavation to uniformly support pipeline. Hand trim for bell and spigot pipe joints. Remove loose matter.
- D. Remove lumped subsoil, boulders, and rock.
- E. Backfill areas overexcavated in accordance with Section 02222 with suitable material.
- F. Stockpile excavated material on up-hill side of trench in area designated on site and remove excess material not being used and dispose of offsite in accordance with Section 02222. Remove excavated material from site and dispose of offsite in accordance with laws and regulations.
- G. Sheet and brace trenches, excavations, and adjacent structures as required by laws and regulations, and as required for protection of life, property, and the Work. When close sheeting is required, drive to prevent adjacent soil from entering trench. Remove close sheeting only when such removal would not damage work or property. Cut off sheeting left in place 18 inches below ground surface.
- H. Where unyielding material is encountered, excavate to depth of at least 6 inches below pipe and overdepth-backfill with suitable material and compact.

- I. In areas to be filled, construct fill at least 1 foot above top of pipe before excavating trench and installing pipeline.
- J. Do not leave more than 500 feet of open trench exposed, or more than can be made ready for backfilling and backfilled within working day, whichever is less.
- K. If groundwater is encountered in the bottom of the trench the material shall be excavated below subgrade and backfilled to subgrade with angular material. The depth of cut below subgrade shall be the minimum amount to accomplish the purpose and shall be directed by the Engineer.

3.3 BACKFILLING

- A. Backfill trenches following a visual inspection by the Owner's Representative. Install pipe and bedding in accordance with Section 02667 and as indicated. Backfill trenches with bedding, and suitable material, and initial backfill, and concrete as indicated.
- B. Deposit materials, other than bedding, in 6-inch horizontal layers and thoroughly and carefully compact until pipe and conduit have a cover of not less than 1 foot. For trenches in open areas, place remainder of backfill material in trench in 1-foot horizontal layers. Backfill simultaneously on opposite sides and compact simultaneously; do not dislocate utility line from installed positions. For trenches beneath pavements, buildings, and structures, backfill entire depth of trench in 6-inch horizontal layers. Moisten or dry each layer and compact as specified hereinafter. Reopen trenches improperly backfilled or where settlement occurs to depth required for proper compaction, refill and compact, restore surface to required grade and compaction, mounded over in open areas, and smoothed off.
- C. Backfill and compact utility trenches in areas to be filled simultaneously with placement and compaction of surrounding fill. Always place final fill lift and compact after utilities are in place and have passed all tests.
- D. Compaction: Method and Requirements: Perform compaction by rolling or tamping with approved compaction equipment. Degree of compaction required is expressed as a percentage of maximum density obtained by test procedure present in ASTM D 1557. Moisten fill and backfill material or dry as necessary to provide moisture content that falls within 3 percent of either side of optimum, unless otherwise approved in writing by the Owner's Representative. Compaction requirements apply to fill and backfill materials and scarified materials under walks. Minimum compaction effort required shall be as follows:

<u>Trench Backfill</u>	<u>Percent of Maximum Density</u>
Under structures or within 25 feet of structures	100
Under exterior concrete slabs, under paving and under walks including related utility trench backfill and scarified subgrades	95
Under unpaved areas, including related utility trench backfill	85
Under storm water management basin embankment	95
Bedding	95

3.4 TOLERANCES

- A. Top surface of Backfilling under Paved Areas: Plus or minus 1 inch, 0.08 feet from required elevations.
- B. Top surface of Backfilling under Paved Areas: Plus or minus 1 inch, 0.08 feet from required elevations.

3.5 FIELD QUALITY CONTROL

- A. Field Quality Control: Perform field-density tests in sufficient number to ensure that specified density is being obtained. Test in accordance with ASTM D 1556 or ASTM D 2922 and ASTM D 3017. Promptly submit written reports of each test and its location. Perform at least one field-density test per lift for each 2000 linear feet of trench run of trench and or roadway crossing. If tests indicate that required density has not been obtained, remove, replace, and recompact material, and retest for correct density, as specified hereinbefore.

3.6 TESTS

- A. Submit certified reports of tests. See Section 01400 for payment in connection with costs for sampling and testing.

3.7 RESTORATION AND CLEANUP

- A. Pavement Outside a State System: Where existing pavement has been damaged or removed from roadways, streets, and other areas, and where such roadways, streets, and other areas are not a part of the South Carolina system of public roadways, restore paving as follows:
 - 1. Asphalt Paving: Restore asphalt paving as indicated and in accordance with Section 02510.
 - 2. Gravel Surfacing: Restore gravel surfacing to its original thickness and compaction, with a size of gravel to match existing. Provide aggregate base 6 inches in thickness.
 - 3. Other Pavement Types: Restore brick, cobble, dirt, and other types of pavement to match existing pavement.
- B. Pavement Within a State System: Where trenches have been opened in any roadway or street that is a part of South Carolina highway system, restore any surface treatment of paving existing at time of construction, in accordance with requirements of SCDOT. Do not allow paving restoration to be less than required hereinbefore.
- C. Concrete Curbs, Gutters, and Walks: Restore concrete curbs, gutters, and walks to size, type, and shape of existing items. Conform concrete work to Section 03301. Replace damaged sections with complete new sections or squares. Do not patch damaged sections.

3.8 PROTECTION OF FINISHED WORK

- A. Protect finished work under provisions of Section 01500.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

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SECTION 02261

RIP RAP

1. GENERAL

1.1. RELATED DOCUMENTS

1.1.1. GENERAL: Requirements of the General and Supplemental Conditions apply to all Work in this Section. Provide all labor, materials, equipment, and services indicated on the Drawings, or specified herein, or reasonably necessary for or incidental to a complete job.

1.2. DESCRIPTION OF WORK

1.2.1. GENERAL: This work consists of installing a protective covering of stone on slopes of embankment, around culvert outlets or inlets, on slopes and bottoms of ditches, around foundations, at such locations as indicated in the Drawings or as directed by the Engineer, for the purpose of preventing scour, erosion, or slipping of embankments. Also indicated are the filter sheet and gravel layer below the rip rap.

1.3. QUALITY ASSURANCE

1.3.1. REFERENCED STANDARDS: Unless otherwise indicated, all referenced standards shall be the latest edition available at the time of bidding. Any requirements of these specifications shall in no way invalidate the minimum requirements of the referenced standards. Comply with the provisions of the following codes and standards, except as otherwise shown or specified.

ASTM C 33 Specification for Concrete Aggregates

2. PRODUCTS

2.1. MATERIALS

2.1.1. FILTER SHEET: Polypropylene filter sheet equal to Carthage 6% (C6%) as manufactured by Carthage Mills, Inc.; Cincinnati, Ohio. Provide a filter sheet with an Equivalent Opening Size (EOS) of not less than 70 and not greater than 80.

2.1.2. GRAVEL SUB-BASE: Coarse aggregate consisting of gravel, crushed gravel, crushed stone, or a combination thereof; equal in size to Gradation 67, unless otherwise approved by the Engineer.

2.1.3. STONE: Sound, dense, durable quarry or field stone free of cracks or iron pyrite intrusions, without other structural defects and of such quality that they will not disintegrate on

exposure to water or weathering. Use stone suitable in all respects for the purpose intended. At least 60% of the stone pieces shall weigh more than 100 pounds.

Stone Weight:	Minimum: 25 Pounds
	Maximum: 150 Pounds
Stone Size (Except Spalls):	Minimum Dimension 8 Inches

3. EXECUTION

3.1. INSPECTION

3.1.1. Inspect slopes or ground surface on which rip rap is to be placed. Trim the area to the lines and grades indicated on the Drawings or as directed by the Engineers. Properly compact any earth depressions filled while trimming slopes.

3.2. INSTALLATION

3.2.1. FILTER SHEET: Place filter sheet in a loosely laid condition so that it might conform to the irregularities in the soil when heavier members are placed upon it. Lap adjoining sheets a minimum of 1 foot.

3.2.2. RIP RAP:

3.2.2.a. Commence placement of rip rap in a trench of sufficient depth to allow the surface of the rip rap to be blended into the surface of the surrounding ground.

3.2.2.b. Handle or dump the stone into place so as to produce a compact, well-graded mass with a minimum percentage of voids. Place the material to its full course thickness, measured perpendicular to the slope, in one operation and in such a manner that the slopes will be disturbed as little as possible. Distribute the larger pieces and place the final layer of rock so that there will be no segregated pockets of small pieces or groups of large pieces which would cause large open voids. Re-arrange the individual pieces, as required, by mechanical equipment or by hand, to the extent necessary to obtain a reasonably well-graded distribution of sizes as specified. The surface of the completed rip rap shall be uniform in appearance, free from humps or depressions.

3.2.2.c. Unless otherwise noted, provide 8 inch minimum thickness, of completed rip rap, measured perpendicular to the slope. To ensure that the filter sheet is not ruptured, do not drop any stone more than 3 feet.

(End of Section 02261)

SECTION 02300

BORING AND TUNNELING

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

Boring and tunneling operations shall be performed in accordance with all requirements of the state department of transportation or the railroad, as applicable, including insurance, inspection, temporary work, watchmen, flagmen, protection of personnel and property, work restrictions, work scheduling and blasting. Unless otherwise specified or directed, the Contractor shall pay for all costs in connection with meeting these requirements. The Contractor shall be responsible for repair or replacement of all existing structures and facilities, including settlement of roadways, damaged or disturbed as a result of the work, at no additional cost to the Owner and department of transportation or railroad, within a period of one year after completion of boring and tunneling operations. All work shall be completed to the full satisfaction of the department of transportation or railroad.

1.2 REFERENCED SECTIONS

- a. Supplementary Conditions

1.3 INSURANCE REQUIREMENTS

Insurance requirements for the railroad are specified in the Supplementary Conditions, and as specified hereinafter.

1.4 SUBMITTALS

- a. SD-04, Drawings
- b. SD-08, Statements
- c. SD-18, Records
- d. Experience record including a list of equipment and personnel to be used, and a list of at least five previous successful similar installations under highways or railroads within the past five years. Failure to submit an experience record or submittal of a record not meeting these requirements will be cause for rejection of the boring and tunneling subcontractor.

1.5 COORDINATION

For all work on railroad right-of-way, the Contractor shall notify the railroad at least 72 hours prior to beginning construction.

1.6 BLASTING

1.6.1 Department of Transportation

No blasting will be done without prior written approval of the department of transportation. If requested, the Contractor shall furnish the department of transportation with details of the proposed blasting method. Blasting shall comply with all federal, state and local regulations pertaining to the use of explosives.

1.6.2 Railroad

1.6.2.1 No explosives or blasting will be permitted in connection with boring and tunneling operations without prior written approval of the railroad. When requesting approval to blast on railroad right-of-way, the Contractor shall provide the following at no additional cost to the Owner and as necessary to comply with railroad requirements.

1.6.2.2 Contractor shall provide certificate of insurance in the amount specified by the railroad with proof that explosion, collapse and underground coverage is provided. The certificate shall show that insurance coverage is provided for the contractual liability assumed by the Owner in his encroachment agreement with the railroad.

1.6.2.3 Blasting procedure (including load, drill and shooting pattern) shall be submitted. If the railroad engages the services of an independent blasting expert to monitor blasting, the cost of this expert will be paid by the Owner. All other costs in connection with blasting shall be paid by the Contractor.

PART 2 - MATERIAL

2.1 CARRIER PIPE

Carrier pipe shall be as specified in other sections.

2.2 ENCASEMENT PIPE

Encasement Pipe installed by boring and jacking shall be welded steel pipe conforming to ASTM A252, Grade 2, and shall be the size shown on the plans. Pipe shall be bituminous coated on the outside. Minimum wall thickness shall be as follows:

Diameter (in.)	Thickness (in.)	Diameter (in.)	Thickness (in.)
Under 10	0.188	26	0.406
12-14	0.250	28	0.438
16	0.281	30	0.469
18	0.312	32	0.500
20-22	0.344	34-36	0.532

24

0.375

42

0.625

48

0.688

When encasement pipe is installed without a protective coating or cathodic protection, the wall thickness shall be increased a minimum of 0.063 inch greater than the minimum thickness shown above.

2.3 STEEL LINER PLATE

Steel Liner Plate for tunnels shall be fabricated from structural steel plates of the four-flange type, or the two-flange type with lap seam longitudinal joint, with ultimate tensile strength of 42,000 psi and yield strength of 28,000 psi. Liner plates shall be galvanized in accordance with AASHTO M167, and bituminous coated in accordance with AASHTO M190. Thickness of liner plate shall be not less than 0.105-inch (12 gage).

- 2.3.1 Bolts, nuts, washers and other accessory hardware shall be hot-dipped galvanized in accordance with ASTM A153.
- 2.3.2 Grout holes shall be provided in the liner plate at not more than 4'-6" centers along the tunnel and staggered around the circumference of the liner. Grout holes shall be threaded with cast iron plugs.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

Unless otherwise specified or directed, encasement up through 48-inch diameter shall be welded steel pipe installed by boring and jacking, and encasement larger than 48-inch diameter shall be steel liner plate installed by tunneling. No open excavation will be allowed within the limits of the encasement without the Engineer's approval. All sheeting, shoring and bracing shall be provided as necessary for the satisfactory and safe performance of the work, and will be subject to the approval of the Engineer and in accordance with the requirements of the department of transportation or railroad. All work areas shall be maintained in a suitable dry condition at all times, with methods of dewatering, draining, pumping and disposal of water subject to approval of the Engineer and department of transportation or railroad.

3.2 BORING

- 3.2.1 Encasement pipe shall be installed by boring and jacking with welded joints, to the required lines and grades. The Contractor shall bear the cost of any corrective action required to meet the line and grade requirements shown on the plans. Welding shall conform to the requirements of the American Welding Society and the American Railway Engineering Association for this type of work. The distance to which boring is carried ahead of the pipe shall be not more than is absolutely necessary for installation purposes, and will be subject to approval of the Engineer. The work shall be performed so that no voids occur in the earth

surrounding the pipe and so that ground settlement adjacent to and within the limits of the pipeline crossing is eliminated. If voids occur or are encountered outside the pipe, grout holes shall be drilled at 10-foot centers in the top of the encasement pipe and the voids filled with 1:3 Portland cement grout applied at sufficient pressure to fill the voids and prevent embankment settlement.

- 3.2.2 If it becomes necessary to abandon an incomplete or unacceptable bore, the abandoned encasement shall be capped and filled completely with 1:3 Portland cement grout. Abandonment procedures shall be completed prior to moving to another boring location. All costs in connection with an abandoned bore, including the construction cost and capping and filling costs, shall be the Contractor's expense.

END OF SECTION

SECTION 02310

HORIZONTAL DIRECTIONAL DRILLING (HDD)

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. The WORK specified in this section consists of furnishings and installing underground utilities using the directional boring or guided horizontal boring for pressure pipe method of installation also known as Horizontal Directional Drilling (HDD). This WORK shall include all piping services, equipment, materials and labor for the complete and proper installation.

1.2 QUALITY ASSURANCE

A. Qualifications:

1. Directional drilling CONTRACTOR (or SUBCONTRACTOR) shall have a minimum of four (4) years experience to include pipelines of the same or larger diameter and the same or greater lengths. All pipe and appurtenances of similar type and material shall be furnished by a single manufacturer.
2. The CONTRACTOR's operations shall be in conformance with the Directional Crossing Contractors Association (DCCA) published guidelines (latest edition) and pipe manufacturer's guidelines and recommendations.
3. Fusion Technician shall be fully qualified by the pipe supplier to install fusible pipe of the type(s) and size(s) being used. Qualification shall be current as of the actual date of fusion performance on the project.

B. Warranty:

1. The pipe shall be warranted for one year per the pipe supplier's standard terms.
2. In addition to the standard pipe warranty, the fusion services shall be warranted for one year per the fusion service provider's standard terms.

1.3 SUBMITTALS

- A. Section 01300 – Submittals: Procedures for submittals.
- B. Product Data: Provide data on pipe and fitting proposed for use on project.

- C. Post-Construction: The following As-Recorded data is required from the contractor and/or fusion provider to the owner or pipe supplier upon request:
 - 1. Approved datalogger device reports
 - 2. Fusion joint documentation
- D. Equipment: Provide a description of the HDD equipment proposed for use on the project including the thrust and torque capacities.
- E. Drilling Plan: Provide a drilling plan that includes a detail of the planned drilled borepath and the method for monitoring and controlling the speed, line, grade, and rate of fluids delivery. It shall include the sequence, size, and description of each reamer and the capabilities of each through various geological formations. The Contractor must maintain the alignment and minimum radii as detailed on the plans and meeting the pipe manufacturer's requirements.
- F. Pullback Thrust: The Contractor shall submit an estimate of the anticipated pullback thrust that will be required to install the pipe. The estimate shall include the calculated buoyant force or buoyant weight of the new pipe and any proposed method for counter-weighting the pipe during pullback. Buoyant force shall be calculated based on the density of the drilling fluid used. Any counter-weight placed inside the pipe shall be free from any dirt, grease, oil, or other contaminants.
- G. Drilling Fluid Management: A fluid management plan shall be submitted for review. This plan shall include the proposed mix design for each specific geological strata or formation anticipated during drilling of the borepath, an estimate of quantities, delivery volume and pressure for each, and the proposed monitoring method. The plan will also include details of the drilling fluid/soil slurry solids separation, recycling or disposal plan that will describe the equipment and capacities for separation and recirculation. If direct vacuum excavation of slurry is selected, the plan will include estimated quantities of slurry and substantiation that there is sufficient equipment to pump or shuttle the slurry to the disposal site as required to maintain a continuous drilling operation.
- H. Inadvertent Surface Discharge of Drilling Fluid (Frac-out): The Contractor shall submit a plan for a quick response team to address inadvertent fluid discharges to the surface for approval.

PART 2 PRODUCTS

2.1 GENERAL

- A. The directional drilling equipment shall consist of the following:

1. A directional drilling rig of sufficient capacity to perform the bore and pull-back the pipe;
2. A drilling fluid mixing, delivery and recovery system of sufficient capacity to complete the crossing;
3. A drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused;
4. A magnetic guidance system to accurately guide boring operations;
5. A vacuum truck of sufficient capacity to handle the drilling fluid volume; and
6. Trained and competent personnel to operate the system.

2.2 DRILLING SYSTEM

A. General:

1. The directional drilling equipment, as a minimum, shall consist of a directional drilling rig of sufficient capacity to perform the bore(s) and pull-back of the pipe(s), a drilling fluid mixing & delivery system of sufficient capacity to successfully complete the crossing, a guidance system to accurately guide boring operations, and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project. All required equipment shall be included in the emergency and contingency plan as submitted per these specifications.

B. Drilling Rig:

1. The directional drilling machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pullback pressure during pullback operations. The rig shall be grounded during drilling and pullback operations. There shall be a system to detect electrical current from the drilling string and an audible alarm that automatically sounds when an electrical current is detected.

C. Drill Head:

1. The horizontal directional drilling equipment shall produce a stable fluid lined tunnel with the use of a steer-able drill head and any subsequent pre-reaming heads.
2. The system must be able to control the depth and direction of the drilling operation.
3. Drill head shall contain all necessary cutters and fluid jets for the operation, and shall be of the appropriate design for the ground medium being drilled.

D. Drilling Fluid System:

1. Drilling Fluid:

- a. Drilling fluid shall be a mixture of water and bentonite clay. The fluid shall be inert. The fluid should remain in the tunnel to ensure the stability of the tunnel, reduce drag on the pulled pipe, and provide backfill within the annulus of the pipe and tunnel.
- b. Disposal of excess drilling fluid and spoils shall be the responsibility of the Contractor who must comply with all relevant regulations, right-of-way, work space and permit agreements. Excess drilling fluid and spoils shall be disposed at an approved location. The Contractor is responsible for transporting all excess drilling fluid and spoils to the disposal site and paying any disposal costs. Excess drilling fluid and spoils shall be transported in a manner that prevents accidental spillage onto roadways. Excess drilling fluid and spoils will not be discharged into sanitary sewers, storm drain systems, or waterways.
- c. Drilling fluid returns (caused by fracturing or formations) at locations other than the entry and exit points shall be minimized. The Contractor shall immediately clean up any drilling fluid that surface through fracturing.
- d. Mobile spoils removal equipment capable of quickly removing spoils from entry or exit pits and areas with returns caused by fracturing shall be present during guided boring operations.
- e. The Contractor shall be responsible for making provisions for a clean water supply for the mixing of drilling fluid.

2. Mixing System:

- a. A drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid for the project.
- b. The mixing system shall be able to ensure thorough mixing of the drilling fluid. The drilling fluid reservoir tank shall be sized for adequate storage of the fluid.
- c. The mixing system shall continually agitate the drilling fluid during drilling operations.

3. Drilling Fluid Delivery and Recovery System:

- a. The drilling fluid pumping system shall have a minimum capacity to supply drilling fluid in accordance with the drilling equipment pull-back rating at a constant required pressure.
- b. The delivery system shall have filters or other appropriate in-line equipment to prevent solids from being pumped into the drill pipe.
- c. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and properly disposed of. The use of spill containment measures shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps, vacuum truck(s), and/or storage of sufficient size shall be in place to contain excess drilling fluid.
- d. A closed-loop drilling fluid system and a drilling fluid cleaning system should be used to whatever extent practical, depending upon project size and conditions. Under no circumstances shall drilling fluid that has escaped containment be reused in the drilling system.

E. Drilling Control System:

1. Calibration of the electronic detection and control system shall be verified prior to the start of the bore.
2. The drilling head shall be remotely steer-able by means of an electronic or magnetic detection system. The drilling head location shall be monitored in three dimensions:
 - a. Offset from the baseline,

- b. Distance along the baseline, and
 - c. Depth of cover.
 - 3. Point of rotation of the head shall also be monitored.
 - 4. For gravity application and on-grade drilling, sonde/beacon or approved equipment applicable for grade increments of 1/10th of one percent shall be used.
- F. Pipe Pull Head:
- 1. Pipe pull heads shall be utilized that employ a positive through-bolt design assuring a smooth wall against the pipe cross-section at all times.
 - 2. Pipe pull heads shall be specifically designed for use with fusible polyvinylchloride pipe, and shall be as recommended by the pipe supplier.
- G. Pipe Rollers:
- 1. Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe during handling and pullback operations.
 - 2. A sufficient quantity of rollers and spacing, per the pipe supplier's guidelines shall be used to assure adequate support and excessive sagging of the product pipe.

2.3 MATERIALS

A. Pipe and Fittings:

- 1. High Density Polyethylene Pipe (HDPE)
 - a. High Density Polyethylene Pipe (HDPE) and fittings shall be used in accordance with the materials specifications. All additional appurtenances shall meet the materials specifications. The Engineer will specify the pipe wall thickness. The Contractor shall supply the pipe and fittings and shall include its price in the bid. All pipe installed by guided boring shall be joined by an approved butt fusion or electro-fusion technique according to the manufacturer's specifications.
 - b. HDPE pipe shall be produced from resins meeting the requirements of ASTM D1248, designation PE3408, ASTM D3350 cell classification, PE34543C, and shall meet the requirements of AWWA C901 and C906. Pipes shall be legibly

marked at intervals of no more than five feet with the manufacturer's name, trademark, pipe size, HDPE cell classification, appropriate legend such as SDR 11, ASTM D3035, AWWA C9091, OR C9906, and dates of manufacture and point of origin. The pipe shall be ductile iron pipe size.

2. Fusible Polyvinyl Chloride (FPVC)

- a. Fusible polyvinyl chloride pipe shall conform to AWWA C900 or AWWA C905, and/or ASTM D2241 or ASTM D1785 for IPS standard dimensionality, if applicable.
- b. The pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind.
- c. The pipe shall be manufactured in standard 20', 30', or 40' nominal lengths.
- d. The pipe shall be blue in color for water and green in color for wastewater.
- e. The pipe shall be marked in accordance with the requirements of AWWA C900/C905 including nominal pipe size, PVC material, dimension ratio (DR), pressure class, extrusion production record code, trademark name, and cell classification 12454.
- f. Pipe shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other visible defects.
- g. Unless otherwise specified, fusible polyvinylchloride pipe lengths shall be assembled in the field with butt-fused joints. The Contractor shall follow the pipe supplier's written guidelines for this procedure. All fusion joints shall be completed as described in this specification.
- h. Use ductile iron fittings at transitions from HDD meeting requirements as outlined in the Specifications.

PART 3 EXECUTION

3.1 DELIVERY AND OFF-LOADING

- A. All pipe shall be bundled or packaged in such a manner as to provide adequate protection of the ends during transportation to the site. Any pipe damaged in shipment shall be replaced as directed by the owner or engineer.

- B. Each pipe shipment should be inspected prior to unloading to see if the load has shifted or otherwise been damaged. Notify owner or engineer immediately if more than immaterial damage is found. Each pipe shipment should be checked for quantity and proper pipe size, color, and type.
- C. Pipe should be loaded, off-loaded, and otherwise handled in accordance with AWWA M23, and all of the pipe supplier's guidelines shall be followed.
- D. Off-loading devices such as chains, wire rope, chokers, or other pipe handling implements that may scratch, nick, cut, or gouge the pipe are strictly prohibited.
- E. During removal and handling, be sure that the pipe does not strike anything. Significant impact could cause damage, particularly during cold weather.
- F. If appropriate unloading equipment is not available, pipe may be unloaded by removing individual pieces. Care should be taken to insure that pipe is not dropped or damaged. Pipe should be carefully lowered, not dropped, from trucks.

3.2 HANDLING AND STORAGE

- A. Any length of pipe showing a crack or which has received a blow that may have caused an incident fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work. Damaged areas, or possible areas of damage may be removed by cutting out and removing the suspected incident fracture area. Limits of the acceptable length of pipe shall be determined by the owner or engineer.
- B. Any scratch or gouge greater than 10% of the wall thickness will be considered significant and can be rejected unless determined acceptable by the owner or engineer.
- C. Pipe lengths should be stored and placed on level ground. Pipe should be stored at the job site in the unit packaging provided by the manufacturer. Caution should be exercised to avoid compression, damage, or deformation to the ends of the pipe. The interior of the pipe, as well as all end surfaces, should be kept free from dirt and foreign matter.
- D. Pipe shall be handled and supported with the use of woven fiber pipe slings or approved equal. Care shall be exercised when handling the pipe to not cut, gouge, scratch or otherwise abrade the piping in any way.
- E. If pipe is to be stored for periods of 1 year or longer, the pipe should be shaded or otherwise shielded from direct sunlight. Covering of the pipe which allows for temperature build-up is strictly prohibited. Pipe should be covered with an opaque material while permitting adequate air circulation above and around the pipe as required to prevent excess heat accumulation.
- F. Pipe shall be stored and stacked per the pipe supplier's guidelines.

3.3 FUSION PROCESS

A. General:

1. Pipe will be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.
2. Pipe will be fused by qualified fusion technicians, as documented by the pipe supplier.
3. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine.
4. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. Fusion machines must incorporate the following elements:
 - a. Heat Plate: Heat plates shall be in good condition with no deep gouges or scratches. Plates shall be clean and free of any debris or contamination. Heater controls shall function properly; cord and plug shall be in good condition. The appropriately sized heat plate shall be capable of maintaining a uniform and consistent heat profile and temperature for the size of pipe being fused, per the pipe supplier's guidelines.
 - b. Carriage: Carriage shall travel smoothly with no binding at less than 50 psi. Jaws shall be in good condition with proper inserts for the pipe size being fused. Insert pins shall be installed with no interference to carriage travel.
 - c. General Machine: Overview of machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.
 - d. Data Logging Device: An approved datalogging device with the current version of the pipe supplier's recommended and compatible software shall be used. Datalogging device operations and maintenance manual shall be with the unit at all times. If fusing for extended periods of time, an independent 110V power source shall be available to extend battery life.
5. Other equipment specifically required for the fusion process shall include the following:
 - a. Pipe rollers shall be used for support of pipe to either side of the machine

- b. A weather protection canopy that allows full machine motion of the heat plate, fusion assembly and carriage shall be provided for fusion in inclement, extreme temperatures, and /or windy weather, per the pipe supplier's recommendations.
- c. An infrared (IR) pyrometer for checking pipe and heat plate temperatures.
- d. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.
- e. Facing blades specifically designed for cutting fusible pipe shall be used.

B. Joint Recording

- 1. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine. The fusion data logging and joint report shall be generated by software developed specifically for the butt-fusion of fusible polyvinyl chloride pipe. The software shall register and/or record the parameters required by the pipe supplier and these specifications. Data not logged by the data logger shall be logged manually and be included in the Fusion Technician's joint report.

3.4 DRILLING OPERATIONS

A. General:

- 1. Bore path and alignment are as indicated in the contract documents. The path of the bore may be modified based on field and equipment conditions. Entry and exit locations and control-point elevations shall be maintained as indicated in the contract documents.
- 2. The Engineer must be notified immediately if any obstruction is encountered that stops forward progress of drilling operations. The Contractor and Engineer must review the situation and jointly determine the feasibility of continuing guided boring operations or switching to an alternative construction method. When it is determined that it is impossible to continue drilling operations, the Contractor will be directed as to how to proceed by the Project Engineer. The type of dewatering method will be at the option of the Contractor. When water is encountered, the Contractor must provide a dewatering system of sufficient capacity to remove water, keeping any excavations free of water until the backfill operation is in progress. Dewatering shall be performed in a manner so that removal of soil particles is held to a minimum.

3. Bend radii shown in the contract documents are minimum allowable radii and shall not be reduced.

B. Location and Protection of Underground Utilities:

1. Correct location of all underground utilities that may impact the HDD installation is the responsibility of the Contractor, regardless of any locations shown on the drawings or previous surveys completed.
2. Utility location and notification services shall be contacted by the Contractor prior to the start of construction.
3. All existing lines and underground utilities shall be positively identified, including exposing those facilities that are located within an envelope of possible impact of HDD installation as determined for the project specific site conditions. It is the Contractor and HDD system operator's responsibility to determine this envelope of safe offset from existing utilities. This will include, but is not limited to, soil conditions and layering, utility proximity and material, HDD system and equipment, and foreign subsurface material.

C. Site Location Preparation:

1. Work site as indicated on drawings shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made
2. Contractor shall confine all activities to designated work areas.

D. Drilling Layout and Tolerances:

1. The drilling equipment must be capable of placing the pipe within the planned line and grade.
2. The drilling equipment must have a minimum pullback rating of 35,000 lbs, a torque rating of 2,000 foot lbs, and a mud flow of 24 gallons per minute.
3. The guidance system must have the capability of measuring inclination, roll and azimuth. The guidance system must have an independent means to ensure the accuracy of the installation. The Contractor shall demonstrate a viable method to eliminate accumulated error due to the inclinometer (pitch accelerometer).
4. The guidance system shall be capable of generating a plot of the borehole survey for the purpose of an as-built drawing.
5. The Contractor shall supply the Owner with a data-log at the fusions

indicating the successful fusion of all joints. The Contractor shall supply the Owner with a log of the depth every 25' along the length of the pipe.

6. The drill path shall be accurately surveyed with entry and exit areas placed in the appropriate locations within the areas indicated on drawings. If using a magnetic guidance system, drill path will be surveyed for any surface geomagnetic variations or anomalies.
7. Instrumentation shall be provided and maintained at all times that accurately locates the pilot hole, measures drill-string axial and torsional loads and measures drilling fluid discharge rate and pressure.
8. Entry and exit areas shall be drilled so as not to exceed the bending limitations of the pipe as recommended by the pipe supplier.

E. Pilot Hole Boring:

1. Pilot hole shall be drilled along bore path. In the event that the pilot bore does deviate from the bore path, it may require contractor to pull-back and re-drill from the location along bore path before the deviation.
2. The Contractor shall limit curvature in any direction to reduce force on the pipe during pull-back. The minimum radius of curvature shall be no less than that specified by the pipe supplier and as indicated on the drawings.
3. Alignment Adjustments and Restarts: In the event of difficulties at any time during boring operations, requiring the complete withdrawal from the tunnel, the Contractor will be allowed to withdraw and abandon the tunnel completely filling the void and begin a second attempt at a location approved by the Project Engineer.

F. Reaming:

1. After successfully completing the pilot hole, the bore hole shall be reamed to a diameter which meets the requirements of the pipe being installed. The following table is offered as an estimated guide:

Nominal Pipe Diameter	Bore Hole Diameter
< 8 inches	Pipe Dia. + 4 inches
8 inches to 24 inches	Pipe Dia. X 1.5
> 24 inches	Pipe Dia. + 12 inches

2. Multiple reaming passes shall be used at the discretion of the Contractor and shall conform to this specification.

3. In the event of a drilling fluid fracture, returns loss or other loss of drilling fluid, the Contractor shall be responsible for restoring any damaged property to original condition and cleaning up the area in the vicinity of the damage or loss.

3.5 PIPE PULL-BACK AND INSERTION

- A. Pipe shall be fused prior to insertion, if the site and conditions allow, into one continuous length.
- B. Contractor shall handle the pipe in a manner that will not over-stress the pipe prior to insertion. Vertical and horizontal curves shall be limited so that the pipe does not bend past the pipe supplier's minimum allowable bend radius, buckle, or otherwise become damaged. Damaged portions of the pipe shall be removed and replaced.
- C. The pipe entry area shall be graded as needed to provide support for the pipe and to allow free movement into the bore hole.
 1. The pipe shall be guided into the bore hole to avoid deformation of, or damage to, the pipe.
 2. The pipe may be continuously or partially supported on rollers or other Owner and Engineer approved friction decreasing implement during joining and insertion, as long as the pipe is not over-stressed or critically abraded prior to, or during installation.
 3. A swivel shall be used between the reaming head and the pipe to minimize torsion stress on the pipe assembly.
- D. Buoyancy modification shall be at the sole discretion of the Contractor, and shall not exceed the pipe supplier's guidelines in regards to maximum pull force or minimum bend radius of the pipe. Damage caused by buoyancy modifications shall be the responsibility of the Contractor.
- E. Once pull-back operations have commenced, the operation shall continue without interruption until the pipe is completely pulled through the bore hole.
- F. The pipe shall be installed in a manner that does not cause upheaval, settlement, cracking, or movement and distortion of surface features. Any damages caused by the Contractor's operations shall be corrected by the Contractor.
- G. Tracer Wire:
 1. All lines installed by HDD shall be provided with a minimum of two (2) continuous type TW insulated #8 solid copper tracer wires. The wire shall be installed along the pipe, fastened securely to the pipe at five (5) foot intervals, and terminated above ground with the lead taped around each

structure.

2. The tracer wire shall be capable of, and demonstrated to have, continuous transmission of tracing signal along the full length of the installed pipe.

3.6 INSTALLATION CLEANUP

- A. Following the installation, the project site shall be returned to a condition equal to or better than the pre-construction condition of the site. All excavations will be backfilled and compacted per the construction documents and jurisdictional standards. All pavement and hardscape shall be repaired per applicable jurisdictional standards, excess materials shall be removed from the site, and disturbed areas shall be re-landscaped. All drilling fluid shall be properly disposed of per these specifications and all applicable jurisdictional laws.
- B. Contractor shall verify that all utilities, structures, and surface features in the project area are sound.

3.7 TESTING

- A. Testing shall comply with all applicable jurisdictional building codes, statutes, standards, regulations, and laws.
- B. Hydrostatic and leakage testing shall be performed in accordance with the procedures outlined in Section 02672 – Pressure and Leakage Testing.

3.8 DISINFECTION OF THE PIPELINE FOR POTABLE WATER PIPING

- A. After installation, the pipeline, having passed all required testing, shall be disinfected prior to being put into service. Unless otherwise directed by the owner or engineer, the pipeline will be disinfected per the procedures outlined in Section 02675 - Disinfection.

END OF SECTION

SECTION 02485

VALVES, HYDRANTS AND APPURTENANCES

1. GENERAL

1.1. RELATED DOCUMENTS

Requirements of the General and Supplemental Conditions apply to all Work in this Section. Provide all labor, material, equipment, and services indicated on the Drawings or specified herein or reasonably necessary for and incidental to a complete job.

1.2. DESCRIPTION OF WORK

GENERAL: This section covers valve boxes, valve pits, hydrants, and all necessary appurtenances generally associated with piping as shown on the Drawings and as specified herein.

1.3. RELATED WORK SPECIFIED ELSEWHERE:

Ductile Iron Force Main	Section 02456
Polyvinyl Chloride Force Main	Section 02466

1.4. QUALITY ASSURANCE

1.4.1. REFERENCED STANDARDS: Unless otherwise indicated, all referenced standards shall be the latest edition available at the time of bidding. Any requirements of these Specifications shall in no way invalidate the minimum requirements of the referenced standards.

ANSI A21.11	Rubber Gasket Joints for Cast-Iron and Ductile-Iron Pressure Pipe and Fittings
ASTM B584	Standard Specification for Copper Alloy Sand Castings for General Applications
AWWA C509	Standard for Gate Valves - 3 Inches Through 48 Inches for Water and Other Liquids
AWWA C502	Standard for Dry-Barrel Fire Hydrants
AWWA C504	Standard for Rubber-Seated Butterfly Valves
AWWA C508	Standard for Swing-Check Valves

1.5. SUBMITTALS

JOB NO.: 013498.00

DATE: August 2017

02485-1

1.5.1. MANUFACTURER'S CERTIFICATION; VALVES: For information only, submit two copies of valve manufacturer's notarized certification that valves furnished for this project are in full compliance with the Referenced Standards and these specifications.

2. PRODUCTS

2.1. PLUG VALVES

2.1.1. Plug valves shall be the non-lubricated eccentric type, with cast iron body, resilient faced plugs, welded overlay seats of not less than 90% pure nickel, sleeve-type metal bearings, and easily adjustable and repackable multiple V-ring type shaft seals without removing valve operator. Valves with resilient seats attached to the body, or with sprayed or plated seats or screwed-in seats will not be acceptable. Plugs shall be one-piece cast iron construction. Port area shall be at least 80% of the full pipe area. Valves shall be rated at 175-psi working pressure for valves 12-inches and smaller and shall seal leak-tight against full rated pressure in both directions. Unless otherwise noted, valves for buried service shall be provided with an extension stem and nut operator, and exposed valves shall be provided with a lever operator or gear actuator. Plug valves shall be as manufactured by Dezurik, Kennedy, M&H or approved equal.

2.1.1.a. Valves 6-inch and larger shall be equipped with gear actuators. Gear sector to handwheel diameter ratio shall not exceed 2:1. Gearbox housing shall have spring-loaded u-cup seals on gear sector. O-rings are not acceptable. Actuators shall provide clear indication of valve position. An adjustable stop shall be provided to set closing torque.

2.1.1.b. Actuators for buried or submerged service shall have seals on all shafts and gaskets on the valve and actuator covers. Actuator mounting brackets for buried or submerged service shall be totally enclosed and shall have gasket seals. Exposed nuts, bolts, springs and washers used in buried or submerged service shall be stainless steel.

2.2. GATE VALVES

2.2.1. VALVES THREE INCHES AND LARGER: ANSI/AWWA C509, iron body, bronze trim, non-rising stem with square nut, single resilient wedge, mechanical joint ends, interior and exterior fusion bonded epoxy coating, opening left.

2.2.2. Valves shall be UL Listed/FM Approved and shall be Mueller Type A 2360 or approved equal.

2.3. VALVE BOXES

2.3.1. CAST IRON VALVE BOXES: Boxes shall be three piece type with fully adjustable top for all valves installed underground. The boxes shall be in the range of twenty four inches to thirty six inches long in order to adjust to fit the depth of earth cover over the valve when final

grade is established and when pavement resurfacing occurs. Box shall have a 3/16" minimum thickness of metal.

2.4. SEWAGE AIR RELEASE VALVE

2.4.1. The sewage air release valve shall be float operated and shall employ a compound lever mechanism to enable the valve to automatically release accumulated air and gases from a sewage pipeline while the system is pressurized and operating.

2.4.2. The air release valve shall close drop tight, incorporating an adjustable Buna_N orifice button. All internal metal parts shall be of stainless steel. The linkage/lever mechanism shall be able to be removed from the valve without disassembly of the mechanism. The float shall be stainless steel and be capable of withstanding 1000 psig test pressure.

2.4.3. The body and cover shall be of stainless steel. Inlet connection shall be 2" or 3" NPT, or 4" flange as required. Outlet connection shall be 1/2" NPT.

2.4.4. The valve shall be supplied with a "Flushing Attachments" consisting of: stainless steel shut-off valves, quick-connect couplings and 5' rubber hose, for backwashing with clear water.

2.4.5. The sewage air release valve shall be Crispin, GA Industries or equal.

2.5. COMBINATION SEWAGE AIR VALVE

2.5.1. The combination sewage air valve shall be designed to exhaust large amounts of air during filling, to release small amounts of accumulated air during operation and to admit large amounts of air upon impending vacuum during draining.

2.5.2. The valve shall be float operated and both the air & vacuum and air release functions shall be housed in a single body. Body and cover shall be of 316 stainless steel. All leverage mechanism parts and the spherical float shall be 316 stainless steel. The large and small orifices seats shall be Buna-N and shall be renewable.

2.5.3. The combination sewage air valve shall be supplied with "Flushing Attachments" to allow periodic flushing of sediment, grease and solids. Attachments consist of: a 2" stainless steel inlet isolating valve, 1" stainless steel blow-off and 1/2" stainless steel flushing valves, and a minimum of 5 feet of rubber hose with quick disconnects to allow connection to a clean water source.

2.5.4. The combination sewage air valve shall be Crispin, GA Industries or equal.

2.6. REGULAR AND BLOW OFF FIRE HYDRANTS

2.6.1. GENERAL: Conform to requirements of AWWA C502 and the following additional requirements:

Main Valve Opening:	5-1/4 inches
Nozzles:	2 2-1/2 inch nozzles with cap and chain 4-1/2 inch pumper nozzle with cap and chain
Nozzle Threads:	National Standard
Inlet Connections:	6 inch, Mechanical Joint
Working Pressure:	150 psi
Test Pressure:	300 psi
Stem Seal:	"O" ring
Drain Outlet:	Included
Paint and Markings:	In accordance with AWWA C502, Section 6

2.6.2. OPENING DIRECTIONS: Turn operating nut to left (counterclockwise).

2.6.3. STANDARD OF QUALITY: Manufacturers offering products complying with the requirements for fire hydrants include (but are not necessarily limited to) the following:

Mueller Company Decatur, Illinois

2.6.4. INSTALLATION: Install hydrants as indicated on the Drawings. Install 3000 psi concrete at the base of hydrants as shown on the Drawings.

2.7. AIR RELEASE VALVES

2.7.1. GENERAL: Furnish two inch Model F-3062 Air Release Valves as manufactured by Clow Corporation, Bensenville, Illinois, or approved equal.

2.8. YARD HYDRANTS

2.8.1. GENERAL: Size as indicated, non-freezing, exposed head, sanitary type for potable water with 3/4 inch NST hose adaptor.

2.8.2. Provide protective concrete base in accordance with manufacturer's recommendation.

2.8.3. Provide 2 cubic feet of well drained aggregate wrapped with geotextile fabric beneath hydrant drain.

2.9. CHECK VALVES

2.9.1. GENERAL: Check valves shall be cast iron body, bronze mounted, fully opening swing type, except where other types are specifically noted. Valves shall be rated at 175 psi and shall conform to AWWA C508. Check valves shall be outside lever-and-weight type.

CUSHIONED SWING CHECK VALVES:

2.9.1.a. Provide valve body of a one-piece casting, globe pattern, constructed of ASTM A126 Class B cast iron with minimum strength of 30,000 psi.

2.9.1.b. Provide flanged end connections per ANSI B16.1.

2.9.1.c. Provide full pipeline flow area with disc at 23° open position, and allow for a minimum of 60° total disc travel.

2.9.1.d. Provide a circular flanged cover of adequate size to permit field inspection, maintenance, and/or replacement of all internal valve components.

2.9.1.e. Design working pressures to 250 psi.

2.9.1.f. Body Seat: Material to be 18-8 stainless steel. Seat shall be designed to permit field replacement.

2.9.1.g. Disc Construction: Constructed of ASTM A126 Class B cast iron with minimum strength of 30,000 psi. Provide disc with resilient seat ring for tight shut off. Disc seat ring shall be of BUNA-N. Attach disc seat ring to disc by means of 18-8 stainless steel follower ring and 18-8 stainless steel fasteners. Design disc seat ring to permit field replacement. Attach disc-to-disc arm by means of a single attachment point. Attachment design shall permit a controlled amount of disc articulation to provide uniform compression of disc seat ring under any pressure condition, up to the maximum working pressure. Rotation of the disc around the attachment point shall not be permitted. Construct disc arm or one-piece, ductile iron casting with minimum strength of 60,000 psi.

2.9.1.h. Shaft Construction: Construct of non-hardened 18-8 stainless steel. Hardened stainless steel or chrome-plated steel shall not be permitted. Support shaft in the body by solid bronze bearings mounted in the valve body. Locate shaft and bearings completely out of the flow path through valve. Bearing material shall be UNS C93200 bronze, with minimum strength of 20,000 psi. Bearing/shaft design shall provide sufficient bearing area to prevent bearing wear, deformation, or excessive friction. Use of oil impregnated bearings, grease or oil lubrication, or synthetic bearing materials shall not be permitted. Shaft design shall employ stainless steel keys for attachment of disc arm and externally mounted counterweight arm. Use of setscrews or clamps shall not be permitted. Extend shaft through one side of valve body to allow attachment of external counterweight arm and cushion chamber. Seal shaft where it passes through the valve body by means of an externally adjustable packing gland and Teflon packing. O-ring shaft seals shall not be permitted. Shaft design shall employ a mechanical locking device for maintaining proper shaft and disc arm alignment within the valve body. The shaft bearings and/or disc arm shall not be used to maintain shaft alignment. Provide minimum shaft diameters for each size as follows:

2.9.1.i.

<u>Valve Size</u>	<u>Shaft Diameter</u>	<u>Valve Size</u>	<u>Shaft Diameter</u>
2-1/2"	3/4"	14"	2"
3"	3/4"	16"	2"
4"	7/8"	18"	2"
6"	1"	20"	2"
8"	1 1/4"	24"	2 3/4"
10"	1 1/4"	30"	4"
12"	1 1/2"	36"	5"

2.9.1.j. Cushion Chamber Construction: Attach a cushion chamber to the exterior of the valve body with mechanical linkage connecting the cushion chamber piston to the valve shaft. Construct the cushion chamber cylinder tube and piston of bronze. Cushioning shall be accomplished by using air as the cushioning media. Use of hydraulic oil or pre-charge air cylinders shall not be permitted. The degree of cushioning shall be easily adjustable.

2.9.1.k. Counterweight Arm and Counterweight Construction: Attach a single counterweight arm to the valve shaft. The counterweight arm shall employ a stainless steel key to prevent rotation around the valve shaft. Use of setscrews or clamps to connect the counterweight arm to the valve shaft shall not be permitted. The counterweight arm shall be positioned on the shaft to provide the maximum amount of closing force when the valve is in the seated position, and the minimum amount of closing force when the valve is in the open position. Sufficient counterweight(s) shall be provided to prevent or minimize slamming of the check valve immediately following shutdown of the pump. The position of the counterweight(s) shall be adjustable on the counterweight arm. The counterweight(s) shall have provision to be locked into position on the counterweight arm.

2.9.1.l. Valve shall be completely serviceable in the line and all internal parts shall be removable through the top cover.

2.9.1.m. The valve shall be Figure 250-D as manufactured by G.A. Industries, Inc or equal.

2.10. ALTITUDE VALVES

2.10.1. The main valve shall be pilot-controlled, hydraulically operated, differential piston actuated and full ported.

2.10.2. The control valve shall be "self-contained" and incorporate a system of pilot controls, factory assembled to and tested with the main valve. The valve shall be operated by line pressure and utilize the pilot system to open, close or throttle the differential piston main valve to perform the specified function(s).

2.10.3. The main valve body shall be globe style, constructed of high-strength cast iron conforming to ASTM A126 Class B with integral flanges, faced and drilled per ANSI B16.1 Class 125.

2.10.4. The valve shall be “full-ported” so that when fully open the flow area through the valve is no less than the area of its nominal pipe size. Globe body valves shall have an integral bottom pad or feet to permit support directly beneath the body.

2.10.5. The main valve shall operate on the differential piston principle such that the area on the underside of the piston is no less than the pipe area and the area on the upper surface is greater than that of the underside. There shall be no diaphragms or springs in the main valve.

2.10.6. The valve piston shall be fully guided on its outside diameter and all guiding and sealing surfaces shall be bronze. To minimize the consequences of throttling, throttling shall be by long, stationary vee-ports located downstream of the seat and not by the seat itself.

2.10.7. The valve shall be fully capable of operating in any position without the need of springs and shall not incorporate stems, stem guides or spokes in the waterway. A visual position indicator shall be provided.

2.10.8. The main valve shall be serviceable in the line through a single flanged top cover that provides easy access to all internal components.

2.10.9. The valve shall be shop coated with NSF-61 certified epoxy on internal surfaces in accordance with American Water Works Association Standard C550 (latest revision).

2.10.10. The valve shall be operated by a system of pilot controls necessary to perform the specified function(s).

2.10.11. The pilot system shall be factory pre-piped, installed on the main valve and tested as an assembly.

2.10.12. In addition to the necessary pressure regulating and/or electrically operated pilots, the system shall incorporate a wye-strainer and opening and/or closing speed control valves.

2.10.13. Sufficient isolating valves and pipe unions shall be provided to facilitate removal and maintenance of the pilot system without disturbing the main valve.

2.10.14. Pilots, controls, piping and fittings shall be corrosion resistant copper, bronze or brass.

2.11. PRESSURE GAUGES

Pressure gauges shall be suitable for wastewater application and installed where shown on the Drawings. They shall be round black case, 4-1/2 inches nominal diameter with phosphor bronze Bourdon tubes, bottom connected with 1/2 inch male threads, stainless steel rack and pinion movement, black micro-adjusted pointers and black figures with white plastic dials, and a threaded ring. The gauges shall be furnished factory mounted with a complete protective diaphragm attachment which shall be demountable without breaking the seal. The space above diaphragm filled with glycerin fluid, the lower portion (wastewater side) provided with a bleed

screw. Gauges shall be installed with short nipple and a 1/2 inch bronze shut off ball valve. The range for the gauges shall be as specified by the Engineer. All gauges shall be manufactured by U.S. gauge, Ashcroft "Duragauge", or approved equal.

2.12. TAPPING SLEEVES

2.12.1. GENERAL: Tapping sleeves shall be constructed of heavy gray cast iron, ductile cast iron, or high-strength steel and in two halves. All tapping sleeves shall be suitable for Class C and D gray cast iron, ductile cast iron pipe, and all pipe manufactured in accordance with ANSI S 21 Standards.

2.12.2. JOINTS:

2.12.2.a. Tapping sleeves shall seal to the pipe by use of a confined "O" ring gasket and able to withstand a pressure test of 150 psi with no leakage in accordance with AWWA C-110. A 3/4 inch NPT test plug shall be provided for pressure testing. All bolts joining the two halves shall be high-strength, low allow steel in accordance with Section 11-6.5 of AWWA C-111, and shall be included with the sleeve.

2.12.2.b. The outlet branch flange shall be a 125# flange joint suitable for attachment by all other makes of tapping valves meeting AWWA Standards.

2.12.3. COATINGS: All gray cast iron and ductile cast iron sleeves shall have an outside bituminous coating in accordance with AWWA C-110 and inside cement-mortar lining in accordance with AWWA C-104. All steel sleeves shall be finished with an epoxy coating both inside and outside.

2.12.4. MAGNETIC TAPE: All open trench installed pipe shall include installation of electronically or magnetically detectable tape buried 12" deep over the pipe. Tape shall be 2 inches or wider and boldly labeled every 18 to 32 inches with "CAUTION SEWER LINE BURIED BELOW" or "CAUTION WATER LINE BURIED BELOW". Tape shall have a tensile strength of not less than 4,000 psi, dart impact strength of not less than 120 rams per 1.5 mils, minimum thickness of 0.0055 and include sufficient metal to allow easy detection.

2.12.5. TRACER WIRE: All line installations, regardless of material, shall also include tracer wire taped to the top of the pipe with polyethylene tape. Wire shall be stranded 12-gauge copper with blue (water) or green (sewer) insulation rated UF or USE by Underwriters Laboratories. Wire shall be looped into ground lever "dummy" cast-iron valve boxes (w/caps labeled "WATER" or "SEWER" and painted white). Boxes shall be installed at beginning and end of source or connection and at intervals not greater than 1,000 feet.

2.13. BLOWOFFS

Blowoff valves and appurtenances shall be located as shown on the plans. Blowoffs shall be constructed as shown on the details. Contractor shall verify acceptance of the Blowoff Detail

with the organization responsible for operation and maintenance of the distribution line, and submit any changes for the Engineer's approval prior to construction.

3. EXECUTION

3.1. INSPECTION

Examine the areas and conditions under which valves, hydrants and appurtenances are to be installed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

3.2. INSTALLATION

3.2.1 Install valves, hydrants and appurtenances to the same specification which covers the piping to which these items are connected.

3.2.2 INSTALLATION OF TAPS BY CONTRACTOR:

3.2.2.a General: All material supplied, and drilling and tapping equipment used to make taps, will be serialized in accordance with AWWA Standards.

3.2.2.b After the tapping sleeve and valve have been installed and before the tap is made, the sleeve will be tested to ensure a watertight joint. A test plug will be provided in the sleeve and, after the sleeve has been installed, it will be filled with water and the pressure increased between 150 psi and 190 psi. All leaking joints will be repaired to the satisfaction of the Owner's Engineer at the Contractor's expense.

(End of Section 02485)

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SECTION 02510

ASPHALT CONCRETE PAVEMENT

PART 1 GENERAL

Selected materials and methods for work in this section are in accordance with applicable provisions of the South Carolina Department of Transportation Road and Bridge Specifications, referred to hereinafter by SCDOT Section. Subsections of specifications describing method of measurement and basis of payment shall not apply to this work. The term "Department" when used in the Road and Bridge Specifications shall be understood to mean the Owner's Representative.

1.1 SECTION INCLUDES

- a. Asphalt concrete pavement.
- b. Asphalt surface treatment.
- c. Aggregate base.

1.2 REFERENCED SECTIONS

- a. Section 02205 - Soil Materials.
- b. Section 02207 - Aggregate Materials.
- c. Section 03300 - Cast-in-Place Concrete.

1.3 REFERENCES

Publications listed below form part of specification to extent referenced. Publications are referenced in text by basic designation only. Refer to Section 01090 for addresses of standard producing associations.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4866	Coal Tar Pitch Emulsion Pavement Sealer Mix Formulation Containing Mineral Aggregates and Optional Polymeric Admixtures
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AMERICAN SOCIETY OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

Job No.: 013498.00

Date: August 2017

02510-1

AASHTO T230-68

Determining Degree of Pavement Compaction of Bituminous
Aggregate Mixtures

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

FHWA Manual

Federal Highway Administration Manual on Uniform Traffic
Control Devices for Streets and Highways

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION (SCDOT)

SCDOT

Standard Specifications for Highway Construction

1.4 SUBMITTALS

Submit under provisions of Section 01300.

- a. SD-12, Field Test Reports
- b. SD-13, Certificates
 - (1) Materials.

PART 2 PRODUCTS

2.1 MATERIALS

- a. Aggregate Base: Conform material to Section 02207.
- b. Asphalt Concrete Surface: Conform material to SCDOT 403 for asphalt concrete Type 1.
- c. Asphalt: Conform material to SCDOT Section 401. Use grade RS-1MS-1, MS-2, HFMS-1, HFMS-2, SS-1, CRS-1, CMS-2 and CSS-1 for prime or tack coat; RS-1 and CRS-1 may be diluted with 50-percent water provided that resulting material produces uniform application of tack.

Job No.: 013498.00

Date: August 2017

02510-2

PART 3 EXECUTION

3.1 PRIME COAT

Apply liquid asphalt material at 0.40 gallon per square yard and cover aggregate at 30 pounds per square yard, all in accordance with SCDOT Section 401.

3.2 AGGREGATE BASE

Construct aggregate base in accordance with SCDOT Section 306.

3.3 TACK COAT

Apply liquid asphalt material at 0.10 gallon per square yard in accordance with SCDOT Section 401.

3.4 ASPHALT CONCRETE SURFACE

Place surface on cleaned, primed base or tacked flowable fill in accordance with SCDOT Section 403.

3.5 FIELD QUALITY CONTROL

- a. Perform field inspection, sampling and testing under provisions of Section 01400.
- b. Asphalt Pavement Tolerances
 - (1) Surface Tolerance: Conform to SCDOT straightedge test.
 - (2) Thickness Tolerance: Conform to SCDOT.
 - (3) Density Requirements: 96 percent of laboratory density as determined by AASHTO T230-68.

END OF SECTION

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Job No.: 013498.00
Date: August 2017

02510-4

SECTION 02515

CUTTING AND REPLACING PAVEMENT

PART 1 GENERAL

Selected materials and methods for the work in this section are in accordance with the applicable provisions of the South Carolina State Department of Transportation Standard Specifications for Highway Construction, referred to hereinafter by SCDOT Section. Subsections of SC DOT specifications describing method of measurement and basis of payment shall not apply to this work. The term "Department" when used in the Highway Construction Specification shall be understood to mean the Owner's Representative.

1.1 SECTION INCLUDES

- a. Cutting and replacing pavement

1.2 REFERENCED SECTIONS

- a. Section 02205 - Soil Materials.
- b. Section 02207 - Aggregate Materials.
- c. Section 02223 - Filling, Backfilling and Finish Grading.
- d. Section 02225 - Trenching

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D2940	Graded Aggregate Material for Bases or Subbases for Highway or Airports
ASTM D 4866	Coal Tar Pitch Emulsion Pavement Sealer Mix Formulation Containing Mineral Aggregates and Optional Polymeric Admixtures

AMERICAN SOCIETY OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

SOUTH CAROLINA DEPARTMENT OF HIGHWAYS (SCDOT)

SCDOT

Standard Specifications For Highway Construction

1.4 SCDOT MANDATORY WARRANTY PERIOD

Once release is issued, a warranty period of two years for all shoulder and roadway work will be mandatory.

1.5 SUBMITTALS

Submit under provisions of Section 01300.

a. SD-13, Certificates

(1) Materials.

PART 2 PRODUCTS

2.1 MATERIALS

a. Flowable Fill: Conform material to SCDOT SC-M-210.

PART 3 EXECUTION

3.1 TIME LIMIT

In no event shall open cuts in the roadway remain unpaved or patched in keeping with highway standards for more than fifteen (15) days. Failure on the part of the contractor to take adequate action on patching will force the District to sublease a paving contractor for the repairs. The contractor will be billed for such work and project acceptance will be subject to payment for repairs.

3.2 CUTTING AND REPLACING PAVEMENT

Existing pavement to be cut for installation of pipe or other utilities shall be replaced with new base and pavement as specified below.

a. Cutting: Pavement shall be neatly cut to a straight edge prior to trenching, with the method of cutting subject to approval of the Engineer. Pavement shall be cut 12

inches wider than the excavated area on each side. Ragged and irregular edges shall be redone.

- (1) Concrete pavement shall be sawed with suitable concrete saw cutting equipment.
- b. Trench, Filling, Backfilling under pavement shall be as specified in Section 02223 and Section 02225.
- c. Base for city, county, and state streets shall be flowable fill as specified in SCDOT SC-M-210.
- d. Base for pavement shall be crusher run stone and placed in accordance with plan. Base width shall be as shown on the plans for the various types of pavement cuts.
 - (1) Crusher run stone shall be SCDOT specifications. Stone shall be well mixed and compacted by tamping and rolling so as to prevent settlement. Crusher run base material shall be placed at the same time that the trench is backfilled. Backfilling to the top of the trench, to be cut out and replaced with base material at a later date, will not be allowed.
 - (2) Base for drives shall be 8 inches of crusher run stone, stabilized with 5% Portland cement. Base shall be thoroughly mixed prior to compaction.
- e. Pavement shall be replaced with bituminous plant mix pavement, except that existing concrete pavement shall be replaced with 8 inches of Portland cement concrete. Pavement shall conform to the applicable state department of transportation specifications for each type.
 - (1) Pavement shall be repaired within the same week that it is cut. If inclement weather delays pavement replacement, Contractor shall not cut additional pavement until he has notified the Engineer and received specific permission and instructions.
 - (2) For bituminous pavement, the entire area to be resurfaced (including edges of existing pavement) shall be primed with an acceptable asphalt prime coat just prior to placing the new pavement. New pavement surfaces shall be smooth, true to grade and shall provide a smooth transition with existing surfaces. All settlement and damage occurring during construction and the warranty period shall be repaired by the Contractor.

3.8 FIELD QUALITY CONTROL

- a. Perform field inspection, sampling and testing under provisions of Section 01400.

b. Asphalt Pavement Samples

For determining asphalt pavement density and thickness, take samples with coring machine or cut a 12-inch square out of pavement in accordance with AASHTO T230-68. Take one set (3 samples) for every 300 tons of material placed at locations selected by the Architect-Engineer. Replace removed pavement with new mixture and refinish.

c. Asphalt Pavement Tolerances

(1) Density Requirements: 96 percent of laboratory density as determined by AASHTO T230-68.

d. Final Acceptance: Although the nuclear field density testing method may be used for operational control during asphalt pavement placement, the final acceptance of asphalt pavement will be based on the test results from the pavement samples per AASHTO T230-68.

e. Aggregate Subbase and Base Courses: Perform testing procedures for density and thickness tolerances so that they conform to SCDOT.

3.9 TESTS

Submit certified reports of tests. Payment for costs in connection with sampling and testing shall be in accordance with Section 01400.

END OF SECTION

SECTION 02556

WATER METERS, SERVICE CONNECTIONS AND SERVICE PIPE

1. GENERAL

1.1. RELATED DOCUMENTS

1.1.1. Requirements of the General and Supplemental Conditions apply to all work in this Section. Provide all labor, materials, equipment, and services indicated on the Drawings, or specified herein, or reasonably necessary for and incidental to a complete job.

1.2. DESCRIPTION OF WORK

1.2.1. The work consists of the installation and testing of all service connections, including water meters, meter boxes and covers, meter yokes, meter stop valves, fittings, pressure reducing valves, corporation stops, tapping saddles, service pipe and accessories as specified herein and as shown on the Drawings.

1.3. QUALITY ASSURANCE

1.3.1. REFERENCED STANDARDS: Unless otherwise indicated, all referenced standards shall be the latest edition available at the time of bidding. Any requirements of these Specifications shall in no way invalidate the minimum requirements of the referenced standards. Comply with the provisions of the following codes and standards, except as otherwise indicated.

ASTM C 33	Specification for Concrete Aggregates
ASTM D 1248	Specification for Polyethylene Plastics Molding and Extrusion Materials
ASTM D 1598	Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
ASTM D 1784	Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
ASTM D 1785	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
ASTM D 2239	Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter

ASTM D 2241	Specification for Poly (Vinyl Chloride) (PVC) Pipe (SDR-PR)	Plastic
ASTM D 2774	Recommended Practice for Underground Installation of Thermoplastic Pressure Piping	
AWWA C700	Standard Specification for Cold-Water Meters-Displacement Type	
AWWA C705	Recommended Procedure for Testing Cold-Water Meters	Meters
AWWA C800	Standard Specification for Underground Service Valves and Fittings	Line

1.3.2. **COMPLIANCE WITH SPECIFICATIONS:** Provide water meters that are the manufacturer's first line meter only, made of the best material and workmanship, and that comply in every respect with AWWA C700. Meters not complying with all the requirements of the above Standard will be rejected. Replace or correct, at the contractors expense, all meters rejected for failure to comply with the above Standard. Use only the best, first line quality concrete, cast iron, and plastic materials in the meter box construction, subject to approval by the Engineer.

1.3.3. **GUARANTEE:** Guarantee meters against defects in materials and workmanship for a period of one year from date of installation. Repair or replace, without charge, those parts in which a defect has developed within one years time of installation. Guarantee meter registers similarly for a period of five years.

1.4. SUBMITTALS

1.4.1. **MANUFACTURER'S CERTIFICATION; WATER METERS:** Submit water meter manufacturer's notarized certification that each water meter furnished for this project has been individually factory tested for accuracy of registration and that it complies with accuracy of water measurement and capacity requirements of AWWA C700, when tested in accordance with AWWA C705.

1.4.2. **AFFADAVIT OF COMPLIANCE; WATER METERS:** Submit affidavit from the manufacturer of water meters stating that the water meters furnished for this project comply with all applicable requirements of AWWA C700.

2. PRODUCTS

2.1. WATER METERS

2.1.1. Provide nutating disc type or oscillating piston type water meters of the size indicated on the Drawings.

2.1.2. Provide meters that are magnetically driven and of frost proof construction. Only registers that are straight-reading, fog-proof, hermetically sealed, and read in U.S. gallons will be accepted. The figures on the number wheels shall be large, distinct and easily readable. Provide meters having registers calibrated in gallons and receiving the necessary power to operate from the measuring chamber by means of magnets. Provide magnets which are of the permanent type, so placed that they are tamper-proof.

2.1.3. Provide measuring chamber which is made of high grade bronze alloy, precision-machined, and so secured in position in the main case that any slight distortion of the outer case will not affect the sensitivity of the meter.

2.1.4. Provide outer casing, casing bolts, nuts, washers and register boxes which are of high grade bronze construction, capable of withstanding a working pressure of 150 psi without leakage at any point, or distortion affecting the free operation of the measuring unit. Provide cast-iron, frost-proof bottom cover on the meter which is corrosion protected by either a copper, plastic, or rubber liner and is frangible when a freezing pressure of approximately 550 pounds of pressure per square inch develops. Provide a suitable gasket, to prevent leakage, at the joint of the iron bottom.

2.1.5. Provide all meters with strainer screens installed within, made of non-ferrous materials. Use strainer screens that are rigid, fit tightly against the casing, easy to remove, and have an effective straining area at least double that of the main-case inlet. Only meters that have a satisfactory demonstrated performance record are acceptable.

2.1.6. MARKING: Provide meters marked with the size, model, and direction of flow permanently on the outer case. Mark the proper direction of flow through the meter by using raised characters and a direction arrow. Imprint the serial number permanently on the register lid and the main casing of each meter.

2.1.7. STANDARD OF QUALITY: Manufacturers offering products which comply with these requirements include (but are not necessarily limited to): Badger Meter Mfg. Co; Neptune Meter Company; Hersey Products Inc.; Rockwell; or equal.

2.2. METER BOXES

2.2.1. Provide meter boxes, including box cover, with all water meters. Construct meter boxes from concrete, cast iron, or plastic. Use meter boxes, for service connections, that are rectangular and that have the following minimum inside dimensions according to water meter size:

Meter Size	Box Length	Box Width	Box Depth
5/8" and 5/8" x 3/4"	15"	9-1/2"	12"
3/4"	16"	10"	15"
1"	20"	10"	15"
1-1/2"	24"	12"	16"
2"	28"	16"	18"

Provide a meter box that is large enough so that the particular size meter housed by it can be easily removed without disturbing the meter box. Provide suitable meter box extensions where required. Depth of meter box and extensions may be dependent on type and size of meter yoke or yokes. Provide cast iron and plastic meter boxes that have a one piece, heavily ribbed, cast iron cover. Provide concrete meter boxes with a one piece heavily ribbed cast iron cover, or a reinforced concrete cover.

Provide a cover for the meter box that can be easily removed by one man for purposes of providing easy access to the complete meter assembly, including yoke and meter stop. Provide a cover that has a small cast iron reader lid, or hatch, with hinged self closing cover of such size that the meter can be easily read without removing the entire meter box cover.

2.2.4. MARKING: Provide all water meter covers with the words "Water Meter" cast on the top of the cover.

2.2.5. STANDARD OF QUALITY: Manufacturers offering products which comply with these requirements include (but are not necessarily limited to): Brooks Products, Inc., Concrete Products Company, Intercontinental Plastics Mfg. Co., Ametek, Mueller Company.

2.3. METER YOKES

2.3.1. Provide copper or iron meter yokes for meter setting, of the riser type, angle type, or straight line type as required for the various types of service connections as indicated on the Drawings. Size of yoke shall be determined by the size of the water meter.

2.3.2. Provide copper or iron meter yoke, for pressure reducing valve setting, of the riser type, angle type, or straight line type for the various types of service connections as indicated on the Drawings. Determine the size of the yoke by the size of the water meter. Place the yoke for the pressure reducing valve setting before the yoke for meter setting, and in series-tandem or series straight line, as shown on drawings, with the meter setting yoke. Provide adapters for setting of pressure reducing valve in yoke.

2.3.3. STANDARD OF QUALITY: Manufacturers offering products which comply with these requirements include (but are not necessarily limited to): Mueller Company; Ford Meter Box Company, Inc.; Zurn Industries, Inc., Hays Fluid Controls Div.

2.4. METER STOP VALVES

2.4.1. Provide inverted key angle meter stop valve on inlet side of riser type and angle type yoke. Provide inverted key straight meter stop valve on inlet side of straight line type yoke.

2.4.2. Provide inverted key angle meter stop valve on inlet side of riser type and angle type yoke that supports a pressure reducing valve. Provide inverted key straight meter stop valve on inlet side of straight line type yoke that supports a pressure reducing valve.

2.4.3. Provide a lock wing on all meter stop valves. Use ground key meter stop valves on iron yokes.

2.4.4. STANDARD OF QUALITY: Manufacturers offering products which comply with these requirements include (but are not necessarily limited): Mueller Company; Ford Meter Box Company, Inc.; Zurn Industries, Inc., Hays Fluid Controls Div.

2.5. DUAL CHECK VALVES

2.5.1. GENERAL: Provide dual check valve, with accessible type plug, on outlet side of yoke. Provide angle dual check valve on outlet side of riser type meter yoke, and provide straight dual check valve on outlet side of angle type and straight type meter yoke. Provide appropriate fittings for connection to water meter and to stub out water service line. Provide double check valves that have a rating of 150 psi.

2.5.2. STANDARD OF QUALITY: Manufacturers offering products which comply with these requirements include (but are not necessarily limited to): Ford Meter Box Company, Inc.

2.6. PRESSURE REDUCING VALVE

2.6.1. Provide pressure reducing and regulating valve, complete with strainer for collecting sediment. Strainer shall be a separate unit installed on inlet side of valve, or built-in on inlet side of pressure reducing valve.

2.6.2. Provide fittings necessary to set the pressure reducing and regulating valve and strainer into yoke. This installation shall be on inlet side of water meter setting and in tandem or straight line with water meter setting as shown on drawings.

2.6.3. Provide a pressure reducing valve which has an inlet rating of 250 psi and an outlet pressure range adjustable between 25-80 psi. Valve design is specifically for use with water.

2.6.4. MARKING: Mark the valve with the manufacturers name, serial number or catalog number of valve, maximum inlet pressure, minimum and maximum adjustable outlet pressures.

2.6.5. STANDARD OF QUALITY: Manufacturers offering products which comply with these requirements include (but are not necessarily limited to): Mueller Company; A.W. Cash; Jordan Valve; Watts Regulator Company.

2.7. CORPORATION STOPS

2.7.1. Provide corporation stops of size and type as shown on the Drawings. Only corporation stops that are designed and manufactured in accordance with the latest revision of AWWA C800, using Mueller type threads on inlet of stop, are acceptable.

2.7.2 STANDARD OF QUALITY: Manufacturers offering products which comply with these requirements include (but are not necessarily limited to): Mueller Company; Ford Meter Box Company, Inc.

2.8. TAPPING SADDLES

2.8.1 Provide tapping saddles at all service connections. Provide saddles that are of cast brass construction with Mueller or CC type threads.

2.8.2 Provide tapping saddles designed specifically for use on PVC pipe. All cutting will be done in strict accordance with PVC pipe manufacturer's recommendations. The cutting tool will be of the shell type cutter which will retain the coupon.

2.8.3. STANDARD OF QUALITY: Manufacturers offering products which comply with these requirements include (but are not necessarily limited to): Mueller Company; Ford Meter Box Company, Inc.; and Rockwell International, Municipal and Utilities Div.

2.9. SERVICE PIPE

2.9.1. Provide Polyethylene (PE) or Polyvinyl Chloride (PVC) pipe of size as shown on Drawings.

2.9.2. PE PIPE: Comply with the requirements of ASTM D 1248 and ASTM D 2239. Material shall be PE 3406, Type 3, Category 5, Grade P34, per ASTM D 1248. Pipe dimensions and tolerances shall correspond with the values listed in ASTM D-2239 for flexible plastic pipe with a standard dimension ratio (SDR) of 7. Pipe shall have a working pressure of 160 psi at 73 degrees F. Provide pipe that is capable of maintaining pressures of 340 psi at 73 degrees F for 1000 hours when tested in accordance with ASTM D 1598.

2.9.2.a. Provide pipe that has mirror smooth surfaces, and that is free from bumps and irregularities. Only the highest level of workmanship compatible with current commercial practice is acceptable. Use materials that are completely homogenous and uniform in appearance.

2.9.2.b. Permanently mark pipe by imprinting at intervals of not more than 5 ft.: Manufacturer's name (or trade mark) and code, pipe size, identification of the National Sanitation Foundation approval, type of plastic material with the designation code PE 3406 and the standard thermoplastic pipe dimension ratio or pressure rating in pounds per square inch for water at 23 degrees C (73.4 degrees F).

2.9.3. PVC PIPE: Comply with the requirements of ASTM D 1784 and ASTM D 1785 or ASTM D 2241. Use only material that is Class 12454-B complying with ASTM D 1784. Provide PVC pipe that is designated PVC 1120 Schedule 40 complying with ASTM D 1785 or PVC 1120, SDR 21 Series 200 psi pressure rated or SDR 26 Series 160 psi pressure rated complying with ASTM D 2241.

2.9.3.a. Mark PVC pipe in accordance with ASTM D 1785.

2.9.3.b. Provide PVC pipe which is approved by the National Sanitation Foundation (NSF) and bearing the NSF seal of approval.

2.9.3.c. STANDARD OF QUALITY: Manufacturers offering products which comply with these requirements include (but are not necessarily limited): Yardley-Celanese Piping Systems; M.L. Sheldon Plastics Corporation, Plastic Pipe lines Division; Dupont-Aldyl "D" Polyethylene Piping Systems, and Eslon Thermoplastics, Inc.

2.9.4. FITTINGS

2.10.1 Provide fittings and connectors of proper materials, sizes, and quantities to join the separate items of the service connection together into one complete and satisfactory functioning system.

2.10.2. Manufacturers offering products which comply with these requirements include (but are not necessarily limited to): Mueller Company; Ford Meter Box Company, Inc.; Zurn Industries, Inc., Hays Fluid Controls Div.

3. EXECUTION

3.1. INSPECTION

3.1.1. Examine the areas and conditions under which service connections are to be installed and notify the Engineer in writing of conditions detrimental to the proper and

timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

3.2. EXCAVATION

3.2.1. Excavate trenches for plastic service pipe in accordance with Section 02220, EXCAVATION AND BACKFILL. Perform necessary blasting in strict accordance with Section 312211, BLASTING. Except where specifically shown or indicated otherwise, lay all service pipe with an earth cover of not less than two feet.

3.3 INSTALLATION

3.3.1. Install meter boxes in a neat and workmanlike manner. Carefully adjust the elevation of the meter boxes so that the lid is flush with the ground surface. Tamp the soil around the meter box installation to eliminate settlement.

3.3.2 Provide a complete meter service installation as specified herein and shown on the drawings.

3.3.3. Install metered service connections utilizing pressure reducing valves and strainers in the meter box in the following flow path: inverted key meter stop valve coupled to a strainer and a pressure reducing valve or a strainer-pressure reducing valve combination all in one yoke assembly. Couple those in tandem-series or straight line-series with another yoke assembly containing the water meter and a check valve, then a stub out from the meter box for 3 feet from the outer face of meter box. Cap end of stub out for house connection.

3.3.4. Install metered service connections utilizing only water meters in the meter box in the following flow path: one yoke assembly containing an inverted key meter stop valve coupled to the water meter and then coupled to a check valve, then a stub out from the meter box for 3 feet from the outer face of the meter box. Cap end of stub out for house connection.

3.3.5. Place a minimum of 12 inches of crushed stone or crushed gravel meeting the requirements of ASTM C33, Gradation 67 beneath meter service connections within the meter box for drainage.

3.3.6. Use proper and suitable tools and equipment for the storage, handling, and laying of the service pipe. Before installation, inspect pipe for cuts, punctures, and excessive abrasion that may have resulted from shipping or handling. Report excessive or wide spread damage to the Engineer immediately. Do not install any pipe or other casting into the meter service which is known to be defective. If, after being laid, the pipe, or other materials are found to be defective, remove and replace those found to be defective with sound material, without further charge. Thoroughly clean all pipe and fittings before being laid, and keep the interior clean until accepted in the complete work.

3.4. PE PIPE: Install pipe in accordance with ASTM D 2774. Adhere to the rules, regulations, and requirements of OSHA, Occupational Safety and Health Act. Polyethylene pipe shall be laid in a continuous piece from the main to the meter with no splicing permitted.

3.4.1. Make allowance for thermal expansion and contraction of pipe during installation. Since polyethylene pipe retains some of its coil, it tends to "snake" itself in the trench enough to provide sufficient slack. As a general rule allow an extra 6 inches per 100 feet to compensate for thermal contraction.

3.4.2. Lay pipe in dry trenches only. Keep all trenches completely free of water during bedding and laying of the pipe. Dewater and use sheeting where required by field conditions. Pump or drain all water away from the work and dispose of in a suitable manner so that no damage occurs outside the construction easement. Do not permit water to rise in an unbackfilled trench after pipe has been placed. Promptly repair any damage within the construction easement.

3.4.3. After delivery alongside trench, visibly inspect the pipe for marking, damaged surfaces, breakage, and conformance to specifications. Acceptable pipe may be marked with paint or other permanent marking material so that the marks are plainly visible after installation in the trench and before pipe is covered. Reject, stockpile, and remove from the site all pipe not conforming to Specifications.

3.4.4. The ease of uncoiling the pipe is dependent on the ambient temperature. The coils should be securely held during the uncoiling process. Pipe of 1-1/2" diameter or less can usually be manually uncoiled, even at temperatures well below 0 degrees F. For pipe diameters from 2 inches to 4 inches, a power-assist is normally required utilizing a tractor or truck to draw the pipe from the coils. To uncoil pipe in cold weather, run the pipe over a guide roller to assist straightening. Always uncoil pipe "straight ahead", never pull from the side of a coil, as this imparts a twist or spiral in the pipe.

3.4.5. Uncoil pipe above ground next to trench and place into trench as digging progresses. The pipe will readily snake up the wall of the open trench. The length which snakes between the bottom and top of the trench will depend on the pipe size and the depth of the trench. One-half inch to 3 inch pipe will snake out in this configuration for about 15 feet in a 3 foot deep trench.

3.4.6. Unless otherwise shown on the Drawings, lay all pipe in open trench construction. Lay pipe to conform to the lines and grades indicated on the Drawings unless otherwise directed by the Engineer. Do not permanently support pipe on saddles, blocking, or boulders.

3.5. PVC PIPE: Install PVC Pipe in accordance with Section 02466, POLYVINYL CHLORIDE PRESSURE PIPE.

3.5.1. BACKFILL: When pipe has been properly bedded, backfill trenches in accordance with Section 02220, EXCAVATION AND BACKFILL.

3.5.2 Repair and retest, at Contractor's expense, any section of the service connection failing to meet the leakage test. Perform repairs with capable personnel and with sound materials equal to those materials specified.

3.6. TESTING AND DISINFECTING

3.6.1 TESTING: Test lines for leakage in accordance with Section 02493, AIR TESTING PIPELINES or Section 02494, WATER TESTING PIPELINES, Contractors option.

3.6.2 REPAIRS: Repair and retest, at Contractor's expense, any section of pipe failing to meet the leakage test. Perform repairs with capable personnel and with sound materials equal to those materials used in the manufacture of the pipe.

3.6.3. DISINFECTION: Disinfect lines in accordance with Section 02496, DISINFECTING PIPELINES.

(End of Section 02556)

SECTION 02667

WATER LINES

PART 1 GENERAL

1.1 SECTION INCLUDES

- a. Pipe and fittings for water line including domestic water line and fire protection.
- b. Valves.

1.2 REFERENCED SECTIONS

- a. Section 02207 - Aggregate Materials.
- b. Section 02225 - Trenching.
- c. Section 03300 - Cast-In-Place Concrete.

1.3 REFERENCES

Publications listed below form part of specification to extent referenced. Publications are referenced in text by basic designation only. Refer to Section 01090 for addresses of standard producing associations.

AMERICAN RAILWAY ENGINEERING ASSOCIATION (AREA)

AREA Manual for Railway Engineering

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ANSI/ASME B1.20.1 Pipe Threads - General Purpose - Inch

ANSI/ASME B16.1 Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800

AMERICAN WATER WORKS ASSOCIATION (AWWA)

ANSI/AWWA C104/A21.4 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water

ANSI/AWWA C110/A21.10 Ductile-Iron and Gray-Iron Fittings, 3 Inch Through 48 Inch For Water and other Liquids

ANSI/AWWA C111/A21.11	Rubber-Gasket Joints for Ductile Iron and Grey-Iron Pressure Pipe Fittings
ANSI/AWWA C115	Flanged Ductile-Iron Pipe with Threaded Flanges
ANSI/AWWA C150/A21.50	Thickness Design of Ductile-Iron Pipe
ANSI/AWWA C151/A21.51	Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids
ANSI/AWWA C500	Metal Seated Gate Valves for Water Supply Service
ANSI/AWWA C504	Rubber Seated Butterfly Valves
ANSI/AWWA C508	Swing-Check Valves for Waterworks Service, 2 Inch Through 24 Inch NPS
ANSI/AWWA C509	Resilient Seated Gate Valves for Water and Sewage Systems
ANSI/AWWA C600	Installation of Ductile-Iron Water Mains and Appurtenances

FACTORY MUTUAL (FM)

FM approved Factory Mutual Approval Guide

NATIONAL FIRE PROTECTION AGENCY (NFPA)

ANSI/NFPA 24 Private Fire Service Mains and Their Appurtenances

UNDERWRITERS LABORATORY, INC. (UL)

UL listed Product Directory

1.4 SUBMITTALS

Submit under provisions of Section 01300.

- a. SD-01, Data
 - (1) Pipe materials.
 - (2) Pipe fittings.
 - (3) Couplings.

- (4) Thrust restraint.
- (5) Accessories.
- b. SD-06, Instructions
 - (1) Pipe material and joints.
- c. SD-13, Certificates
 - (1) Certify that products meet or exceed specified requirements.

1.5 PROJECT RECORD DOCUMENTS

- a. Submit under provisions of Section 01700.
- b. Record actual location of piping mains, valves, connections, and invert elevations.
- c. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

- a. Perform Work in accordance with utility company standards and municipality standards.
- b. Valves: Manufacturer's name, and pressure rating marked on valve body.

1.7 DELIVERY, STORAGE, AND HANDLING

- a. Deliver, store, protect and handle products to site under provisions of Section 01600.
- b. Deliver and store valves in shipping containers with labeling in place.

PART 2 PRODUCTS

All pipe, fittings, packing, jointing materials, and valves shall conform to Section C of the AWWA Standards.

All water mains shall be provided with a minimum thirty-six (36) inches of cover. Where this is not possible, pipe shall be steel, concrete or ductile iron or other approved material and method approved by DHEC and when necessary insulated to prevent freezing.

Pipe fittings, solder or flux used in potable water lines shall be "lead-free", which is defined as less than 0.2% lead in solder and flux and less than 8.0% lead in pipe and fittings. Leaded joints necessary for repair of CIP shall be exempt from this. Asbestos cement pipe cannot be used in

potable water systems except in the repair of existing asbestos lines.

All materials in contact with potable water shall be third party certified as meeting the specifications ANSI/NSF Standard 61. Natural rubber or other materials which will support microbiological growth shall not be used for any gaskets, o-rings and other products used for joining pipes, setting meters or valves or other appurtenances which will expose the material to water. Lubricants that will support microbiological growth shall not be used for slip-on joints. Vegetable shortening shall not be used to lubricate joints.

2.1 PIPE

2.1.1 Ductile-Iron Pipe

ANSI/AWWA C150/A21.50 and ANSI/AWWA C151/A21.51 Pressure Class 350 for mechanical and push on joints and ANSI/AWWA C150/A21.50 and ANSI/AWWA C115.A21.15 Pressure Class 250 for flanged joints unless otherwise noted.

- a. Joints: Mechanical or push-on ANSI/AWWA C111/A21.11; flanged, ANSI/AWWA C115.
- b. Fittings: Mechanical ANSI/AWWA C110/A21.10; flanged ANSI/AWWA C110/A21.10, UL listed/FM approved. Compact fittings shall be in accordance with ANSI/AWWA C153.
- c. Cement Mortar Lining: Standard thickness conforming to ANSI/AWWA C104.A21.4 for pipe and fittings.
- d. Exterior Coating Pipe and Fittings: ANSI/AWWA C151/A21.51.
- e. UL listed/FM approved.

2.1.2 PVC Pipe

- a. Four-Inch-and-Larger-Diameter Pipe.
 - (1) Four-inch to 12-inch Pipe: ANSI/AWWA C900 DR 18.
 - (2) UL listed/FM approved.
- b. Four-Inch-and-Larger-Diameter Joints: Push-on conforming to ASTM D 3139.
- c. Four-Inch-and-Larger-Diameter Fittings: Conform to requirements for ductile-iron fittings. UL listed/FM approved.
- d. Pipe shall conform to AWWA C900 with pipe made to cast iron outside diameters. Pipe shall have integral bell and spigot joints with rubber ring or gasket.

e. Tracer Wire for Buried PVC Pipe:

- (1) Marking Tape: Acid- and alkali-resistant polyethylene film, 6 inches wide with minimum thickness of 0.004 inch, minimum strength of 1750 psi lengthwise and 1500 psi crosswise. Use type specifically manufactured for marking and locating underground utilities. Provide tape manufactured with foil core at least 0.35-mil thick or with other means to enable detection by metal detector when tape is buried up to 3 feet deep. Provide tape with metallic core encased in protective jacket or with other means to protect it from corrosion. Provide tape of blue color that bears continuous printed inscription identifying water main.
- (2) Tracer Wire: Continuous, single strand copper wire, insulated, 10 AWG diameter.

2.2 VALVES

2.2.1 Gate Valves, Up to 3 Inches

- a. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, threaded ends, extension box and valve key, open left.

2.2.2 Gate Valves, 3 Inches and Over

- a. Gate Valves 3 inches through 20 Inches – ANSI/AWWA C 509, Iron body, bronze trim, non-rising stem with square nut, single resilient wedge, mechanical joint ends, interior and exterior fusion-bonded epoxy coating, open left.
- b. UL listed/FM approved.

2.2.3 Swing Check Valves, From 2 Inches to 24 Inches

- a. ANSI/AWWA C508, iron body, bronze trim, clear opening, renewable disc and seat, flanged ends, outside lever-and-weight or lever-and-spring, as noted. Additional seat requirements as noted on plans.
- b. UL listed/FM approved.

2.2.4 Butterfly Valves, From 2 Inches to 24 Inches

- a. ANSI/AWWA C504, iron body, cast iron disc per ASTM A48 Class 40C, disc seating edge shall be solid 316 stainless steel, flanged ends.
- b. UL listed/FM approved.

- c. Electrically operated valve shall be equipped with a manual handwheel override and be able to accept a signal from water tank level indicator to open or close.

2.3 VALVE BOXES

Provide cast-iron or concrete valve boxes, except that concrete boxes may be installed only in locations not subjected to vehicular traffic.

- a. Cast-Iron Boxes: Extension type with slide-type adjustment, flared base, and 3/16-inch minimum thickness of metal.
- b. Concrete Boxes: Standard product of a manufacturer of precast concrete equipment.
- c. Cast the word "WATER" in cover. Adapt box length, without full extension, to depth of cover required over pipe at valve location.

2.4 VALVE VAULTS

Construct valve vaults at locations indicated or as required and in accordance with plans. Provide concrete with compressive strength of 5000 psi in accordance with Section 03300.

2.4.1 Access Cover

Aluminum, watertight with provision for drain connection. Channel frame 1/4-inch aluminum with anchor flange around perimeter and 1-1/2-inch diameter drainage coupling.

- a. Door Leaf: 1/4-inch aluminum diamond pattern reinforced to withstand a live load of 300 pounds per square foot. Equip door with heavy forged brass or bronze hinges, stainless steel pins, spring operation for easy operation, and automatic hold-open arm with release handle. Provide inside snap lock with outside removable handle.
- b. Hardware: Cadmium-plated.
- c. Factory Finish: Mill finish with bituminous coating applied to frame exterior.
- d. Nominal length and width of cover: Size as indicated on drawings.
- e. Provide access cover as manufactured by Bilco, Type "J", or equal.

2.5 BEDDING MATERIALS

Bedding shall be select material from excavated in-situ soil free of large stones, hard lumps, frozen matter, organic matter, debris and other objectionable material. If in-situ soil is not

acceptable, then the Contractor shall provide suitable material for bedding and backfill from offsite sources.

2.6 THRUST RESTRAINT

Thrust blocking or mechanical restraints must be provided for all tees, bends and plugs on lines 2 ½ inches in diameter and larger, for all post hydrants on lines 3 inches in diameter and larger, and for all hydrants on lines 6 inches in diameter and larger.

- a. Restrained Joint Manufacturers: EBAA Iron Sales, Inc.
- b. Thrust Blocks: Concrete type as specified in Section 03300.
- c. Pipe Clamps and Tie Rods: ANSI/NFPA 24.

2.7 ACCESSORIES

- a. Tapping Sleeves and Valves: Provide tapping sleeves and valve of the type designed for making connections to existing and active water lines without the loss of water or interruption of service. Provide tapping valves suitable for installation with tapping sleeves and pipe used, designed for minimum water working pressure of 150 psi., and have clear waterway equal to full nominal diameter of valve. Valves shall be of same construction as standard AWWA gate valves, complete with operating nut.
- b. Tapping Sleeve: Cast gray, ductile, or malleable-iron, split-sleeve type with flanged or grooved outlet, and with bolts, follower rings and gaskets on each end of sleeve suitable for maximum working pressure of 150 psi. Bolts shall have square heads and hexagonal nuts. Longitudinal gaskets and mechanical joints with gaskets shall be as recommended by manufacturer of sleeve. When using grooved mechanical tee, it shall consist of an upper housing with full locating collar for rigid positioning which engages machine-cut hole in pipe, encasing elastomeric gasket which conforms to pipe outside diameter around hole and lower housing with positioning lugs, secured together during assembly by nuts and bolts as specified, pretorqued to 50 foot-pounds.
- c. Valve Markers shall be as detailed on the plans, and shall be of 3000 psi concrete, reinforced as shown on the drawings, and conforming to Section 03300. Valve markers shall be marked with recessed letters identifying the valve function, either MV, AV, BO, etc., as applicable.

PART 3 EXECUTION

3.1 EXAMINATION

- a. Verify existing conditions.

3.2 PREPARATION

- a. Ream pipe and tube ends and remove burrs.
- b. Remove scale and dirt, on inside and outside, before assembly.
- c. Prepare pipe connections to equipment with flanges or unions.

3.3 BEDDING

- a. Excavate pipe trench in accordance with Section 02222 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

3.4 PIPE INSTALLATION

- a. Maintain separation of water main from sewer and gas line piping in accordance with local, state, and federal codes.

(1) The State of South Carolina Department of Health and Environmental Control requires the following for separation of water mains and sewers:

- (a) Parallel Installation – Water mains shall be laid at least ten (1) feet horizontally from any existing or proposed sewer. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten foot separation, the Department may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the water main closer to a sewer, provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least eighteen (18) inches above the top of the sewer.
- (b) Crossings – Water mains crossing sewers shall be laid to provide a minimum vertical separation of eighteen (18) inches between the outside of the water main and the outside of the sewer. This shall be the case whether the water main is either above or below the sewer line. Whenever possible, the water main shall be located above the sewer line. Where a new water main crosses a new sewer line, a full length of pipe shall be used for both the water main and sewer line and the crossing shall be arranged so that the joints of each line will be as far as possible from the point of crossing and each other. Where a new water main

crosses an existing sewer line, one full length of water pipe shall be located so both joints will be as far from the sewer line as possible. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer line to prevent damage to the water main.

- (c) Special Conditions – When it is impossible to obtain the distances specified in (a) and (b) the Department may allow an alternative design. Any alternative design shall:
 - (i) Maximize the distances between the water main and sewer line and the joints of each;
 - (ii) Use materials which meet the requirements R.61-58.4(D)(1) for the sewer line; and
 - (iii) Allow enough distance to make repairs to one of the lines without damaging the other.
 - (d) Force mains – There shall be at least a ten (10) foot horizontal separation between water mains and sanitary sewer force mains. There shall be an eighteen (18) inch vertical separation at crossing as required in (a) and (b) above.
 - (e) Sewer manholes – No water pipe shall pass through or come in contact with any part of a sewer manhole. Water lines may come in contact with storm sewers or catch basins if there is no other practical alternative, provided that ductile iron is used, no joints of the water line are within the storm sewer or catch basin and the joints are located as far as possible from the storm sewer or catch basin.
 - (f) Drain-fields and Spray-fields – Potable water lines shall not be laid less than twenty-five (25) feet horizontally from any portion of a wastewater tile-field or spray-field, or shall be otherwise protected by an acceptable method approved by the Department.
- b. Install pipe to indicated elevation to within tolerance of 1 inch.
 - c. Install ductile iron piping and fittings to ANSI/AWWA C600.
 - d. Install PVC piping according to AWWA M23.
 - e. Slope water pipe and position drain at low points.
 - f. Form and place concrete for thrust blocks at each elbow or change of direction of pipe main.

- g. Establish elevations of buried piping to ensure not less than three (3) ft of cover.
- h. Install warning tape and tracer wire directly above pipe and conduit and cable at a depth of 12 inches below finished grade unless otherwise indicated.
- i. Backfill trench in accordance with Section 02223.

3.5 VALVES INSTALLATION

- a. Set valves on solid bearing.
- b. Center and plumb valve box over valve. Set box cover flush with finished grade.
- c. Install tapping sleeves and tapping valves in accordance with manufacturers recommendations.
- d. Install valves according to NFPA 24.

3.6 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

See Section 02675 – Disinfection of Water Distribution Systems.

3.7 FIELD QUALITY CONTROL

- b. Perform field-testing under provisions of Section 01400 and according to NFPA 24.
- c. Hydrostatically test newly laid pipeline and valved section thereof. See Section 02672 Pressure and Leakage Testing.

END OF SECTION

SECTION 02672

PRESSURE AND LEAKAGE TESTING

PART 1 GENERAL

All liquid-retaining structures, and pressure piping shall be tested by the Contractor as specified herein and as directed by the Engineer. Testing shall be conducted in a manner to minimize interference with the progress of the work.

1.1 REFERENCED SECTIONS

Section 02667 – Site Water Lines

Section 13210 – Elevated Storage Tank

1.2 REFERENCES

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C 600 Installation of Ductile Iron Water Mains and Their Appurtenances

AWWA C 605 Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 TESTS OF STRUCTURES

3.1.1 Steel Water Tanks

Upon completion of erection and painting, each tank shall be filled with water furnished at the site by the Owner. The water shall be furnished at the proper pressure to fill the tank to the maximum working water level. The Contractor shall repair all leaks and other defects disclosed by this test. No repairs shall be done unless the water in the tank is completely drained, or unless the water in the tank is at least 2 feet below the point being repaired. Any paint damaged by repairs shall be properly restored.

3.2 TESTS OF PIPING

3.2.1 Pressure Lines

Each pressure pipeline or valved section thereof shall be subjected to hydrostatic testing in accordance with all applicable provisions of AWWA C600, Section 4 for ductile iron pipe.

- a. Pressure Lines: Each pressure pipeline or valved section thereof shall be subjected to hydrostatic testing in accordance with all applicable provisions of AWWA C600, Section 5 for ductile iron pipe and AWWA C605 Section 7 for PVC and HDPE pipe.
 1. Pressure Test: Unless otherwise specified, pressure lines shall be tested to not less than 1.25 times the stated working pressure of the pipeline measured at the highest elevation along the test section and not less than 1.5 times the stated working pressure at the lowest elevation of the test section. The test pressure shall not exceed the thrust restraint design pressures or 1.5 times the pressure rating of the pipe or joint, whichever is less (as specified by the manufacturer). Before applying the test pressure, all air shall be expelled completely from the line through air valves or other means. The test shall be maintained at full pressure for at least two hours. All damaged or defective pipe, fittings, joints, vales, hydrants and appurtenances discovered after the leakage test shall be repaired or replaced with sound material, and the pressure test repeated until satisfactory to the Engineer.
 2. Leakage test shall be conducted concurrently with the pressure test. Leakage shall be not more than the number of gallons per hour for each section of line tested, as determined by the following formula:
$$L = \frac{SD \sqrt{P}}{148,000}$$

L = Allowable leakage, in gallons per hour
S = Length of pipe tested, in feet
D = Nominal diameter of pipe, in inches
P = Average test pressure, in psig
 3. If the test discloses leakage greater than that specified above, the Contractor shall, at his own expense, locate and repair all defects until leakage is within the specified allowance. All visible leaks shall be repaired regardless of the amount of leakage.
 4. Water for testing will be paid for by the Contractor. The Contractor shall furnish the backflow preventer, meter, test pump, measuring devices and all necessary pipe or hose extensions or transportation to the point of use, and shall exercise care in the use of water.

END OF SECTION

SECTION 02675

DISINFECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- a. Disinfection of potable water distribution system.
- b. Disinfection of water storage facilities.
- c. Testing and reporting results.

1.2 REFERENCED SECTIONS

- a. Section 02667 - Water Lines.
- b. Section 13210 – Elevated Storage Tank.

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced to in the text by basic designation only. Refer to Section 01090 for addresses of standard producing associations.

AMERICAN PUBLIC HEALTH ASSOCIATION (APHA)

APHA Standard Methods	Standard Methods for the Examination of Water and Wastewater
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AMERICAN WATER WORKS ASSOCIATION (AWWA)

ANSI/AWWA B300	Hypochlorites
ANSI/AWWA B301	Liquid Chlorine
ANSI/AWWA C651	Disinfecting Water Mains
ANSI/AWWA C652	Disinfection of Water-Storage Facilities

1.4 SUBMITTALS

Submit under provisions of Section 01300.

- a. SD-08, Certification

Job No.: 013498.00

Date: August 2017

02675-1

- (1) Certify that cleanliness of water system meets minimum specified requirements.

b. SD-12, Field Test Reports

- (1) Disinfection Report

Record the following:

- (a) Method, type, and form of disinfectant used.
- (b) Date and time of disinfectant injection start and time of completion.
- (c) Test locations.
- (d) Initial and 24-hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
- (e) Date and time of flushing start and completion.
- (f) Disinfectant residual after flushing in ppm for each outlet tested.

- (2) Bacteriological Report

Record the following:

- (a) Date issued, project name, and testing laboratory name, address, and telephone number.
- (b) Time and date of water sample collection.
- (c) Name of person collecting samples.
- (d) Test locations.
- (e) Initial and 24-hour disinfectant residuals in ppm for each outlet tested.
- (f) Coliform bacteria test results for each outlet tested.
- (g) Certification that water conforms, or fails to conform, to bacterial standards of the authority having jurisdiction.
- (h) Bacteriologist's signature and authority.

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

- a. Liquid chlorine.
- b. Calcium hypochlorite.
- c. Sodium hypochlorite.

PART 3 EXECUTION

3.1 EXAMINATION

Verify that water lines have been installed in accordance with Section 02667. Verify that water storage facility has been installed in accordance with Section 13210. The Owner will furnish water for disinfection at no cost to the Contractor. The Contractor shall furnish all chemicals required for disinfection, and all necessary pipe or hose extensions or transportation to the point of use. The Contractor shall exercise care in the use of water.

3.2 FLUSHING

Flush water mains prior to disinfection, unless tablet method is used. Operate valves and hydrants during flushing. Flushing velocity shall be greater than 2.5 feet per second. At the Contractor's option, water lines may be disinfected in sections isolated by means of valves or other approved methods.

3.3. CLEANING, WATER STORAGE FACILITY

- a. Remove scaffolding, planks, tools, rags, and other materials not part of structural or operating facilities. Clean surfaces of walls, floors, and operating facilities of storage facility thoroughly using a high-pressure water jet, sweeping, scrubbing, or equally effective means. Remove water, dirt, and foreign material accumulated during cleaning from water storage facility.
- b. Following cleaning, check vent screen, overflow screen, and other screened openings to prevent birds, insects, and other contaminants from entering the facility. Take care to minimize the introduction of foreign material into water storage facility after cleaning operations.

3.4 DISINFECTION, WATER MAINS

Disinfect water mains in accordance with AWWA C651 by one of the following method(s):

3.4.1 Continuous Feed Method

- a. Introduce potable water into water main at constant flow rate.
- b. Add chlorine to flow at constant rate so that chlorine concentration in the water is at least 50 mg/L.
- c. Maintain the chlorinated water in the main for at least 24 hours, after which the chlorine residual shall be a minimum of 10 mg/L. Operate valves and appurtenances while the chlorinated water remains in the main.

3.5 DISINFECTION, WATER STORAGE FACILITIES

Disinfect storage facilities in accordance with AWWA C652, Method 1 or Method 2, as described below.

3.5.1 Chlorination Method 1

- a. Introduce potable water to storage facility at constant flow rate until water level equals overflow level.
- b. Add chlorine to flow at constant rate.
- c. Maintain chlorinated water in storage facility for not less than 6 hours, after which time chlorine residual shall be minimum of 10 mg/L. Should sodium hypochlorite or calcium hypochlorite be used to chlorinate, increase time to 24 hours.

3.5.2 Chlorination Method 2

- a. Introduce chlorine solution of 200 mg/L, applied directly by brush or spray equipment, to all surfaces, including inlet and outlet piping, of storage facility that will be in contact with water up to overflow elevation.
- b. Apply solution to drain piping, except overflow piping, such that chlorine concentration of 10 mg/L is maintained when drain piping is filled with water.
- c. Maintain surfaces in contact with water for 30 minutes. Then flush 10-mg/L chlorinated water from the drain piping. Then fill facility to overflow level with potable water.

3.6 FLUSHING CHLORINATED WATER

- a. Flush chlorinated water from water mains after required retention period. Continue flushing until chlorine concentration is no greater than that generally prevailing in water system.
- b. After retention period, reduce free-chlorine residual to level prevailing in existing water system, not to exceed 2 mg/L, by draining the water storage facility and refilling with potable water or by blending with potable water having a low chlorine

concentration. Subject to satisfactory bacteriological test results and acceptable aesthetic quality, water may be delivered to distribution system.

3.7 DISPOSAL OF CHLORINATED WATER

Dispose of chlorinated water in a manner not damaging to the environment. When necessary to protect environment, apply reducing agent to chlorinated water to neutralize chlorine residual.

3.8 QUALITY CONTROL

- a. Under standard conditions, after final flushing and before water main or water storage facility is placed in service, collect water samples. A minimum of two (2) samples shall be collected from each sampling site (main or storage facility) for total coliform analysis. The number of sites for water mains depends on the amount of new construction but must include all dead-end lines and be representative of the water in the newly constructed mains, and shall be collected a minimum of every 1,200 linear feet. These samples must be collected at least twenty-four (24) hours apart and results must show the absence of total coliform bacteria. The chlorine residual must also be measured and reported. If the membrane filter method of analysis is used for the coliform analysis, non-coliform growth must also be reported. If the non-coliform growth is greater than eighty (80) colonies per one hundred (100) milliliters, the sample result is invalid and must be repeated. All samples must be analyzed by a State certified laboratory. Samples shall be collected and tested by the Contractor at his expense.
- b. Check water in water storage facility for offensive odor due to chlorine reactions or excess chlorine residual. Eliminate offensive odors where they occur.

END OF SECTION

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SECTION 02936

SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Seeding.
- B. Soil amendments.
- C. Ancillary materials.
- D. Maintenance.

1.2 REFERENCED SECTION

None

1.3 SUBMITTALS

- A. SD-13, Certificates
 - 1. Fertilizer.
 - 2. Lime.
 - 3. Seed.
 - 4. Soil retention coverings.
- B. SD-09, Reports
 - 1. Report of soil test and analysis.

1.4 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- B. Perform work with experienced workmen regularly engaged in this type of work.

1.5 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver to site, store, protect and handle products under provisions of Section 01600.
- B. Deliver seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- C. Deliver fertilizer and lime in original, unopened containers bearing manufacturer's guaranteed analysis, name, trade name, trademark, and conformance to state and federal laws. In lieu of containers, fertilizer and lime may be furnished in bulk with a certificate indicating the above information accompanying each delivery.

1.7 MAINTENANCE SERVICE

- A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.

PART 2 PRODUCTS

2.1 SEEDING SCHEDULE

Material shall be accepted by the Engineer prior to use. Fertilizer shall be delivered in undamaged waterproof bags showing weight, chemical analysis, and manufacturer. Lime shall be delivered in bags with a tag or label showing brand or trade name, magnesium carbonate equivalent and other pertinent information. Seed shall be delivered in original undamaged containers showing name of seed, net weight, percentage of pure seed and germination, origin and date of packaging.

Seed: Fescue, Bermuda, or Pensacola Bahia as required by seasonal or soil conditions with at least 90% purity and 80% germination as required by state law.

2.2 SOIL AMENDMENT

- A. Fertilizer: Recommended for grass, with 50 percent of the elements derived from organic sources; of proportion necessary to eliminate deficiencies of topsoil.
 - 1. Nitrogen 4 percent.
 - 2. Phosphoric acid 12 percent.
 - 3. Soluble potash 12 percent.

- B. Lime: Recommended for grass, ground limestone containing not less than 85-percent total carbonates.

2.3 ANCILLARY MATERIALS

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry hay or chopped cornstalks are acceptable.
- B. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.
- C. Soil Retention Coverings
 1. Jute Mesh: Uniform, open, plain weave of undyed and unbleached single jute yarn, loosely twisted and not varying in thickness by more than its normal diameter. Furnish new, with length marked on each roll. Between strands lengthwise, openings shall be 0.60 inch plus or minus 25 percent. Between strands crosswise, openings shall be 0.90 inch plus or minus 25 percent. Jute mesh shall weigh 0.9 pound per square yard plus or minus 5 percent.
 2. Soil Retention Mats: Machine-produced mat of wood fibers, wood excelsior, or manmade fiber that intertwine or interlock, nontoxic to vegetation and germination of seed, and not injurious to the unprotected skin of the human body.
 3. Soil Stabilization Mats: Geotextile materials conforming to the current approved SCDOT products list for the use indicated.
- D. Stakes: Softwood lumber, chisel pointed.
- E. String: Inorganic fiber.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this section.

3.2 APPLICATION OF SOIL AMENDMENTS

- A. Apply fertilizer in accordance with manufacturer's instructions at a rate of 1000 pounds of nitrogen per acre.
- B. Apply lime at a rate of 2000 pounds per acre.

- C. Apply after smooth raking of topsoil and prior to roller compaction.
- D. Do not apply fertilizer or lime at same time or with same machine as will be used to apply seed.
- E. Mix thoroughly into upper 3-4 inches of topsoil.
- F. Lightly water to aid the dissipation of fertilizer.

3.3 SEEDING

- A. Apply seed at a rate of 200 lbs per acre for Fescue, 40 lbs per acre for Bermuda or Pensacola Bahia, in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- D. Roll seeded areas with roller not exceeding 112 lbs.
- E. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inch. Maintain clear of shrubs and trees.
- F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches depth of soil.

3.4 TEMPORARY COVER

If areas to be grassed are ready for seeding at a time inappropriate for establishing the permanent grass cover, a temporary cover shall be provided for protection of such areas until such time that the permanent cover can be established. At the appropriate time, the Contractor shall return to the site and provide the permanent cover as specified above.

- A. Temporary cover shall be provided as specified above for the permanent cover, with the following exceptions:
 - (1) Fertilizer shall be applied at one-half the rate specified for the permanent cover.
 - (2) Seed shall be rye or Sudan Grass applied at rates to provide an adequate and acceptable temporary cover.

- B. After temporary seeding is complete, the seeded areas shall be watered until an acceptable grass cover is obtained.

3.5 SEED PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to 8 inches. Space stakes at 36 inches.
- B. Cover seeded slopes where grade is 4 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- C. Lay fabric smoothly on surface, bury top end of each section in 6-inch-deep excavated topsoil trench. Provide 12-inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- D. Secure outside edges and overlaps at 36-inch intervals with stakes.
- E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- F. At ditches, lay fabric laps in direction of water flow and lap ends and edges as indicated.

3.6 SATISFACTORY STAND

A complete permanent grass cover of all areas to be grassed shall be obtained before these areas will be acceptable. All such areas shall be seeded immediately following grading and shall obtain acceptable growth within 30 days after completion of grading. All eroded areas shall be filled and completely covered with grass before being acceptable. An acceptable grass cover is defined as a minimum 2-inch stand with bare spots less than 1 square foot after first mowing. Highway permit provisions shall govern grassing procedures within highway right-of-way.

3.7 MAINTENANCE

- A. Mow grass at regular intervals to maintain at a height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming.
- D. Water to prevent grass and soil from drying out.
- E. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.

- F. Immediately reseed areas that show bare spots or fail to exhibit a satisfactory stand of turf.
- G. Protect seeded areas with warning signs during maintenance period.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- a. All cast-in-place concrete.
- b. Control, expansion, and contraction joint devices associated with concrete work.

1.2 REFERENCED SECTION

- a. Section 02223 - Filling, Backfilling, and Finish Grading.

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only. Refer to Section 01090 for addresses of standard producing associations.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 301	Structural Concrete for Buildings
ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 318/318R	Building Code Requirements for Reinforced Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 615/A 615M	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 33	Concrete Aggregates
ASTM C 94	Ready-Mixed Concrete
ASTM C 131	Resistance to Degradation of Small-size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

ASTM C 143	Slump of Hydraulic Cement Concrete
ASTM C 150	Portland Cement
ASTM C 260	Air-Entraining Admixtures for Concrete
ASTM C 1107	Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM D 1752	Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

AMERICAN WELDING SOCIETY (AWS)

ANSI/AWS D1.1	Structural Welding Code - Steel
ANSI/AWS D1.4	Structural Welding Code - Reinforcing Steel

CORPS OF ENGINEERS (COE)

COE CRD-C 513	Rubber Waterstops
COE CRD-C 572	Polyvinylchloride Waterstops

FEDERAL SPECIFICATIONS (FS)

FF-S-325	Nail Expansion; and Nail, Drive Screw (Devices, Anchoring, Masonry)
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1.4 SUBMITTALS

Submit under provisions of Section 01300.

a. SD-02, Manufacturer's Catalog Data

Submit catalog data, manufacturer's literature, and other data required indicating compliance with the specifications for the following, as required:

- (1) Admixtures.
- (2) Anchorage items.
- (3) Concrete anchors.
- (4) Bonding agents.
- (5) Curing compounds.

- (6) Premolded expansion-joint filler strips.
 - (7) Non-Shrink grout.
 - (8) Release agents.
 - (9) Waterstops.
 - (10) Reinforcement supports.
- b. SD-04, Drawings
- Submit shop drawings as specified in ACI 301. Submit shop drawings showing the location of all proposed construction joints separate from the steel reinforcement shop drawings.
- (1) Construction joints.
 - (2) Steel reinforcement.
- c. SD-05, Design Data
- (1) Concrete mix designs.
 - (a) Include test results and necessary substantiating data used to establish the mix designs, plus curves plotted to establish water-cement ratio when trial mixtures are used.
- d. SD-09, Reports
- e. SD-13, Certificates
- (1) Certificates.

Prohibiting the use of calcium chloride or admixtures containing calcium chloride.

1.5 PROJECT RECORD DOCUMENTS

- a. Submit under provisions of Section 01700.
- b. Accurately record actual locations of embedded utilities and components which are concealed from view.

1.6 QUALITY ASSURANCE

- a. Perform Work in accordance with ACI 301 except as modified.

- b. Acquire cement and aggregate from same source for all work.
- c. Conform to ACI 305R when concreting during hot weather.
- d. Conform to ACI 306R when concreting during cold weather.

1.7 COORDINATION

Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

2.1.1 Portland Cement

- a. ASTM C 150, Type I or II. Provide cement for concrete with a uniform color classification.

2.1.2 Aggregate

- a. Concrete for Containers of Liquids: For concrete for containers of liquids, use size No. 57 as specified in ASTM C 33, unless a smaller size aggregate is required to conform to provisions of Section 3.6 of ACI 301. Conform to requirements of ASTM C 33 and the following:

<u>Limits for Deleterious Substances in Coarse Aggregate for Concrete</u>	<u>Maximum Percent by Weight of Total Sample</u>
Clay lumps and friable particles	2.0
Chert (less than 2.4 specific gravity, SSD)	1.0
Sum of clay lumps, friable particles, and chert (less than 2.4 specific gravity, SSD)	2.0
Flat and elongated particles (long dimensions more than 5 times short dimensions)	15.0

b. Gradation of Fine Aggregate for Concrete for Exposed Slabs

Sieve <u>Designation</u>	Percent Passing		
	<u>Normal-Weight Aggregate</u>	<u>Lightweight Aggregate</u>	<u>Heavy-Duty Toppings, Class 6 Floors</u>
3/8 in.	100	100	100
No. 4	95-100	85-100	95-100
No. 8	80-90	---	65-80
No. 16	50-75	40-80	45-65
No. 30	30-50	30-65	25-45
No. 50	10-20	10-35	5-15
No. 100	2-5	5-20	0-5]

2.2 ADMIXTURES

- a. Air Entrainment: ASTM C 260. Furnish with relative durability of 95 minimum.

2.3 CONCRETE PROPORTIONING AND USAGE

2.3.1 Proportioning of Structural Concrete

Proportion structural concrete of the classes required as specified in Section 3.9 of ACI 301 to produce the following 28-day compressive strengths:

<u>Class</u>	<u>f'c (psi)</u>
AA	5000
A	4000
B	3000

2.3.2 Usage

Use concrete class as follows:

- a. Class AA Concrete: For precast concrete.
- b. Class A Concrete: For all concrete unless noted otherwise.
- c. Class B Concrete: For footings and piers

2.3.3 Slump

- a. Slump of Normal-Weight Concrete: ASTM C 143

Slump in Inches

<u>Types of Construction</u>	<u>Maximum</u>	<u>Minimum</u>
Reinforced foundation walls and footings	3	1
Reinforced slabs, beams, and walls	4	1
Building piers	4	1
Sidewalks, and slabs-on-grade	3	1

- b. Achieve increased slump only with use of high-range water-reducing admixture (superplasticizer).
- c. Limitations on Slump: Do not allow the slump of lightweight concrete as determined by ASTM C 143 to exceed 3 inches, unless specifically authorized by the Architect-Engineer. Deliver concrete to the jobsite at a slump of 2 to 3 inches. Provide other concrete with slump ranges as specified herein.

2.3.4 Maximum Water/Cement Ratio for Concrete Used.

Maximum Water/Cement Ratio

Concrete subject to freezing and thawing 0.50

2.3.5 Retarding, Accelerating and Water-Reducing Admixtures

Use of admixtures to retard setting of the concrete during hot weather, to accelerate setting during cold weather, and to reduce water content without impairing workability, will be permitted if the admixtures conform to ASTM C 494, and the relative durability factor for air-entrained concrete containing the admixture is at least 100 percent of control.

2.3.6 Hot Weather Concreting

For hot weather concreting, the Architect-Engineer may require the use of a water-reducing and retarding admixture (Type D) for concrete with a thickness of 30 inches or greater and for concrete whenever the temperature at the time concrete is cast exceeds 80 degrees F. Select admixture conforming to the requirements of these specifications and submit mix design with admixture prior to usage.

2.3.7 Admixtures and Design Mixes

Use admixtures in concrete design mixes in the same manner and proportions as in the field, so that the effects of the admixtures are included in preliminary tests submitted for approval prior to the start of construction.

- a. Where more than one admixture is used, use compatible admixtures, preferably by the same manufacturer.
- b. Use of calcium chloride or admixtures containing calcium chloride is strictly prohibited. Submit certificate evidencing compliance with the restriction.

2.4 FORMS

2.4.1 Prefabricated Forms

- a. Preformed Steel Forms: Minimum 16 gage, matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- b. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.
- c. Tubular Column Type: Round, spirally wound laminated fiber, wood, or glass fiber material, surface treated with release agent, non-reusable, of sizes required.
- d. Forms for Exposed Concrete Surfaces: Exterior grade, high density overlay plywood, steel or wood forms with smooth, tempered hardboard formliners.

2.4.2 Corners

Fillet or Chamfer, rigid plastic, or wood strip type

2.4.3 Flashing Reglets

Galvanized steel 22 gage thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.

2.4.4 Form Deck

High-tensile steel forming, 1-5/16 inches deep, 28 gage, galvanized as manufactured by Bowman Strongform, Wheeling Tensiform or Roll Form Permaform.

2.4.5 Form Ties

Snap-off type, galvanized metal, adjustable length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch in concrete surface.

2.5 REINFORCEMENT

2.5.1 Reinforcing Steel

ASTM A 615, 60 ksi yield grade; deformed billet steel bars.

2.5.2 Smooth Dowels

ASTM A 615, plain or ASTM A 53, Schedule 80 with closed end.

2.5.3 Chairs, Bolsters, Bar Supports, Spacers

Sized and shaped for strength and support of reinforcement during concrete placement conditions. For concrete exposed to view in finished work, provide stainless steel or high-density polyethylene tips to keep metal portion at least 1/4 inch from the form or surface. Clay brick or concrete masonry brick is not acceptable.

2.6 OTHER MATERIALS

2.6.1 Form Release Agent

Colorless mineral oil which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.

2.6.2 Bonding Agent

Polymer resin emulsion or Polyvinyl Acetate or Two component modified epoxy resin.

2.6.3 Anchorage Items

Standard manufacture of the type required to engage with anchors installed under other sections of these specifications, and subject to approval by the Architect-Engineer. Provide inserts of galvanized malleable iron or steel, with adequate strength for the load to be carried, threaded or slotted as required by their usage, with integral lugs to prevent turning.

2.6.4 Non-Shrink Grout

ASTM C 1107; Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 7,000 in 28 days. Do not use metallic grout.

2.6.5 Premolded Joint Filler Type C.

ASTM D 1752; Premolded sponge rubber fully compressible with recovery rate of minimum 95 percent; 3/8 inch thick minimum.

PART 3 EXECUTION

3.1 EXAMINATION

Job No.: 013498.00

Date: August 2017

03300-8

Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.2 FORMWORK

3.2.1 Earth Cuts

Unless otherwise authorized by the Architect-Engineer, use earth cuts as forms for the vertical surfaces of footings and pile caps.

3.2.2 Formwork Tolerances

Construct formwork so that concrete surfaces will conform to the tolerance limits in Table 3.3.2.3 of ACI 301 and to the following additional limits:

- a. Footings and Pile Caps: Variation of bearing surface from indicated elevations as shown on plans- plus or minus 1/2 inch.
- b. Anchor Bolts
 - (1) Variations from indicated location in plan - plus or minus 1/4 inch.
 - (2) Variations from specified elevation - plus or minus 1/2 inch.
 - (3) Anchor bolt projection - minus 1/4 inch, plus 1/2 inch.
 - (4) Plumbness of anchor bolts - plus or minus 1/16 inch.

3.2.3 Cleanliness

Apply provisions of Section 5.7.1 of ACI 318/318R regarding cleanliness of spaces to be occupied by concrete to cellular and composite steel deck. Prior to concrete placement, remove foreign material from surfaces to receive concrete, and thoroughly clean the cellular and composite steel deck of oil, paint, and other substances that reduce or destroy bond.

3.3 PLACEMENT

3.3.1 Installation of Underground and Embedded Items

Install pipes and conduits below the concrete unless otherwise indicated. Place fill required to raise the subgrade in accordance with Sections under Division II - Sitework. Install porous fill not less than 4 inches in compacted thickness under slabs, sidewalks, tank bottoms, pile caps, and foundations. Level and uniformly compact the fill to a reasonably true and even surface, with the surfaces clean and free from frost, ice, mud, and water. Lay waterproof paper, polyethylene sheeting of nominal 4-mil minimum thickness, or polyethylene-coated burlap over all surfaces receiving concrete.

3.3.2 Concrete Footings, Exterior Slabs, and Exterior Foundations

Place concrete footings, exterior slabs, and exterior foundations on undisturbed surfaces conforming to Sections under Division II - Sitework, with surfaces clean and free from frost, ice, mud, and water. Lay waterproof paper, polyethylene sheeting of nominal 4-mil minimum thickness, or polyethylene-coated burlap over dry or pervious surfaces receiving concrete. Place concrete footings and exterior foundations directly on impervious surfaces that are thoroughly moistened but not muddy at the time concrete is placed.

3.3.3 Smooth Dowels

Install smooth dowels at right angles to construction joints. Align dowels paralleled to the finished surface. Hold and support dowels rigidly during placement of the concrete. Oil or grease one end of dowels or coat dowels with high-density polyethylene with a minimum thickness of 14 mils.

3.3.4 Horizontal Wall Joints

Use horizontal wall joints only at underside of floor members or at floor level, unless otherwise specifically approved by the Architect-Engineer. Form horizontal wall joints in accordance with approved details.

3.3.5 Unit of Operation

Do not allow the unit of operation, except for slabs on grade, exceed 60 feet in any horizontal direction and less than 48 hours elapse between casting of adjoining units, unless these requirements are waived by the Architect-Engineer. Make provisions for jointing successive units as indicated or required. Prepare construction joints for bonding as specified in Section 5.3.5 of ACI 301. Keep joints in walls and columns level. Place concrete in layers not over 18 inches deep. Compact each layer by mechanical internally vibrating equipment, supplemented by hand spading, rodding, and tamping, as directed.

3.3.6 Time Limitations

Place concrete mixed in stationary mixers and transported by nonagitating equipment in the forms within 45 minutes of the time ingredients are charged into the mixing drum. Deliver concrete that is truck mixed or transported in truck mixers or truck agitators to the site and discharge completed in the forms within the time specified in paragraph 11.7 of ASTM C 94, except that when the concrete temperature exceeds 85 degrees F, reduce the time to 45 minutes. Place transit-mixed concrete that is completely mixed at the site of concrete placement or batched cement and aggregates transported to mixers in the forms within 1-1/2 hours after cement has been added. Place concrete in the forms within 15 minutes after discharge from the mixer at the jobsite.

3.3.7 Prohibition on Use of Aluminum

If concrete is placed by pumping, use no aluminum in any parts of the pumping system which contact or might contaminate the concrete. Do not use aluminum chutes and conveyors.

3.3.8 Floor and Slabs with Drains

Exercise special care to slope the floors uniformly to the drains. Provide floors with drains with a 24 inch radius sweep-in centered on the drain, with a depression of 1/2 inch at low points, sloped not less than 1/4 inch per foot unless otherwise indicated. In all areas where materials requiring more than a 1/4 inch drop are to be overlaid, depress the concrete base slab as shown to provide a finished floor at the same elevation as surrounding areas.

3.4 SLABS-ON-GRADE

3.4.1 General

Install pipes and conduits below the concrete unless otherwise indicated. Place fill required to raise subgrade as specified in Section 02223. Install porous fill not less than 4 inches in compacted thickness under slab on grade. Compact porous fill by not less than two passes of a vibratory compactor. Level and uniformly compact the fill to a reasonably true and even surface. Immediately before concrete is placed, cover the fill with a vapor barrier lapped at least 6 inches at all edges and sealed. Install vapor barrier to avoid punctures or tears and extend up walls unbroken to the top of the slab.

3.4.2 Reinforcement

- a. Place welded wire fabric continuous between crack control joints. Lap welded wire fabric at least one full mesh plus 2 inches staggered to avoid continuous lap in either direction. Securely wire or clip with standard clips.
- b. When concrete below welded wire fabric (WWF) is placed before the WWF is installed, place the WWF and the concrete over the WWF not over 45 minutes after the lower layer has been placed, so that the upper layer is cast and compacted while the lower layer is still plastic.

3.4.3 Placing

Compact, screed to grade, and prepare concrete for the specified finish. Place concrete continuously so that each unit of operation will be monolithic in construction. Provide diamond-shaped or circular isolation joints in slabs on grade at columns for full slab depth and construct so that corners of isolation joints will meet at crack-control joints. NOTE: Indicated reinforcement size and spacing on drawings.

3.5 CURING

- a. Cure surfaces in accordance with ACI 301.
- b. Where curing compound is used, apply in accordance with manufacturer's instructions in two coats with second coat applied at right angles to first.
- c. Protect finished work.
- d. Do not permit traffic over unprotected floor surface.
- e. Ensure surfaces to receive adhered materials are clean, dry, smooth, and free from deleterious materials and projections.

3.6 CONCRETE WALKS, CURBS, AND CURB AND GUTTER

3.6.1 Subgrade

Compact subgrade at the required grades. Remove spongy and otherwise unsuitable material and replace with approved material. Place concrete walks upon 4-inch porous fill.

3.6.2 Concrete Walks

Place concrete walks to not less than 4-inch thickness. Place contraction joints every 5 linear feet in each direction, formed in the fresh concrete by cutting a groove with a jointing tool to a depth of at least one-fourth the slab thickness. Install transverse expansion joints at returns, at driveways, and opposite expansion joints in adjacent curbs and curb and gutter. Where curbs and curb and gutter are not adjacent, install transverse expansion joints at intervals of approximately 40 feet. Broom finish sidewalks. Place scoring in a transverse direction. Edge sidewalks and joints with a tool having a radius not greater than 1/8 inch. Slope sidewalks adjacent to curbs and curb and gutter a slope of 1/4 inch per foot toward the curb and curb and gutter, except where grade indicate otherwise. Slope sidewalks not adjacent to curbs and curb and gutter a 1/4 inch per foot or crown as directed with a transverse slope of 1/4 inch per foot, except where grades indicate otherwise. Do not vary surface of the concrete in cross section in excess of 1/4 inch in 5 feet, except where grades indicate otherwise.

3.6.3 Concrete Walk Reinforcing

Reinforce concrete walks with 6x6-W1.4xW1.4 welded wire fabric.

3.6.4 Concrete Curbs and Curb and Gutter

Construct concrete curbs and curb and gutter to the section indicated. Incorporate horizontal and vertical curves as indicated or required. Use steel forms as approved by the Owner's Representative. At the option of the Contractor, use precast or cast-in-place curbs and curb and gutter. Divide cast-in-place curbs and curb and gutter into sections 8 to 10 feet in length using steel divider plates. Extend divider plates completely through the concrete. Remove divider plates after concrete has set. Cast precast curbs and curb and gutter in lengths of 4 to 5 feet. Finish exposed surfaces of concrete smooth. Tool sharp edges and the edges of joints and divisions to a 1/4-inch radius. Install steel reinforcement where the curb and curb and gutter crosses pipe trenches or other similarly insecure foundation. Place two No. 4 deformed bars near the bottom of the curb and curb and gutter. Extend at least 24 inches beyond the insecure area. Install transverse expansion joints at curb and curb and gutter returns and at intervals of approximately 40 feet.

3.7 FINISHES

3.7.1 General

In accordance with paragraphs 5.3.4 of ACI 301, except as otherwise specified herein.

3.7.2 Concrete Surfaces Exposed to View

- a. Construction: Produce concrete exposed to view in the completed structure using materials and workmanship of such quality that only nominal finishing will be required. Apply the provisions of Sections 5.3.6.2, 5.3.6.3, and 5.3.6.4 of ACI 301 to all exterior concrete surfaces exposed to view.
- b. Release Agents: Coat forms with an approved release agent before the initial placement of concrete and between subsequent placements in accordance with the manufacturer's printed instructions. Do not wet form boards with water before concrete is placed.
- c. Form Ties: Arrange form ties uniformly and symmetrically.
- d. Surface Defects: Repaired as specified in Chapter 9 of ACI 301.
- e. Structural Repairs: Make structural repairs using the specified epoxy-bonding agent. Obtain approval from Architect-Engineer on methods and procedures. Use a low-viscosity epoxy bonding agent, where the epoxy must be injected.
- f. Protection: Exercise care to prevent chipping of corners and other damage to concrete when forms are removed. Protect columns, stair treads and risers, exposed corners,

and other surfaces that may be damaged by ensuing operations by boxing, corner boards, or other approved means until construction is completed.

3.7.3 Exposed Vertical Surfaces

Immediately after removal of forms and before concrete is dry, chip off fins and other projections. Repair voids, honeycomb, aggregate pockets, and other surface defects exceeding 1/2 inch in any dimension as specified in Chapter 9 of ACI 301. In areas where concentrations of small voids 1/2 inch or less occur, patch a sufficient number to produce a uniform appearance across the entire panel. Smooth projections and fins with wet carborundum stones or power grinders to the extent directed by the Owner's Representative. Pull tie rods, and fill voids formed by wood or plastic cones with an approved mortar to a point 3/4 inch from finish surface. Make color of patch as directed by the Owner's Representative. Patch irregular lines at edges of ceiling ribs to produce a neat, uniform appearance.

3.7.4 Exposed-to-View Exterior Surfaces and Interior Vertical Surfaces

Provide a smooth form finish.

3.7.5 Tie Holes and Repairable Defective Areas Occurring in Concrete Surfaces Exposed to View in the Finished Work

Coat exposed surfaces with bonding agent before being patched.

3.7.6 Cleaning

Thoroughly clean exposed concrete to remove stains, laitance, dust, form oil, and other surface residue by use of water, stiff brushes, sandpaper, or other means approved by the Architect-Engineer.

3.8 TESTING

Have testing performed by a recognized independent testing laboratory approved by the Architect-Engineer. Have testing done in accordance with the provisions of ACI 301 and as hereinafter specified, except that the cost of all testing shall be borne by the Contractor. The requirements for strength tests may be waived by the Architect-Engineer when 15 cubic yards or less of concrete is placed in relatively minor work. In addition to the data required by Section 16.6.2 of ACI 301, include in strength test reports the proportions of ingredients used in the concrete mix, the slump, the unit weight, and for air-entrained concrete, the air content of the concrete. Submit two copies of the reports of such tests. Receipt thereof will be acknowledged and action will be taken only when corrective measures appear to be required.

3.9 DEFECTIVE CONCRETE

- a. Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements and ACI 301 acceptance criteria.
- b. Excessive honeycomb or embedded debris in concrete is not acceptable.
- c. Repair or replacement of defective concrete will be determined by the Owner's Representative.
- d. Do not patch, fill, touch-up, repair, or replace exposed concrete upon express direction of Owner's Representative for each individual area.

END OF SECTION

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APPENDIX A

SCDOT ENCROACHMENT PERMIT

**SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
Encroachment Permit**

Permit No : 206557

Permit Decision Date :
10/20/2017

Expiration Date : 10/20/2018

Type Permit : WATER

Location:

<u>District</u>	<u>Work County</u>	<u>Type</u>	<u>Route</u>	<u>Aux</u>	<u>Begin MP</u>	<u>End MP</u>
6	Colleton, SC	SC	217	None	7.856	9.069
6	Colleton, SC	S-	135	None	0.009	0.374
6	Colleton, SC	US	21	None	29.026	29.493

Contact
Information

Applicant: TOWNOFSMOAKS

Phone:

Contact: Richard Linder (Mayor - Town of
Smoaks)

Address: 176 NEW STREET,

City: SMOAKES

State: SC

Zip: 29481

Comments

Lodge Hwy (SC 217) - Install new water line 5ft from edge of pavement on North side.Sunrise Rd (SC 217) - Install new water line 5ft from edge of pavement on North side.New Street (S-135) - Install new water line 5ft from edge of pavement on East and South side.Low Country Hwy (US 21) - Install new water line 5ft from edge of pavement on the East side.Beulah Rd (S-53) - New water line to cross Beulah Rd.at the intersection of Lodge Hwy.

Special
Provisions:

0004 - SCDOT SHALL BE NOTIFIED WHEN WORK DEFINED IN THE PERMIT STARTS AS WELL AS WHEN THE WORK IS COMPLETED. REFERENCE SHALL BE MADE BY PERMIT NUMBER.

0101 - SHOULDER SOD DESTROYED BY THIS INSTALLATION TO BE REPLACED FOR THE ENTIRE AREA. THE AREA SHALL BE RE-SHAPED AND ROLLED TO THE CROSS SECTION EXISTING PRIOR TO THIS WORK.

0102 - BORE PITS SHALL BE CLOSED IMMEDIATELY AFTER INSTALLATION.

0103 - THE PROPOSED ENCROACHMENT SHALL BE TRENCHED TO A MINIMUM DEPTH OF 42" BELOW THE CROSS SECTION AS ORIGINALLY CONSTRUCTED.

0107 - TRENCH TO BE PROPERLY BACK-FILLED AND THOROUGHLY TAMPED. THE ENTIRE DISTURBED AREA SHALL BE RE-SHAPED AND DRESSED OUT IN A WORKMANSHIP LIKE MANNER.

0109 - THE BORE SHALL BE MADE BY THE DRY BORE METHOD IN SUCH A

MANNER AS NOT TO DISTURB THE PAVEMENT. THE BORE PIT MUST NOT BE CLOSER THAN FIVE (5) FEET FROM THE EDGE OF PAVEMENT. THE BORE DEPTH SHALL BE NOT LESS THAN 48" DEEP AT ANY POINT IN THE BORE. NOTICE SHALL BE GIVEN TO THE DEPARTMENT IMMEDIATELY IF THE BORE TURNS AND DAMANGES THE ROAD.

0112 - ALL WATER METERS, AIR VALVES, ELECTRIC TRANSFORMERS, CATV CONNECTION BOXES, TELEPHONE PEDESTALS, AND/OR OTHER UTILITY/SPLICE BOXES SHALL BE PLACED AT THE RIGHT-OF-WAY LINE.

0120 - RESTORATION OF PAVEMENT, SHOULDERS, DITCHES, ETC., TO BE PERFORMED AS SOON AS POSSIBLE AFTER CONSTRUCTION, OR SCHEDULED SO THAT THE CONSTRUCTION IS NO FURTHER THAN 2,000 L.F. AHEAD OF COMPLETE RESTORATION.

0125 - ALL CROSSLINE PIPES ARE TO BE LOCATED AND FLAGGED PRIOR TO BEGINNING OPERATION.

0209 - DISTURBED VEGETATION SHALL BE RESEEDDED ACCORDING TO THE SPECIFICAION FOR HIGHWAY CONSTRUCTION.

0301 - THE DITCHES AND/OR SHOULDERS DISTURBED DURING THE INSTALLATION SHALL BE RE-ESTABLISHED TO PROPER GRADE, ORIGINAL CROSS SECTION, STABILIZED, AND ALL DRAIN PIPES CLEARED.

0302 - NO EXCAVATION SHALL BE LEFT OPEN ALONG HIGHWAY.

0306 - TRAFFIC CONTROL, LIGHTS, SIGNS AND FLAG-MEN WILL BE FURNISHED BY APPLICANT AND WILL CONFORM TO PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

0310 - FIELD CHANGES, IF NECESSARY, MUST BE APPROVED IN WRITING BEFORE ACTUAL CONSTRUCTION OF PROPOSED CHANGES.

0311 - SEDIMENT AND EROSION CONTROL DEVICES SHALL BE USED TO MINIMIZE THE MOVEMENT OF SEDIMENT.

0312 - THE PERMITTEE SHALL HOLD THE DEPARTMENT HARMLESS FOR DAMAGES TO BOTH UPSTREAM AND DOWNSTREAM PROPERTIES.

0123 - ALL WORK PERFORMED IN CONNECTION WITH THIS PERMIT SHALL CONFORM TO THE SCDOT "A POLICY FOR ACCOMODATING UTILITIES ON HIGHWAY RIGHT-OF-WAY" MOST CURRENT EDITION.

0318 - THE APPLICANT SHALL BE RESPONSIBLE FOR IMMEDIATE REMOVAL OF SUCH TRAFFIC HAZARDS AS MUD, DEBRIS, LOOSE STONE, AND TRASH AS MAY BE WASHED OR SPILLED ON THE TRAVELED ROADWAY AS A RESULT OF THE PROPOSED WORK.

0203 - ENTIRE WIDTH OF SIDEWALK TO BE REMOVED AND DISPOSED OF OFF RIGHT-OF-WAY. SIDEWALK TO BE REPLACED USING CLASS 2500 CONCRETE, 4" THICK, AND FINISHED TO SCDOT SPECIFICAIONS.

0204 - SIDEWALK OR CURB AND GUTTER REMOVAL SHALL BE REPLACED FROM JOINT TO JOINT.

Application for Encroachment Permit

S.C. Department of Transportation
Form 637 (Rev 09/2015)

Contact Information

Applicant: TOWN OF SMOAKS
Street: 176 NEW STREET
City: SMOAKES
State: SC **Zip Code:** 29481
Phone: (843)562-8636 **Fax:**
Email: rlinder48@yahoo.com
Contact: Richard Linder (Mayor - Town of Smoaks)

Project Location

Primary County: Colleton

County	Road Name
Colleton	Lodge Hwy (SC 217)
Colleton	Sunrise Rd (SC 217)
Colleton	New St (S-135)
Colleton	Lowcountry Hwy (US 21)
Colleton	Beulah Rd (S-53)

1. Type of Encroachment:

WATER

The Town of Smoaks is located in the northern section of Colleton County, South Carolina. The Town operates a local water system that uses 2 wells. The water is pumped from the wells, then processed by a chlorination system and stored for distribution by a 100,000 gallon elevated storage tank. The Town's current system is not metered nor does it provide fire protection. The Town wants to upgrade its system to provide fire protection and measure (meter) the flow that is used by its customers. To accomplish the above, the Town will install new water mains that will allow the flow and pressure necessary for fire protection and customer use. The existing water lines are to be abandoned. The project includes the construction and installation of 1,250 linear feet of 10", 10,250 linear feet of 8", 7,460 linear feet of 6" water mains, 22 fire hydrants, 73 water meters and all the necessary appurtenances.

2. Description of Location:

Lodge Hwy (SC 217) - Install new water line 5ft from edge of pavement on North side. Sunrise Rd (SC 217) - Install new water line 5ft from edge of pavement on North side. New Street (S-135) - Install new water line 5ft from edge of pavement on East and South side. Low Country Hwy (US 21) - Install new water line 5ft from edge of pavement on the East side. Beulah Rd (S-53) - New water line to cross Beulah Rd at the intersection of Lodge Hwy.

(Attach sketch indicating roadway features such as: pavement width, shoulder width, sidewalk and curb and gutter location, significant drainage structure, north arrow, right of way width, and location of the proposed encroachment with respect to the roadway centerline and the nearest intersecting road on the State system.)

Customer Agreement

3. The undersigned applicant hereby requests the SCDOT to permit encroachment on the SCDOT right of way as described herein. It is expressly understood that the encroachment, if and when constructed, shall be installed in accordance with the sketch attached hereto and made a part hereof. The applicant agrees to comply with and be bound by the SCDOT's 'A Policy for Accommodating Utilities on Highways Rights of way', 'Standard Specifications for Highway Construction', the 'General Provisions' and 'Special Provisions', attached hereto or made a part hereof by reference, during the installation, operation and maintenance of said encroachment within the SCDOT's Right of Way. **DISCHARGES OF STORM WATER AND NON-STORM WATER:** Work within State Highway right-of-way shall be conducted in compliance with all applicable requirements of the National Pollutant Discharge Elimination System (NPDES) permit(s) issued to the Department of Transportation (Department), to govern the discharge of storm water and non-storm water from its properties. Work shall also be in compliance with all other applicable Federal, State and Local laws and regulations, and with the Department's Encroachment Permits Manual and encroachment permit. The encroachment permit will not be issued until the applicant has received an NPDES construction permit from SC Department of Health and Environmental Control.

The applicant agrees to comply with all current SCDOT Standards Specifications for Highway Construction including all Supplemental Technical Specifications. The applicant hereby further agrees, and binds his/her/its heirs, personal representatives, successors, assigns, to assume any and all liability for accidents or injuries to persons, or damage to property, including the highway, that may be caused by the construction, maintenance, use, moving or removing of the physical appurtenances contemplated herein, and the applicant agrees to indemnify and hold SCDOT harmless from and against any and all claims for personal injury and/or property damage which may be sustained by person by reason of the construction, maintenance or existence of said encroachment on the SCDOT's right of way.

Applicant's Name: Richard Linder
(Please print or type)

Date: 05/01/2017

Applicant's Sig: _____

Title: Mayor

For Office Use Only

For Office Use Only

In accordance with your request and subject to all the provisions, terms, conditions, and restrictions stated in the application and the general and special provisions attached hereto, the SCDOT hereby approves your application for an encroachment permit. This permit shall become null and void unless the work contemplated herein shall have been completed prior to:

See Attached Special Provision and/or Permit Requirements

NPDES Permit
Nbr: _____

(Date received by res. Maint. Engr.)

(SCDOT Approval)

(Date)

General Provisions

Application for Encroachment Permit General Provisions

- 1. DEFINITIONS:** The word "Permittee" used herein shall mean the name of the person, firm, or corporation to whom this permit is addressed, his, her, its, heirs, personal representatives, successors and assigns. The word "DEPARTMENT" shall mean the South Carolina Department of Transportation.
- 2. NOTICE PRIOR TO STARTING WORK:** Before starting the work contemplated herein within the limits of the highway right of way, the Department's Resident Maintenance Engineer in the county in which the proposed work is located shall be notified 24 hours in advance so that he may be present while the work is under way.
- 3. PERMIT SUBJECT TO INSPECTION:** This permit shall be kept at the site of the work at all times while said work is under way and must be shown to any representative of the Department or law enforcement officer on demand.
- 4. PROTECTION OF HIGHWAY TRAFFIC:** The applicant shall be responsible for the protection of the highway traffic at all times during the construction, maintenance, removing or moving of the encroachment permitted herein. Detours, barricades, warning signs and flagmen, as necessary, shall be provided by and at the expense of the Permittee and shall be in accordance with the "Manual on Uniform Traffic Control Devices" (MUTCD). The work shall be planned and carried out so that there will be the least possible inconvenience to the motoring public. The Permittee agrees to observe all rules and regulations of the Department while carrying on the work contemplated herein and take all other precautions that circumstances warrant.
- 5. STANDARDS OF CONSTRUCTION:** All work shall conform to the Department's standards of construction and shall be performed in a workman-like manner. The applicant shall make adequate provisions for maintaining the proper drainage of the highway as it may be affected by the encroachment permitted herein. All work shall be subject to the supervision and satisfaction of the Department.
- 6. FUTURE MOVING OF PHYSICAL APPURTENANCES:** If, in the opinion of the State Highway Engineer, it should ever become necessary to move or remove the physical appurtenances, or any part thereof contemplated herein, on account of change in location of the highway, widening of the highway, or for any other sufficient reason, such moving shall be done on demand of the Department at the expense of the Permittee.
- 7. RESTORATION OF HIGHWAY FACILITIES UPON MOVING OR REMOVING OF PHYSICAL APPURTENANCES:** If, and when, the physical appurtenances contemplated herein shall be moved or removed, either on the demand of the Department or at the option of the Permittee, the highway and facilities shall immediately be restored to their original condition

- at the expense of the Permittee.
8. **COSTS:** All work in connection with the construction, maintenance, moving or removing of the physical appurtenances contemplated herein shall be done by and at the expense of the Permittee.
 9. **ADDITIONAL PERMISSIONS:**
 - (a) It is distinctly understood that this permit does not in any way grant or release any rights lawfully possessed by the abutting property owners. The Permittee shall secure any such rights, as necessary, from said abutting property owners.
 - (b) The Permittee shall be responsible for obtaining all other approvals or permits necessary for installation of the encroachment from other government entities.
 - (c) There shall be no excavation of soil nearer than two feet to any public utility line or appurtenant facility except with the consent of the owner thereof, or except upon special permission of this Department after an opportunity to be heard is given the owner of such line or appurtenant facility.
 10. **ADDITIONAL WORK PERFORMANCE:**
 - (a) All crossings over the highway shall be constructed in accordance with "Specifications for Overhead Crossings of Light and Power Transmission Lines and Telegraph Lines over each other and over Highway Rights of Way in South Carolina," as approved by the Public Service Commission of South Carolina and effective as of date of this permit.
 - (b) All tunneling, boring, or jacking shall be done in such a way as not to disturb the highway surfacing.
 - (c) No pavement shall be cut unless specifically authorized herein.
 - (d) No excavation shall be nearer than three feet to the edge of pavement unless specifically authorized herein.
 - (e) Underground facilities will be located at minimum depths as defined in the "Utility Accommodations Manual" for the transmittant, generally as follows: 4 feet minimum for hazardous or dangerous transmittant, 3 feet minimum for other lines. The Department may approve shallower depths if adequate protection is provided. Such approval must be obtained in writing.
 - (f) Service and other small diameter pipes shall be jacked, driven, or otherwise forced underneath the pavements on any surfaced road without disturbing the pavement. The section under the highway pavement and within a distance of three (3) feet on either side shall be continuous without joints.
 11. **ACCESS:**
 - (a) Permittee is responsible for maintaining reasonable access to private driveways during construction.
 - (b) It is expressly provided that, with respect to any limited access highway, the Permittee shall not have or gain access from the main traveled way of the highway, or the on or off ramps to such facility, except upon approval by the Department.
 12. **DRIVEWAYS:**
 - (a) The existing crown of the highway shall be continued to the outside shoulder line of the highway.
 - (b) If the driveway or approach is concrete pavement, the pavement shall be constructed at least 6 inches thick and with a minimum of class 2500 concrete. There shall be a bituminous expansion joint, not less than 3/4 inches in thickness, placed between the highway paving and the paving of the approach for the full width of the approach.
 13. **BEAUTIFICATION:**
 - (a) All trees, plants, flowers, etc. shall be placed in accordance with the provisions specifically stipulated herein.
 - (b) All trees, plants, flowers, etc. shall be maintained by, and at the expense of, the Permittee and the provisions of this permit shall become null and void, if and when said Permittee ceases to maintain aid trees, plants, flowers, etc.
 14. **AS-BUILT PLANS:**
 - (a) The applicant shall provide the Department with survey-quality as-built plans in accordance with the requirements set forth in the Department's "A Policy for Accommodating Utilities on Highway Rights of Way".

APPENDIX B

SCDHEC PERMIT TO CONSTRUCT WATER LINE

Water Supply Construction Permit Bureau of Water



Permission is Hereby Granted To: **TOWN OF SMOAKS
PO BOX 13
SMOAKS SC 29481**

for the construction of a distribution system in accordance with the construction plans, specifications, design calculations and the SCDHEC Construction Permit Application signed by D Mack Kelly, Professional Engineer, S.C. Registration Number: 17989.

Project Name: **SMOAKS WATER LINE** **County:** Colleton
Location: ALONG US-21, SC-217, S-15-325 AND NEW STREET (TOWN OF SMOAKS MAINTAINED).

Project Description: Installation of approximately 7460 LF of 6", 10250 LF of 8", 1250 LF of 10" water line, 22 fire hydrants and all necessary appurtenances to serve 73 meters.

Service By: Water will be provided by the Smoaks Town Of (System Number: 1510002).

Special Conditions:

1. See attached (to original construction permit) DHEC Office of Ocean and Coastal Resource Management (DHEC-OCRM) certification for additional conditions related to the Coastal Zone Consistency determination.

In accepting this permit, the owner agrees to the admission of properly authorized persons at all reasonable hours for the purpose of sampling and inspection.

NOTE: This is a permit for construction only and does not constitute State Department of Health and Environmental Control approval, temporary or otherwise, to place the system in operation. An Approval to Place in Operation is required and can be obtained following the completion of construction by contacting the BEAUFORT EQC OFFICE at 843-846-1030. Additional permits may be required prior to construction (e.g., stormwater).

Permit Number: **32243-WS**
Date of Issue: **September 28, 2017**
Expiration Date: Construction must be completed
and the Approval to Place in
Operation granted prior to
September 28, 2020 or this permit
will expire.

A handwritten signature in black ink, appearing to read "Douglas B. Kinard".

*Douglas B. Kinard P.E., Director
Drinking Water Protection Division*

BMC

APPENDIX C

SCDHEC LAND DISTURBING PERMIT



October 18, 2017

RICHARD LINDER
TOWN OF SMOAKS
176 NEW ST
SMOAKS, SC 29481

RE: TOWN OF SMOAKS, Colleton County
NPDES Coverage Number: SCR10BV70

Dear RICHARD LINDER:

The Department of Health and Environmental Control (Department or DHEC) has approved the Stormwater Pollution Prevention Plan (SWPPP) for the referenced project on **October 18, 2017**. Based on your submission of the Notice of Intent (NOI) and in accordance with the NPDES General Permit for Stormwater Discharges from Construction Activities (CGP), this project has been granted coverage under the CGP. This project's general permit coverage number is **SCR10BV70**. The total disturbed area for this site is **4.4 acres**.

See attached DHEC Office of Ocean and Coastal Resource Management (DHEC-OCRM) certification dated September 27, 2017 for additional conditions related to the Coastal Zone Consistency determination.

The CGP can be downloaded at the following website: <http://www.scdhec.gov/Environment/docs/CGP-permit.pdf> or you may request a copy from us via email (stormwatercgp@dhec.sc.gov). You are responsible for ensuring your contractor(s) complies with the approved SWPPP and the minimum requirements of the CGP. Also, you are responsible for overall compliance with the Storm Water Management and Sediment Reduction Act of 1991 (1991 Act), SC Pollution Control Act, and the Federal Clean Water Act (CWA). Failure to comply with the approved SWPPP or applicable statutes and regulations may result in enforcement actions.

You must notify the local EA Office prior to starting any land-disturbing activity. The address and telephone number are as follows:

Lowcountry EA Beaufort
104 Parker Drive
Beaufort, SC29906
843-846-1030

Inspections of this site must be performed by qualified personnel as described in Section 4.2.E of the CGP.

You should be aware that this approval is only applicable for the SWPPP that was submitted for this project. Any additional construction or land disturbing activity beyond the scope of the approved plans is not authorized. Any future work for this project not shown on the stamped, approved plans will require that you submit another site plan for review and approval. All major modifications require review and approval by the Department. Minor modifications to the approved SWPPP may be made by the SWPPP preparer and do not require review and approval by the Department; these changes should be signed and dated by the SWPPP

preparer. If you have a question about whether a modification is major or minor, contact the Coastal Stormwater Permitting Section at (843) 953-0200.

A copy of the stamped, approved SWPPP (including a copy of the CGP, contractor certifications, inspection records, rainfall data, etc.), NOI, and CGP coverage letter from DHEC must be retained and available at the construction site (or accessible within 30 minutes during normal business hours) from the date of commencement of construction activities to the date of final stabilization. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance at the construction site.

All contractors who will conduct land-disturbing activities at the site must complete a Contractor Certification Form. You are also responsible for listing all contractors in the SWPPP and for holding a pre-construction conference with each contractor before they can conduct land-disturbing activity at the site.

The Department may conduct periodic inspections of your site. Any violations found during these inspections may result in enforcement action.

This NPDES coverage should be terminated by the permittee when the conditions listed in Section 5.1 of the CGP have been met. You must submit a Notice of Termination (NOT) to cancel your NPDES coverage under the CGP. Please see section 5.1 of the CGP for additional information required to be submitted with the NOT.

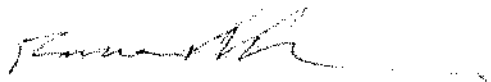
You are responsible for obtaining any other federal, state, or local permit that may be required for this project. In particular, any permits through the U.S. Army Corps of Engineers for the placement of fill material in Waters of the United States. Please note we have not sent a copy of this letter to any county or city building official. You must send a copy of this letter to these agencies, if necessary.

If material excavated during construction activities leaves the site, a mine operating permit may be needed. You are responsible for contacting the Mining and Reclamation Section to determine if a mining permit is required for the site. The Mining and Reclamation Section can be reached at (803)898-1362 or via e-mail at AskMines@dhec.sc.gov.

Please see the enclosed "Guide to Board Review" document for information about the procedures for appealing this NPDES coverage.

If you have any questions or cannot access the referenced websites, please call me at 843-953-0238.

Sincerely,



Richard V Geer
Bureau of Water, Coastal Stormwater Permitting Section
1362 McMillan Ave, Suite 400, Charleston SC 29405

cc: D Mack Kelly JR—DAVIS & FLOYD INC.
Lowcountry EA Beaufort



NOTICE OF INTENT (NOI)
 For Coverage(s) of Primary Permittees
 Under South Carolina NPDES General Permit
 For Stormwater Discharges From Construction Activities SCR100000
 (Maintain As Part of On-Site SWPPP)

For Official Use Only
 File Number: _____
 Permit Number: SCR10
 Submittal Package Complete: _____
 Submission of this Notice of Intent constitutes notice that the Applicant identified in Section II intends to be authorized as a Primary Permittee in the state of South Carolina under NPDES General Permit SCR1000000. Fees required for review and NPDES coverage of each application type are as listed on page 2 of the Instructions.

SOUTH CAROLINA
 DEPT OF HEALTH AND ENVIRONMENTAL CONTROL
 ENVIRONMENTAL QUALITY CONTROL
 STORMWATER PERMITTING SECTION
 APPROVED - FOR CONSTRUCTION ONLY
 DHEC PERMIT #: SCR10 2170
 FILE #: 15-12-08-01
 DATE ISSUED: 10/19/2017
 BY: [Signature]

Date: 09/07/2017
 Project/Site Name: Town of Smoaks County: Colleton
 (Modification or Change of Information Only) Prior Approved NPDES Permit or File Number: _____

Do you want this project to be considered for the Expedited Review Program (ERP)? Yes or No (See instructions)

I. Notice of Intent (NOI) Application Type(s)

- A. **Project (Application/Review) Type(s)** (Select ALL that apply):
 New Project (Initial Notification) Ongoing Project: Permitted or Un-Permitted
 Late Notification Low Impact Development (LID) or Project Design Above Regulatory Requirements
 New Owner/Operator or Company Name Change (see instructions, attach Form A (Transfer of Ownership))
 Major Modification: (see instructions, attach Form B (Major Modifications))
 MS4 Project Review
 Ocean and Coastal Resource Management (OCRM) Review
 Change of Information/Other (Specify): _____
 B. If Applicable, identify the entity designated as MS4 Reviewer and MS4 Operator (i.e., Lexington County, City of Greer, etc.): MS4 Reviewer _____ MS4 Operator _____

II. Primary Permittee Information

Person or Company If a Company, are you a Lending Institution or Government Entity?
 Company EIN (if applicable): EIN: 57-0159980 Change of Information

A. **Primary Permittee Name:** Town of Smoaks
 Mailing Address: 176 New Street City: Smoaks State: SC Zip: 29481
 Phone: (843) 562-8632 Fax: _____ Email Address: rlinder48@yahoo.com

B. **Contact /ODSA Name** (if different from above OR if owner is a company):
 Mailing Address: _____ City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____ Email Address: _____

C. **Property Owner Name** (if different from above):
 Mailing Address: _____ City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____ Email Address: _____

III. Comprehensive Stormwater Pollution Prevention Plan (C-SWPPP) Preparer Information Change of Information

A. **C-SWPPP Preparer Name:** D. Mack Kelly, Jr.
 B. **Registered Professional** Engineer Landscape Architect Tier B Land Surveyor S. C. Registration #: 17989
 C. **Company/Firm Name:** Davis & Floyd, Inc. S. C. COA #: C00538
 Mailing Address: 101 N. Main St., Suite 901 City: Greenville State: SC Zip: 29601
 Phone: (864) 527-9800 Fax: (864) 527-9801 Email Address: mkelly@davisfloyd.com

IV. Project/Site Information

A. **Type of Construction Activity(ies)** (Select ALL that apply): Change of Information
 Commercial Industrial Institutional Mass Grading Linear Utility/Infrastructure
 Residential: Single-family Residential: Multi-family Multi-use (Commercial & Residential)
 Site Preparation (No New Impervious Area) Other (Specify) _____

B. **Site Address/Location** (street address, nearest intersection, etc.) Along US 21, SC 217, S-15-135, and New Street
 City/Town (if in limits): Town of Smoaks Zip Code: 29481-3028
 Latitude: 33° 05' 21" N Longitude: - 80° 48' 49" W (Source): GPS Web Site: Google
Tax Map Number (s) (List all): SCDOT ROW and Town of Smoaks ROW

- C. Is this site located on Indian Land? Yes No
- D. Proposed Start Date: 08/15/2017 Proposed Completion Date: March 2018
- E. Disturbed Area (nearest tenth of an acre): 4.4 Total Area (acres): 30.5
- F. Modification Only; (nearest tenth of an acre): Disturbed Area: Current (Approved) Area: _____
Disturbed Area Change (Increase Only): _____ Total Disturbed Area (After Change): _____
- G. Is this project part of a Larger Common Plan for Development or Sale (LCP)? Yes No
LCP/ Overall Development Name: _____ Check here if this is the First Phase:
Previous State Permit/File Number: _____ Previous NPDES Coverage Number: SCR10 _____
- H. Any Flooding Problems exist downstream of or adjacent to this site? (Yes No) (if yes, provide detailed description of flooding problems and applicable floodway/flood zone information in the C-SWPPP).
- I. Active S.C. DHEC Warning Notice, Notice to Comply or Notice of Violation for this site or LCP? Yes No
- J. List Relevant State and Federal Environmental Permits or Approvals applied for or obtained for this site (e.g., RCRA, USACOE, Nationwide, etc.). If None, list None.
None
- K. Any Waiver(s)/Variances/Exceptions Requested for this Project? (if yes, identify below and include Waiver Request and Justifications in the C-SWPPP for each proposed request).

1. Small Construction Activity Waiver(s) From NPDES permitting (Section 1.4 & Appendix B)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, identify requested waiver: <input type="checkbox"/> Rainfall Erosivity Waiver <input type="checkbox"/> TMDL Waiver <input type="checkbox"/> Equivalent Analysis Waiver	
2. Detention Waiver (72-302(B))? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3. Other (Specify): _____

V. Waterbody Information (Attach additional sheet(s) as needed) Change of Information

- A. Receiving Waterbody(s) (RWB) Information (List the nearest and next nearest receiving waterbodies to which the sites stormwater discharges will drain. If stormwater discharges drain to multiple waterbodies, list all such waterbodies).

1. Name of Receiving Waterbodies (RWB)	2. Distance to RWB (feet)	3. Classification of RWB
a. Nearest: Buckhead Creek	1600	FW
b. Next Nearest: Little Salkehatchie River	59000	FW
c. Coastal Zone ONLY: Coastal Receiving Water (CRW): Buckhead Creek	1600	Not Applicable
d. Other Waterbodies: _____		

- B. Waters of the U.S. / State Information (Attach additional sheet(s) as needed)

Waters of the U.S. / State	1. On the site?	2. Delineated/ Identified?	3. Impacts?	4. Amount of impacts
a. Jurisdictional wetlands	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ Ac
b. Non-jurisdictional wetlands	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ Ac
c. Other Water(s): _____	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____ Ac _____ Feet
d. Coastal Zone ONLY: Direct Critical Area	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ Ac _____ Feet

5. If yes for impacts in B.3, describe each impact and activity, and list all permits (e.g., USACOE Nationwide Permit, DHEC General Permit) and certifications that have been applied for or obtained for each impact:

- C. S.C. Navigable Waters (SCNW) Information (Section 2.6.5) The Department will address any issues related to State Navigable Waters' Program under SC Regulation 19-450 during the review of the C-SWPPP for activities that will NOT require a 404 permit or a 401 certification. (Attach additional sheet(s) as needed).

1. Are S.C. Navigable Waters (SCNW) on the site: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
a. If no, do not complete this question. Proceed to Section D (Impaired Waterbodies).		
b. If yes, provide the name of S.C. Navigable Waters (SCNW) on the site: _____		
2. If yes for C.1, will construction activities cross over or occur in, under, or thru the SCNW? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe SCNW activities (e.g., road crossing, sub-aqueous utility line, temporary or permanent structures, etc.) and proceed to Section C.3:		
3. Identify permits providing coverage of SCNW activities proposed for your site. If NONE, list none.		
Permits/Certifications	Permit or Certification No.	Corresponding Covered SCNW Activity(ies)
a. DHEC General/ Other DHEC Permit	None	
b. USACOE 404 Permit or 401 Certification	None	
c. SCNW Permit If applied for or issued, identify Date applied for or issued: _____	None	<input type="checkbox"/> All Activities or <input type="checkbox"/> Some Activities (Describe):
d. If a SCNW Permit has NOT been applied for provide an additional plan sheet that shows plan and profile views (drawn to scale) of the SCNW and associated activities. Include a description of all proposed activities on this plan.		

D. Impaired Waterbodies Information (Attach additional sheet(s) as needed)

1. 303(d) Listed Impaired Waterbodies					
a. Name of Nearest DHEC Water Quality Monitoring Stations (WQMS)(s) that receives stormwater from your construction site and/or thru an MS4 and the Name of the Corresponding Waterbody?		b. Is this WQMS(s) listed on the most current 303(d) list? # No, proceed to Section 2 of this table. If Yes, complete items c thru f.	c. List the pollutant(s) identified as "CAUSES" of the impairment	d. Will any pollutants causing the impairment be present in your site's construction stormwater discharges?	e. If yes for d, list the "USE SUPPORT" impairment(s) affected by the pollutant(s) identified in c.
Nearest DHEC WQMS(s)	Corresponding Waterbody				
RS-08076	Buckhead Creek	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	Ecoli	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	
f. If yes for d above, will use of the BMPs proposed for your project ensure the site's discharges will <u>NOT</u> contribute to or cause further WQS violations for the impairment(s) listed in c? <input type="checkbox"/> Yes <input type="checkbox"/> No See Instructions.					
2. TMDL Impaired Waterbodies					
a. Name of Nearest DHEC Water Quality Monitoring Stations (WQMS)(s) that receives stormwater from your construction site and/or thru an MS4?	b. Has a TMDL(s) been developed for this WQMS(s)? If No, identify as such below and proceed to Section VI. If Yes, complete items c thru f of this table.	c. If yes for b, what pollutants are listed as "CAUSES" or causing the impairment?	d. If yes for b, has the standard been "ATTAINED" or "Fully Supported" for the impairment(s)?	e. If no for d (Not Attained), will any pollutants causing the impairment be present in your site's construction stormwater discharges?	
RS-08076	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	Ecoli	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	
f. If yes for e above, are your discharges consistent with the assumptions and requirements of the TMDL(s)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No See Instructions.					

VI. Signatures and Certifications DO NOT SIGN IN BLACK INK! Read the Certifications below (in entirety). Provide date, printed name, and signatures below. If you are a New Owner/Operator, as Primary Permittee you must also sign and date the applicable Comprehensive SWPPP Acceptance & Compliance Agreement below.

C-SWPPP PREPARER: "One copy of the C-SWPPP, all specifications and supporting calculations, forms, and reports are herewith submitted and made a part of this application. I have placed my signature and seal on the design documents submitted signifying that I accept responsibility for the design of the system. Further, I certify to the best of my knowledge and belief that the design is consistent with the requirements of Title 48, Chapter 14 of the Code of Laws of SC, 1976 as amended, pursuant to Regulation 72-300 et seq. (if applicable), and in accordance with the terms and conditions of SCR100000." (This should be the person identified in Section III).

D. Mack Kelly, Jr.  17989
 Printed Name of C-SWPPP Preparer Signature of C-SWPPP Preparer S. C. Registration #

PRIMARY PERMITTEE: "I or I (on behalf of my company and its contractors and agents), as the case may be, certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I understand that DHEC enforcement actions may be taken if the terms and conditions of the C-SWPPP are not met and I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

"I or I (on behalf of my company and its contractors and agents), as the case may be, also hereby certify that all land-disturbing construction and associated activity pertaining to this site shall be accomplished pursuant to and in keeping with the terms and conditions of the approved plans and SCR100000. I also certify that a responsible person will be assigned to the project for day-to-day control. I hereby grant authorization to the to S. C. Department of Health and Environmental Control (DHEC) and/or the local implementing agency the right of access to the site at all times for the purpose of on site inspections during the course of construction and to perform maintenance inspections following the completion of the land-disturbing activity." (See Section 122.22 of S.C. Reg. 61-9 for signatory authority information.) Having understood the above information, I am signing this certification as Primary Permittee to the aforementioned NPDES general permit."

Richard Linder  Mayor for Town of Smoaks
 Printed Name of Primary Permittee Title/Position
 Signature of Primary Permittee Date Signed
 September 7, 2017



Coastal Zone Consistency Determination

To: Melanie Williams, BOW Construction Permitting Section
Richard Geer, BOW Coastal Stormwater Permitting Section

From: *SR* Sarah Reed, OCRM Coastal Zone Consistency Section

Applicant: Town of Smoaks

Project Name: Town of Smoaks Water Line

Site location: Along US-21, SC-217, & S-15-135, Smoaks, Colleton County, SC

Finding: Conditionally Consistent with the S.C. Coastal Zone Management Program

CZC #: CZC-17-0981

PN#: SCR10BV70 (stormwater); unassigned (water supply)

Date: September 27, 2017

The Coastal Zone Consistency staff of the Office of Ocean and Coastal Resource Management (OCRM) have reviewed the above referenced project request for land disturbance associated with the replacement of the Town of Smoak's existing drinking water distribution line. The project involves the installation of 1,250 LF of 10", 10,250 LF of 8", and 7,460 LF of 6" drinking water distribution lines, 22 fire hydrants, 73 meters, and all necessary appurtenances. The project will be constructed within the highway and city street right-of-ways. Stormwater flow patterns will remain unchanged from their current conditions as the disturbed area will be returned to its original state post construction. The project also proposed BMPs to control sediment and increased runoff due to temporary land disturbance during construction. No wetland impacts are proposed. The total area of disturbance for this project is 4.4 acres of a 30.5 acre reviewed project site.

We hereby certify that the project, as proposed, is **Consistent** with the Guidelines for Evaluation of All Projects, as well as the (1) Public Service and Facilities (*Water Supply*) and (2) Stormwater Management (*Runoff*) policies contained in the S.C. Coastal Zone Management Program provided the following conditions are included in the permits and adhered to by the applicant.

1. In the event that any historic or cultural resources and/or archaeological materials are found during the course of work, the applicant must notify the State Historic Preservation Office (SHPO) and the South Carolina Institute of Archaeology and Anthropology. Historic or cultural resources consist of those sites listed in the National Register of Historic Places and those sites that are eligible for the National Register. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects, and human skeletal materials.

2. All construction BMPs must be installed, inspected and maintained to retain sediment onsite and to protect wetlands and waters through the life of the project. Upon completion of construction activities, all disturbed areas, including those impacted for access, must be immediately stabilized.
3. The project must entirely avoid wetlands through construction confined to the shoulder of the existing highway and city right-of-ways. No wetland impacts are authorized.
4. There must be a drilling mud containment, response and notification plan to protect Buckhead Creek during the directional drilling in the event of inadvertent release of drilling fluids/mud into waterbodies or onto adjacent surface soils.
5. The project must be fully consistent with all local zoning, ordinances, comprehensive plans, and other specific local authorizations prior to land disturbance.

This determination shall serve as the DHEC OCRM State Coastal Zone Consistency Determination for the work described above. This determination *does not* serve as the final permitting decision and *does not* alleviate the applicant's responsibility to obtain the final authorizing State or Federal permit(s). Local government authorizations *may also* be required.

South Carolina Board of Health and Environmental Control
Guide to Board Review
Pursuant to S.C. Code Ann. § 44-1-60

The decision of the South Carolina Department of Health and Environmental Control (Department) becomes the final agency decision fifteen (15) calendar days after notice of the decision has been mailed to the applicant, permittee, licensee and affected persons who have requested in writing to be notified, unless a written request for final review accompanied by a filing fee in the amount of \$100 is filed with Department by the applicant, permittee, licensee or affected person.

Applicants, permittees, licensees, and affected parties are encouraged to engage in mediation or settlement discussions during the final review process.

If the Board declines in writing to schedule a final review conference, the Department's decision becomes the final agency decision and an applicant, permittee, licensee, or affected person may request a contested case hearing before the Administrative Law Court within thirty (30) calendar days after notice is mailed that the Board declined to hold a final review conference. In matters pertaining to decisions under the South Carolina Mining Act, appeals should be made to the South Carolina Mining Council.

I. Filing of Request for Final Review

1. A written Request for Final Review (RFR) and the required filing fee of one hundred dollars (\$100) must be received by Clerk of the Board within fifteen (15) calendar days after notice of the staff decision has been mailed to the applicant, permittee, licensee, or affected persons. If the 15th day occurs on a weekend or State holiday, the RFR must be received by the Clerk on the next working day. RFRs will not be accepted after 5:00 p.m.
2. RFRs shall be in writing and should include, at a minimum, the following information:
 - The grounds for amending, modifying, or rescinding the staff decision;
 - a statement of any significant issues or factors the Board should consider in deciding how to handle the matter;
 - the relief requested;
 - a copy of the decision for which review is requested; and
 - mailing address, email address, if applicable, and phone number(s) at which the requestor can be contacted.
3. RFRs should be filed in person or by mail at the following address:

South Carolina Board of Health and Environmental Control
Attention: Clerk of the Board
2600 Bull Street
Columbia, South Carolina 29201

Alternatively, RFR's may be filed with the Clerk by facsimile (803-898-3393) or by electronic mail (boardclerk@dhec.sc.gov).
4. The filing fee may be paid by cash, check or credit card and must be received by the 15th day.
5. If there is any perceived discrepancy in compliance with this RFR filing procedure, the Clerk should consult with the Chairman or, if the Chairman is unavailable, the Vice-Chairman. The Chairman or the Vice-Chairman will determine whether the RFR is timely and properly filed and direct the Clerk to (1) process the RFR for consideration by the Board or (2) return the RFR and filing fee to the requestor with a cover letter explaining why the RFR was not timely or properly filed. Processing an RFR for consideration by the Board shall not be interpreted as a waiver of any claim or defense by the agency in subsequent proceedings concerning the RFR.
6. If the RFR will be processed for Board consideration, the Clerk will send an Acknowledgement of RFR to the Requestor and the applicant, permittee, or licensee, if other than the Requestor. All personal and financial identifying information will be redacted from the RFR and accompanying documentation before the RFR is released to the Board, Department staff or the public.
7. If an RFR pertains to an emergency order, the Clerk will, upon receipt, immediately provide a copy of the RFR to all Board members. The Chairman, or in his or her absence, the Vice-Chairman shall based on the circumstances, decide whether to refer the RFR to the RFR Committee for expedited review or to decline in writing to schedule a Final Review Conference. If the Chairman or Vice-Chairman determines review by the RFR Committee is appropriate, the Clerk will forward a copy of the RFR to Department staff and Office of General Counsel. A Department response and RFR Committee review will be provided on an expedited schedule defined by the Chairman or Vice-Chairman.
8. The Clerk will email the RFR to staff and Office of General Counsel and request a Department Response within eight (8) working days. Upon receipt of the Department Response, the Clerk will forward the RFR and Department Response to all Board members for review, and all Board members will confirm receipt of the RFR to the Clerk by email. If a Board member does not confirm receipt of the RFR within a twenty-four (24) hour period, the Clerk will contact the Board member and confirm receipt. If a Board member believes the RFR should be considered by the RFR Committee, he or she will respond to the Clerk's email within forty-eight (48) hours and will request further review. If no Board member requests further review of the RFR within the forty-eight (48) hour period, the Clerk will send a letter by certified mail to the Requestor, with copy by

regular mail to the applicant, permittee, or licensee, if not the Requestor, stating the Board will not hold a Final Review Conference. Contested case guidance will be included within the letter.

NOTE: If the time periods described above end on a weekend or State holiday, the time is automatically extended to 5:00 p.m. on the next business day.

9. If the RFR is to be considered by the RFR Committee, the Clerk will notify the Presiding Member of the RFR Committee and the Chairman that further review is requested by the Board. RFR Committee meetings are open to the public and will be public noticed at least 24 hours in advance.
10. Following RFR Committee or Board consideration of the RFR, if it is determined no Conference will be held, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, stating the Board will not hold a Conference. Contested case guidance will be included within the letter.

II. Final Review Conference Scheduling

1. If a Conference will be held, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, informing the Requestor of the determination.
2. The Clerk will request Department staff provide the Administrative Record.
3. The Clerk will send Notice of Final Review Conference to the parties at least ten (10) days before the Conference. The Conference will be publically noticed and should:
 - include the place, date and time of the Conference;
 - state the presentation times allowed in the Conference;
 - state evidence may be presented at the Conference;
 - if the conference will be held by committee, include a copy of the Chairman's order appointing the committee; and
 - inform the Requestor of his or her right to request a transcript of the proceedings of the Conference prepared at Requestor's expense.
4. If a party requests a transcript of the proceedings of the Conference and agrees to pay all related costs in writing, including costs for the transcript, the Clerk will schedule a court reporter for the Conference.

III. Final Review Conference and Decision

1. The order of presentation in the Conference will, subject to the presiding officer's discretion, be as follows:
 - Department staff will provide an overview of the staff decision and the applicable law to include [10 minutes]:
 - Type of decision (permit, enforcement, etc.) and description of the program.
 - Parties
 - Description of facility/site
 - Applicable statutes and regulations
 - Decision and materials relied upon in the administrative record to support the staff decision.
 - Requestor(s) will state the reasons for protesting the staff decision and may provide evidence to support amending, modifying, or rescinding the staff decision. [15 minutes] *NOTE: The burden of proof is on the Requestor(s).*
 - Rebuttal by Department staff [15 minutes]
 - Rebuttal by Requestor(s) [10 minutes]

Note: Times noted in brackets are for information only and are superseded by times stated in the Notice of Final Review Conference or by the presiding officer.
2. Parties may present evidence during the conference; however, the rules of evidence do not apply.
3. At any time during the conference, the officers conducting the Conference may request additional information and may question the Requestor, the staff, and anyone else providing information at the Conference.
4. The presiding officer, in his or her sole discretion, may allow additional time for presentations and may impose time limits on the Conference.
5. All Conferences are open to the public.
6. The officers may deliberate in closed session.
7. The officers may announce the decision at the conclusion of the Conference or it may be reserved for consideration.
8. The Clerk will mail the written final agency decision (FAD) to parties within 30 days after the Conference. The written decision must explain the basis for the decision and inform the parties of their right to request a contested case hearing before the Administrative Law Court or in matters pertaining to decisions under the South Carolina Mining Act, to request a hearing before the South Carolina Mining Council. The FAD will be sent by certified mail, return receipt requested.
9. Communications may also be sent by electronic mail, in addition to the forms stated herein, when electronic mail addresses are provided to the Clerk.

The above information is provided as a courtesy; parties are responsible for complying with all applicable legal requirements.


APPENDIX D

SCDHEC OCRM COASTAL ZONE CONSISTENCY DETERMINATION



Coastal Zone Consistency Determination

To: Melanie Williams, BOW Construction Permitting Section
Richard Geer, BOW Coastal Stormwater Permitting Section

From:  Sarah Reed, OCRM Coastal Zone Consistency Section

Applicant: Town of Smoaks

Project Name: Town of Smoaks Water Line

Site location: Along US-21, SC-217, & S-15-135, Smoaks, Colleton County, SC

Finding: Conditionally Consistent with the S.C. Coastal Zone Management Program

CZC #: CZC-17-0981

PN#: SCR10BV70 (stormwater); unassigned (water supply)

Date: September 27, 2017

The Coastal Zone Consistency staff of the Office of Ocean and Coastal Resource Management (OCRM) have reviewed the above referenced project request for land disturbance associated with the replacement of the Town of Smoak's existing drinking water distribution line. The project involves the installation of 1,250 LF of 10", 10,250 LF of 8", and 7,460 LF of 6" drinking water distribution lines, 22 fire hydrants, 73 meters, and all necessary appurtenances. The project will be constructed within the highway and city street right-of-ways. Stormwater flow patterns will remain unchanged from their current conditions as the disturbed area will be returned to its original state post construction. The project also proposed BMPs to control sediment and increased runoff due to temporary land disturbance during construction. No wetland impacts are proposed. The total area of disturbance for this project is 4.4 acres of a 30.5 acre reviewed project site.

We hereby certify that the project, as proposed, is **Consistent** with the Guidelines for Evaluation of All Projects, as well as the (1) Public Service and Facilities (*Water Supply*) and (2) Stormwater Management (*Runoff*) policies contained in the S.C. Coastal Zone Management Program provided the following conditions are included in the permits and adhered to by the applicant.

1. In the event that any historic or cultural resources and/or archaeological materials are found during the course of work, the applicant must notify the State Historic Preservation Office (SHPO) and the South Carolina Institute of Archaeology and Anthropology. Historic or cultural resources consist of those sites listed in the National Register of Historic Places and those sites that are eligible for the National Register. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects, and human skeletal materials.

2. All construction BMPs must be installed, inspected and maintained to retain sediment onsite and to protect wetlands and waters through the life of the project. Upon completion of construction activities, all disturbed areas, including those impacted for access, must be immediately stabilized.
3. The project must entirely avoid wetlands through construction confined to the shoulder of the existing highway and city right-of-ways. No wetland impacts are authorized.
4. There must be a drilling mud containment, response and notification plan to protect Buckhead Creek during the directional drilling in the event of inadvertent release of drilling fluids/mud into waterbodies or onto adjacent surface soils.
5. The project must be fully consistent with all local zoning, ordinances, comprehensive plans, and other specific local authorizations prior to land disturbance.

This determination shall serve as the DHEC OCRM State Coastal Zone Consistency Determination for the work described above. This determination *does not* serve as the final permitting decision and *does not* alleviate the applicant's responsibility to obtain the final authorizing State or Federal permit(s). Local government authorizations *may also* be required.

TOWN OF SMOAKS WATER SYSTEM IMPROVEMENTS

SMOAKS, SOUTH CAROLINA
AUGUST 2017

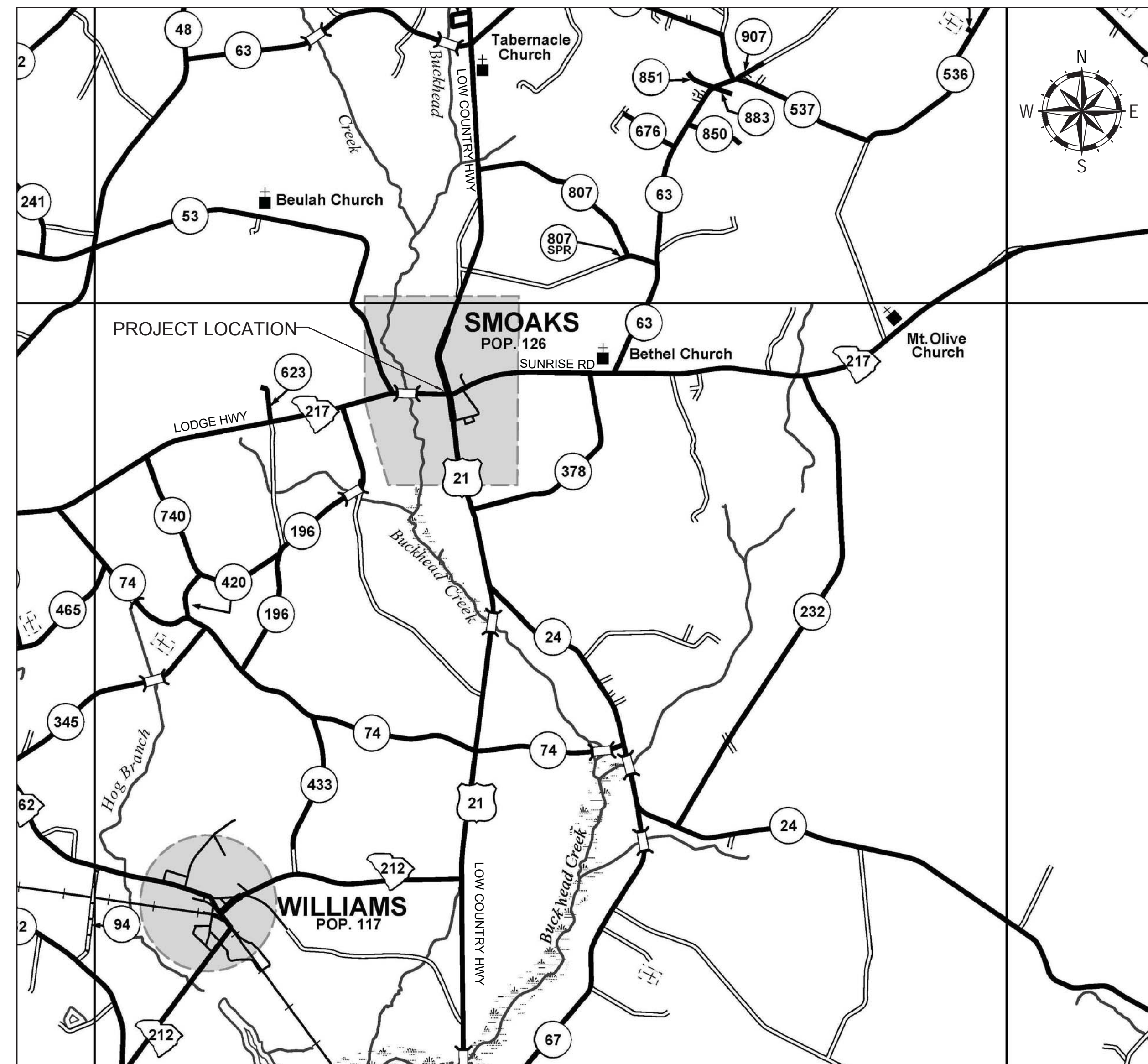
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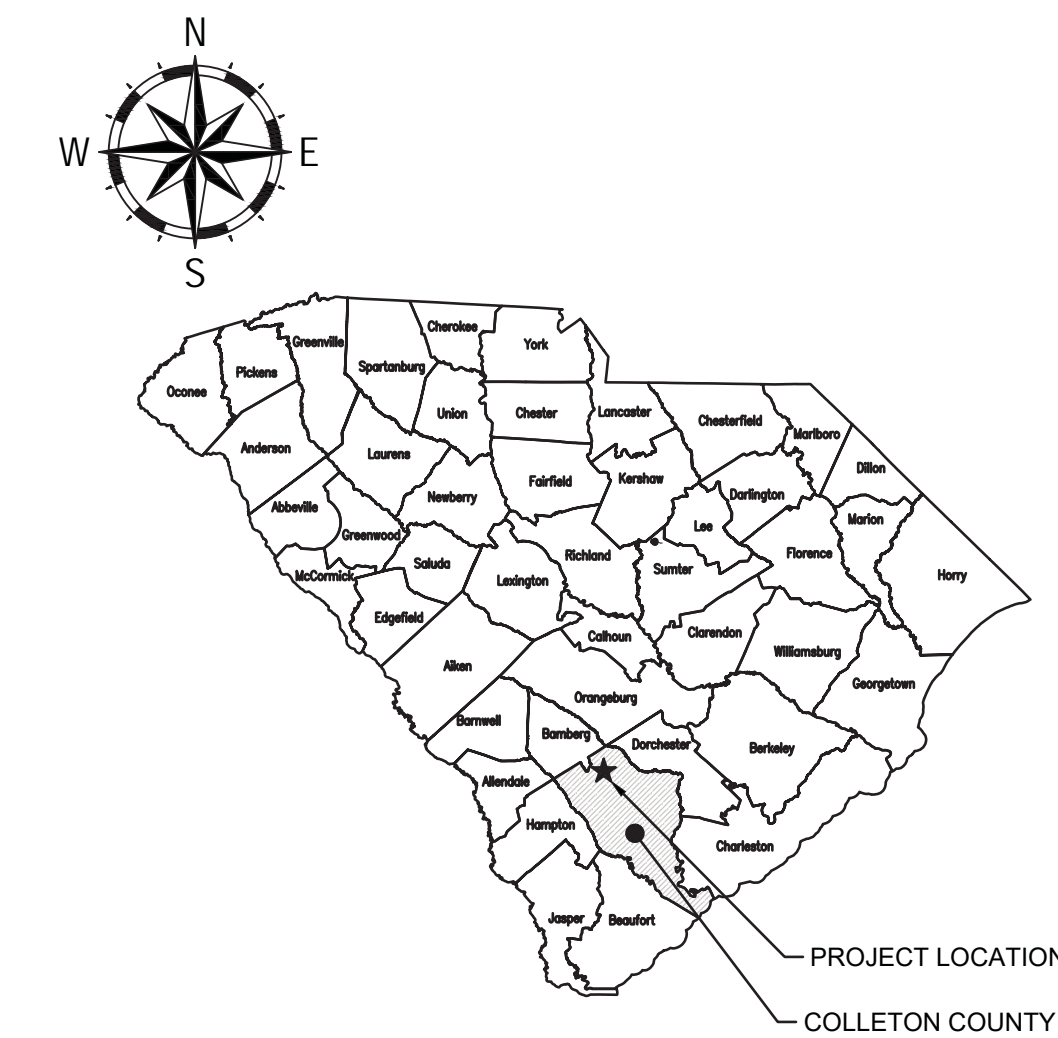
- G000 TITLE SHEET
- G001 GENERAL NOTES & LEGEND

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- C202 LODGE HWY STA. 13+00.00 - 26+50.00 PLAN & PROFILE
- C203 LODGE HWY STA. 26+00.00 - 38+44.81 PLAN & PROFILE
- C204 SUNRISE RD STA. 0+00.00 - 12+50.00 PLAN & PROFILE
- C205 SUNRISE RD STA. 12+50.00 - 26+00.00 PLAN & PROFILE
- C206 SUNRISE RD STA. 26+00.00 - 39+50.00 PLAN & PROFILE
- C207 SUNRISE RD STA. 39+50.00 - 49+97.6 PLAN & PROFILE
- C208 LOW COUNTRY HWY STA. 0+00.00 - 12+00.00 PLAN & PROFILE
- C209 LOW COUNTRY HWY STA. 12+00.00 - 25+00.00 PLAN & PROFILE
- C210 LOW COUNTRY HWY STA. 25+00.00 - 38+50.00 PLAN & PROFILE
- C211 LOW COUNTRY HWY STA. 38+50.00 - 51+00.00 PLAN & PROFILE
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- C213 LOW COUNTRY HWY STA. 64+00.00 - 72+10.00 PLAN & PROFILE
- C214 NEW STREET STA. 0+00.00 - 11+00.00 PLAN & PROFILE
- C215 NEW STREET STA. 11+00.00 - 22+56.96 PLAN & PROFILE
- C216 FIREMAN LANE STA. 0+00.00 - 5+31.55 PLAN & PROFILE
- C501 WATER UTILITY DETAILS SHEET 1 OF 3
- C502 WATER UTILITY DETAILS SHEET 2 OF 3
- C503 WATER UTILITY DETAILS SHEET 3 OF 3
- EC501 EROSION CONTROL DETAILS SHEET 1 OF 3
- EC502 EROSION CONTROL DETAILS SHEET 2 OF 3
- EC503 EROSION CONTROL DETAILS SHEET 3 OF 3



LOCATION MAP
SCALE: N.T.S.



VICINITY MAP
COLLETON COUNTY, SC
SCALE: 1" = 300,000'



Know what's below
Call before you dig.

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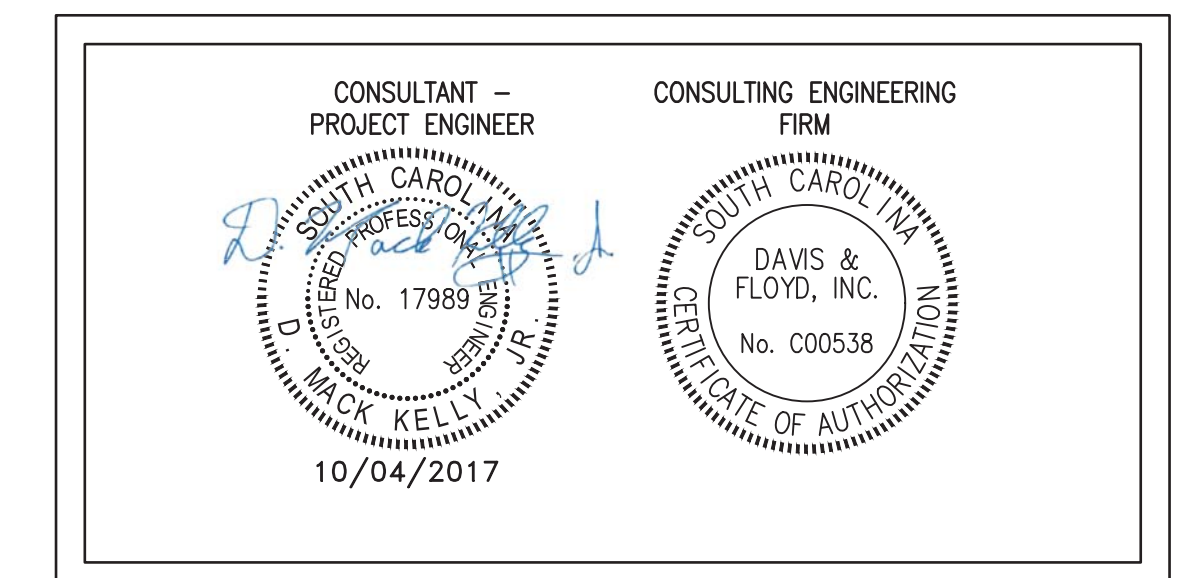
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GREENVILLE, SC 29601
(864) 527-9800

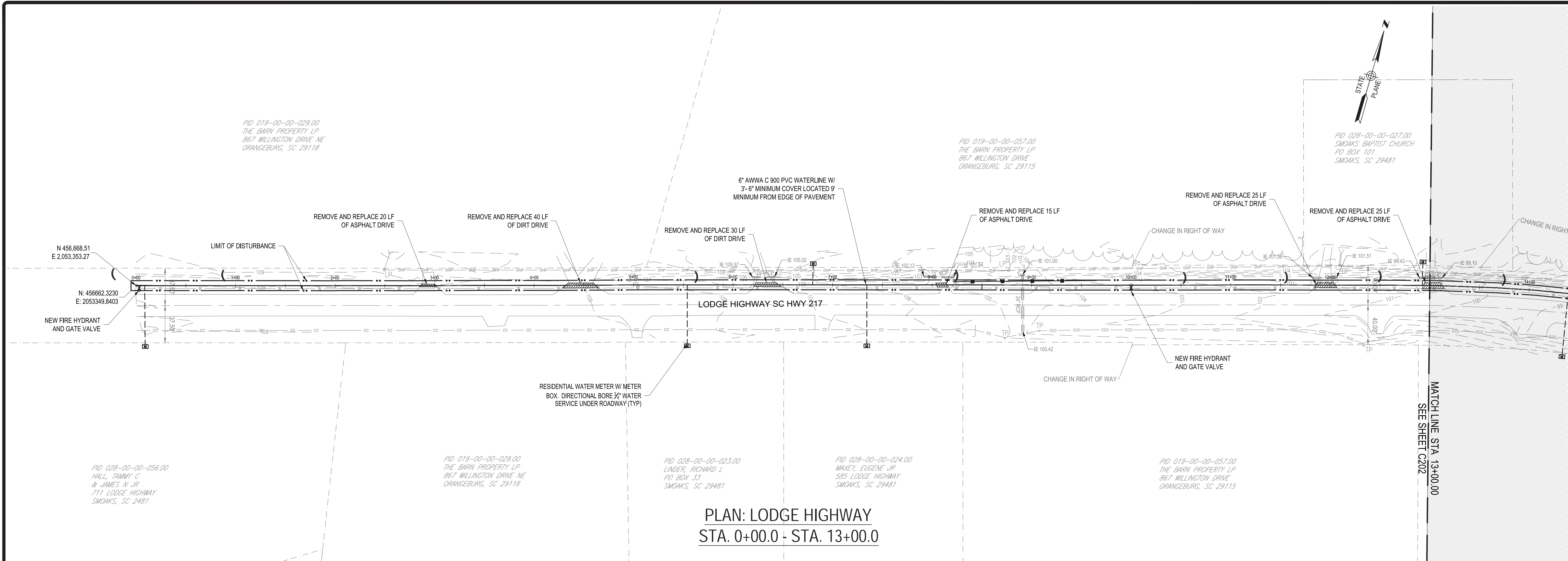
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D&F JOB No.: 013498.00

UTILITIES NOTICE:
EXISTING UNDERGROUND UTILITIES ARE SHOWN AT APPROXIMATE LOCATIONS. ACTUAL LOCATIONS MAY VARY SIGNIFICANTLY. CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES THAT RESULT FROM FAILURE TO EXACTLY LOCATE AND PROTECT ANY AND ALL UNDERGROUND UTILITIES.

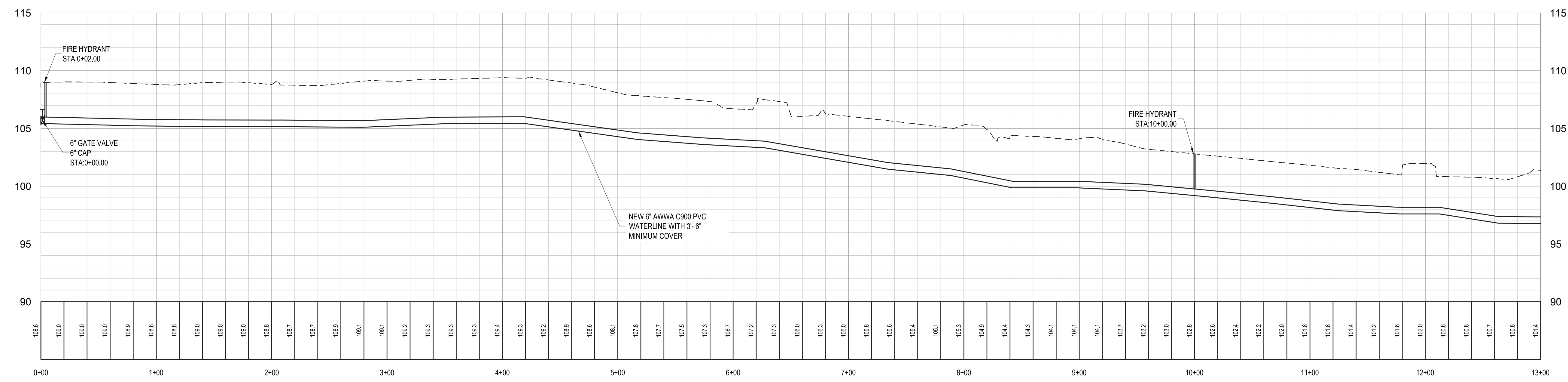


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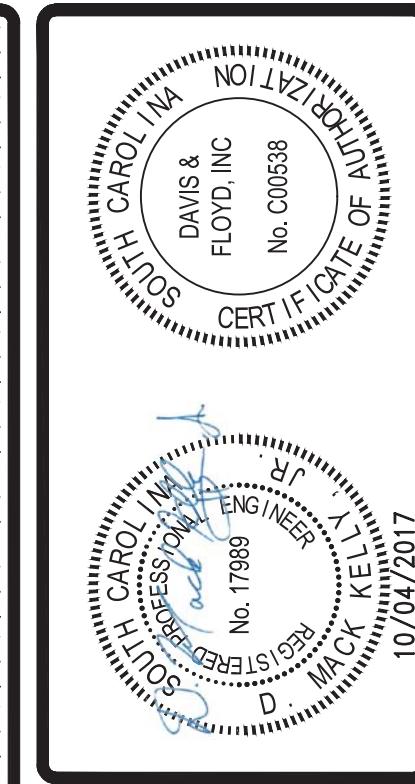
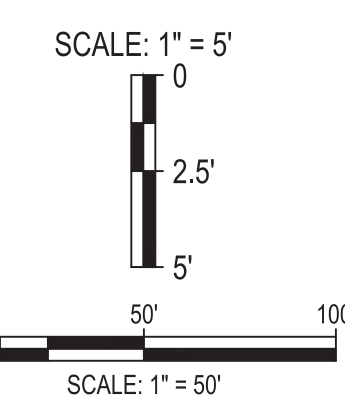


PLAN: LODGE HIGHWAY
 STA. 0+00.0 - STA. 13+00.0

NOTE:
 1. NO VALVES SHALL BE LOCATED IN DITCHES.
 2. WATER METERS SHALL BE PLACED A MAXIMUM OF 1' OUTSIDE R/W LINE.
 3. WATER METER LOCATION TO BE FIELD VERIFIED BY CONTRACTOR WITH EACH CUSTOMER.
 4. WATER METER MUST BE LOCATED ON CUSTOMER'S PROPERTY AND TIED IN WITH CUSTOMER'S HOUSE SERVICE LINE.



PROFILE: LODGE HIGHWAY
 STA. 0+00.0 - STA. 13+00.0



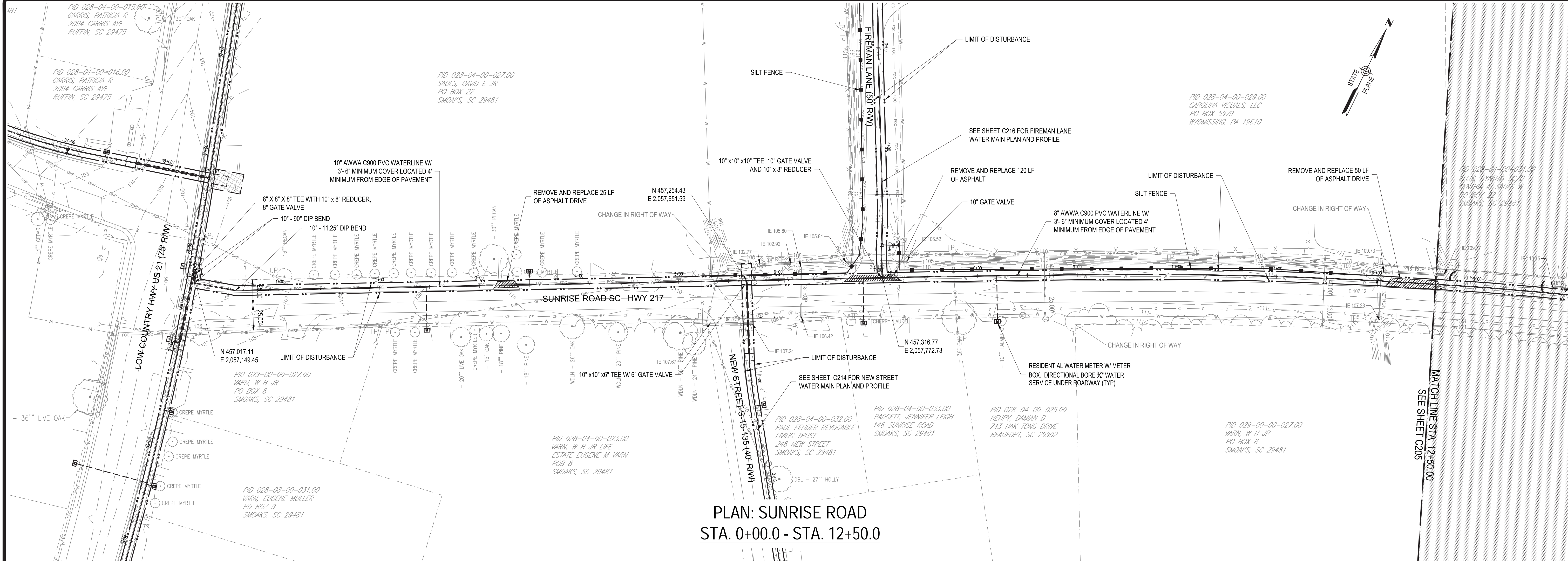
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 864-627-9800

OWNER: TOWN OF SMOAKS
 PROJECT TITLE: SMOAKS, SOUTH CAROLINA
 WATER SYSTEM IMPROVEMENTS

DRAWING TITLE: LODGE HIGHWAY STA 0+00.0 - 13+00.0 PLAN & PROFILE

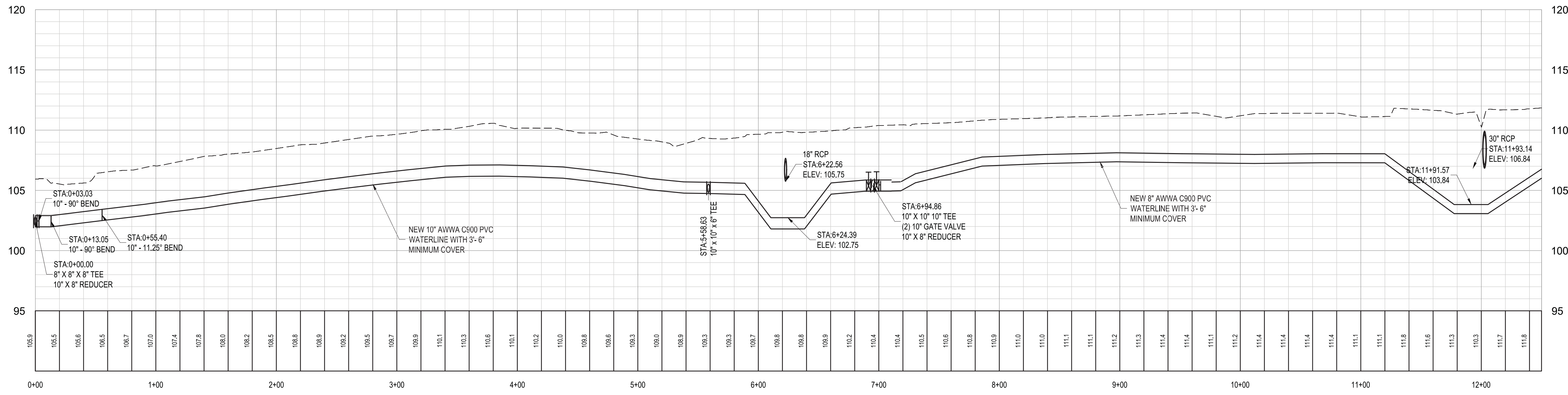
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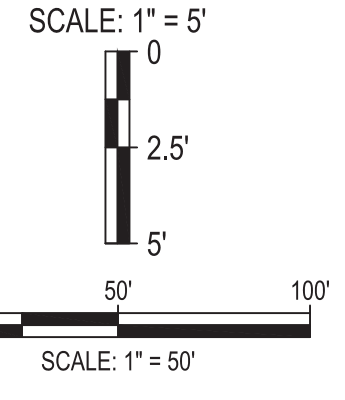


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STA. 0+00.0 - STA. 12+50.0**

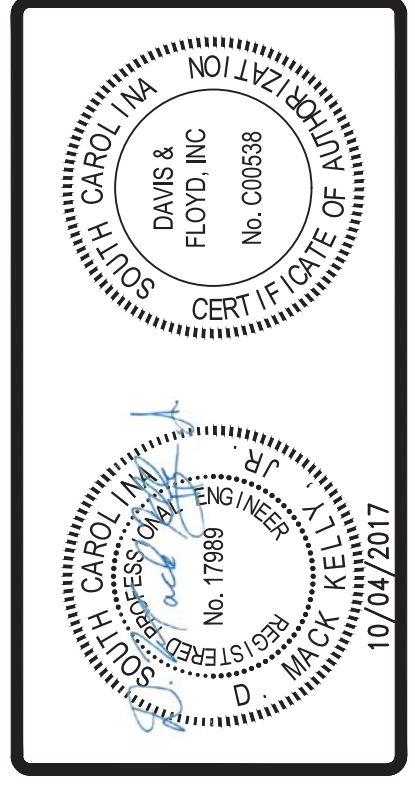
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**PROFILE: SUNRISE ROAD
STA. 0+00.0 - STA. 12+50.0**



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PROJECT TITLE
WATER SYSTEM IMPROVEMENTS

**SUNRISE ROAD
STA. 0+00.0 - 12+50.0
PLAN & PROFILE**

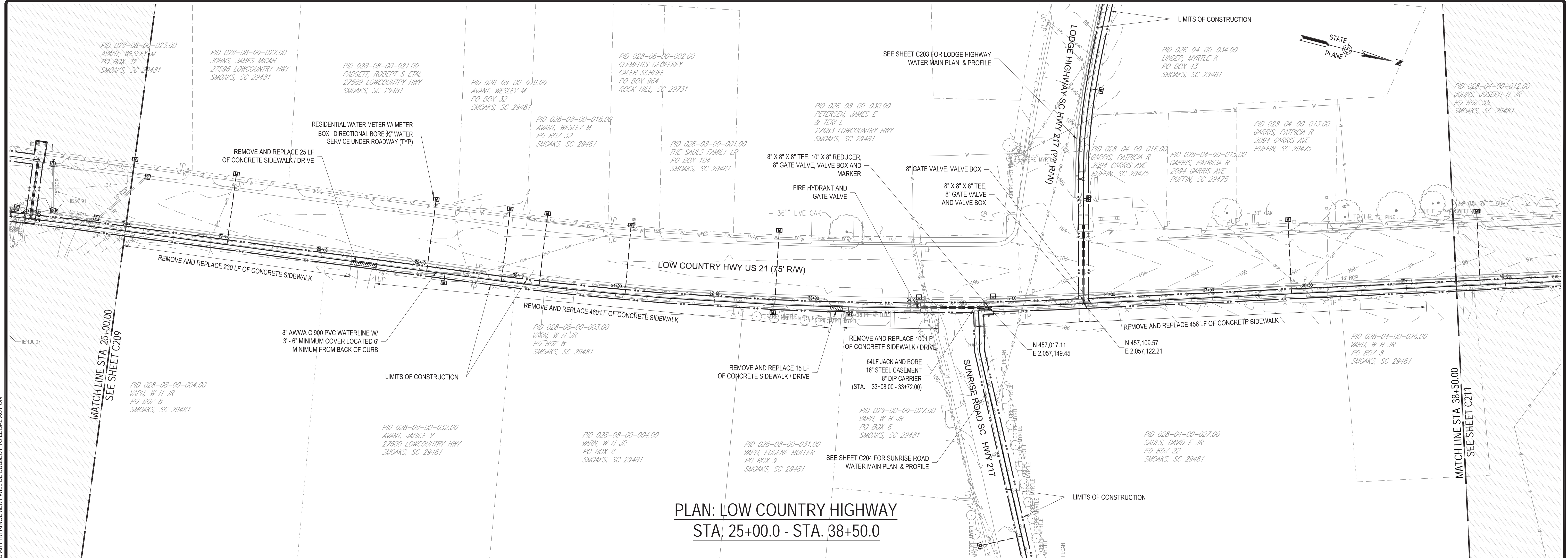
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3	08/01/2017	ISSUED FOR CONSTRUCTION	CS	DMK	

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 DATE AUGUST 2017
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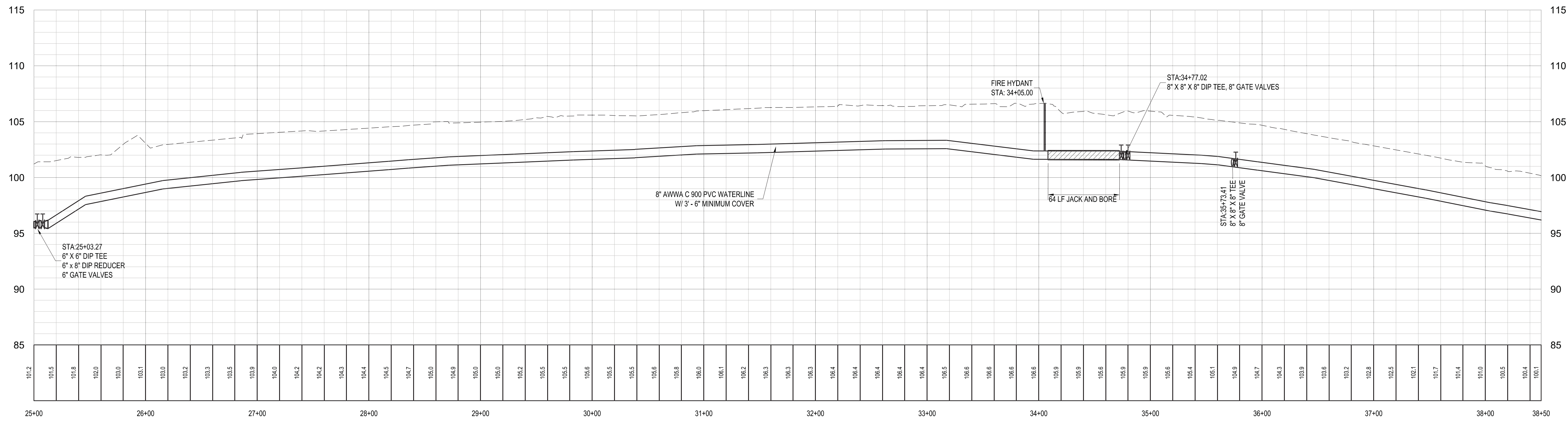
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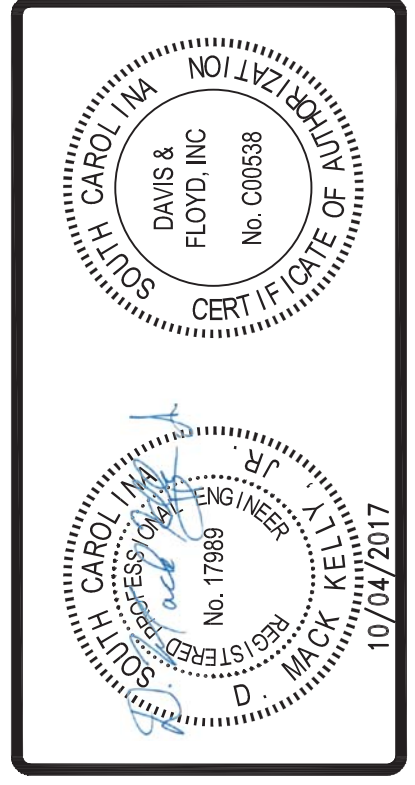
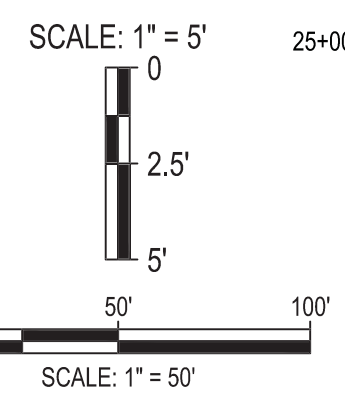


PLAN: LOW COUNTRY HIGHWAY
 STA. 25+00.0 - STA. 38+50.0

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PROFILE: LODGE HIGHWAY
 STA. 25+00.0 - STA. 38+50.0



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TOWN OF SMOAKS
 SMOAKS, SOUTH CAROLINA
 PROJECT TITLE
WATER SYSTEM IMPROVEMENTS

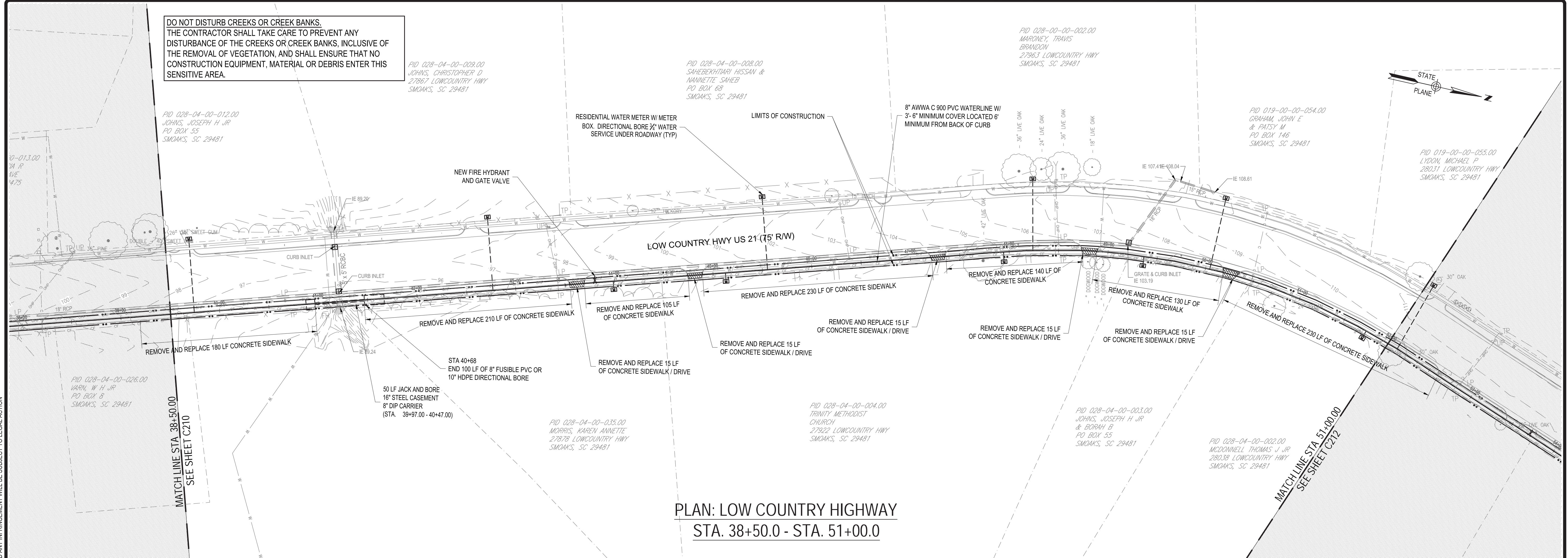
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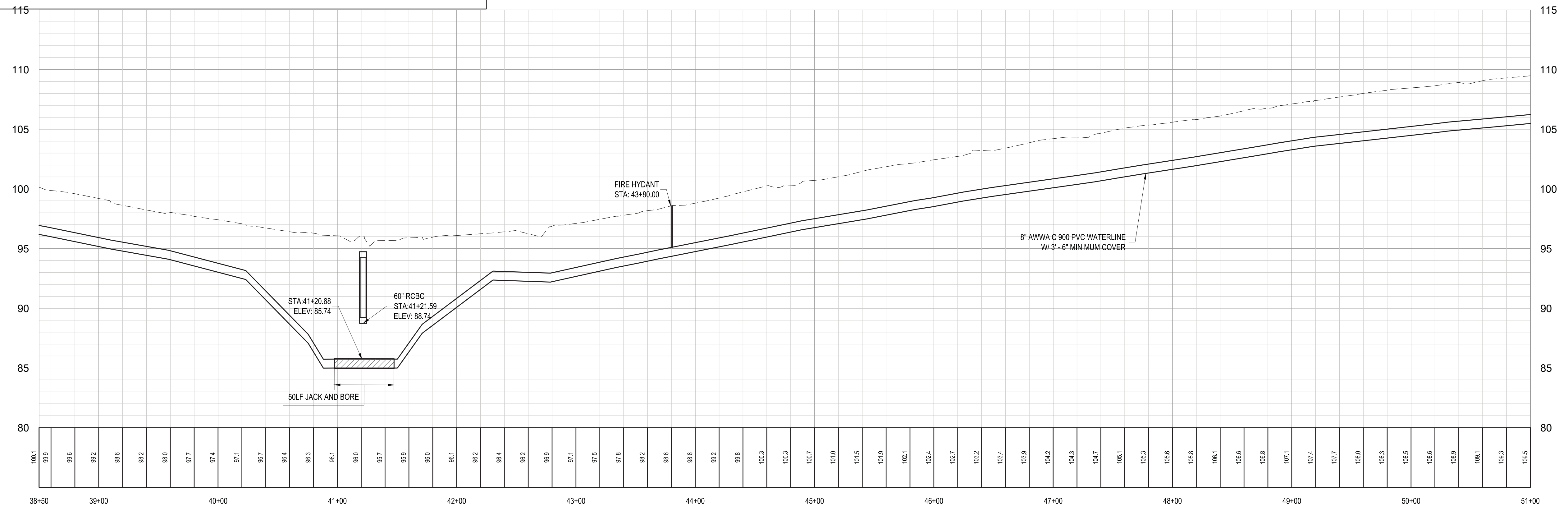
PAGE 12 OF 24

DO NOT DISTURB CREEKS OR CREEK BANKS. THE CONTRACTOR SHALL TAKE CARE TO PREVENT ANY DISTURBANCE OF THE CREEKS OR CREEK BANKS, INCLUSIVE OF THE REMOVAL OF VEGETATION, AND SHALL ENSURE THAT NO CONSTRUCTION EQUIPMENT, MATERIAL OR DEBRIS ENTER THIS SENSITIVE AREA.

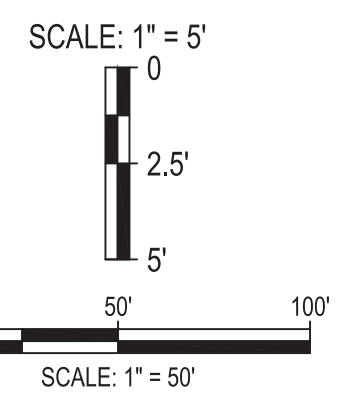


PLAN: LOW COUNTRY HIGHWAY
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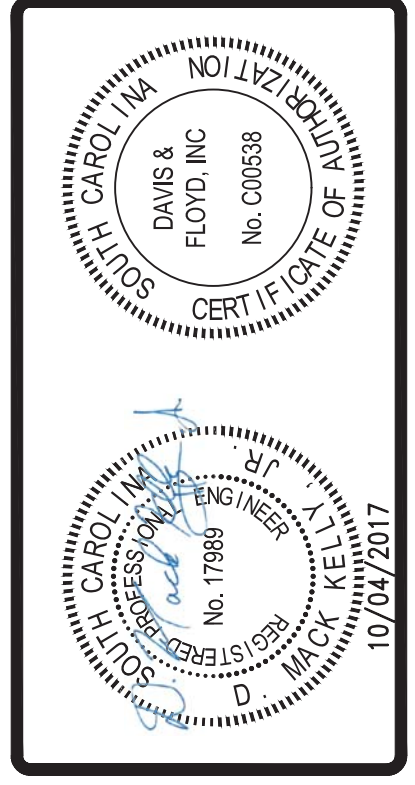
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PROFILE: LOW COUNTRY HIGHWAY
STA. 38+50.0 - STA. 51+00.0



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TOWN OF SMOAKS
 SMOAKS, SOUTH CAROLINA
 PROJECT TITLE
 WATER SYSTEM IMPROVEMENTS

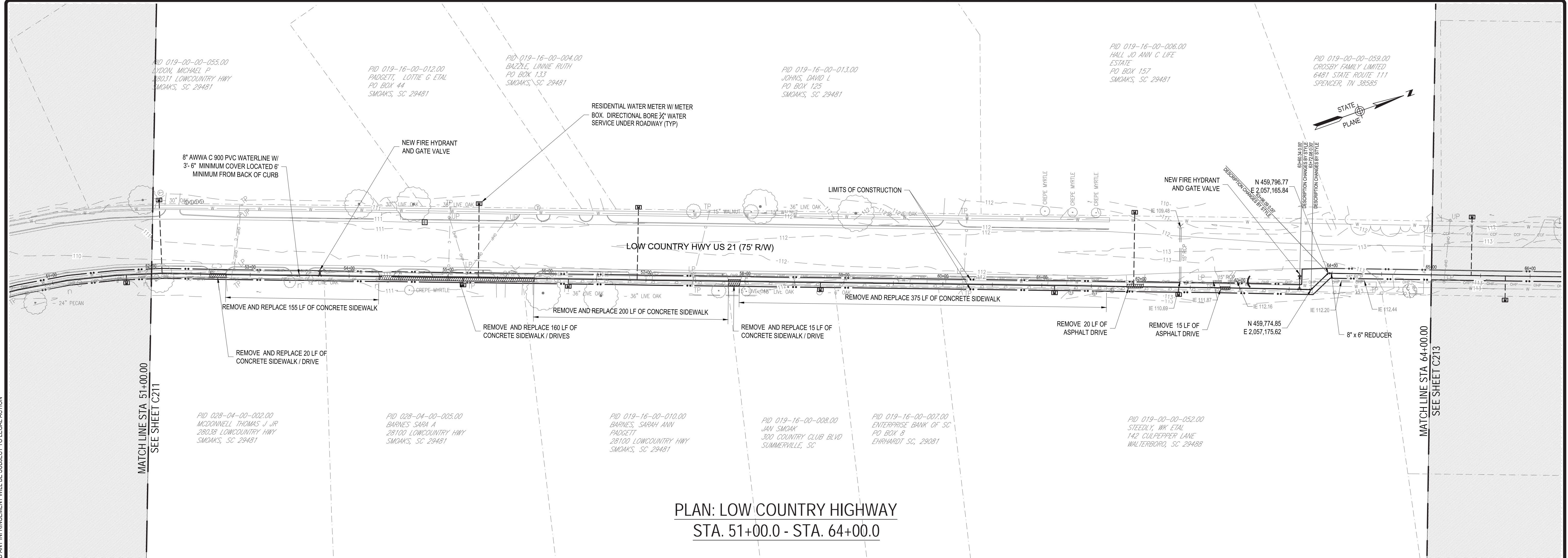
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 STA 38+50.0 - 51+00.0
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DATE: AUGUST 2017
 DRAWN: CSI
 CHECKED: CSI
 IN CHARGE: DMK
 APPROVED: DMV

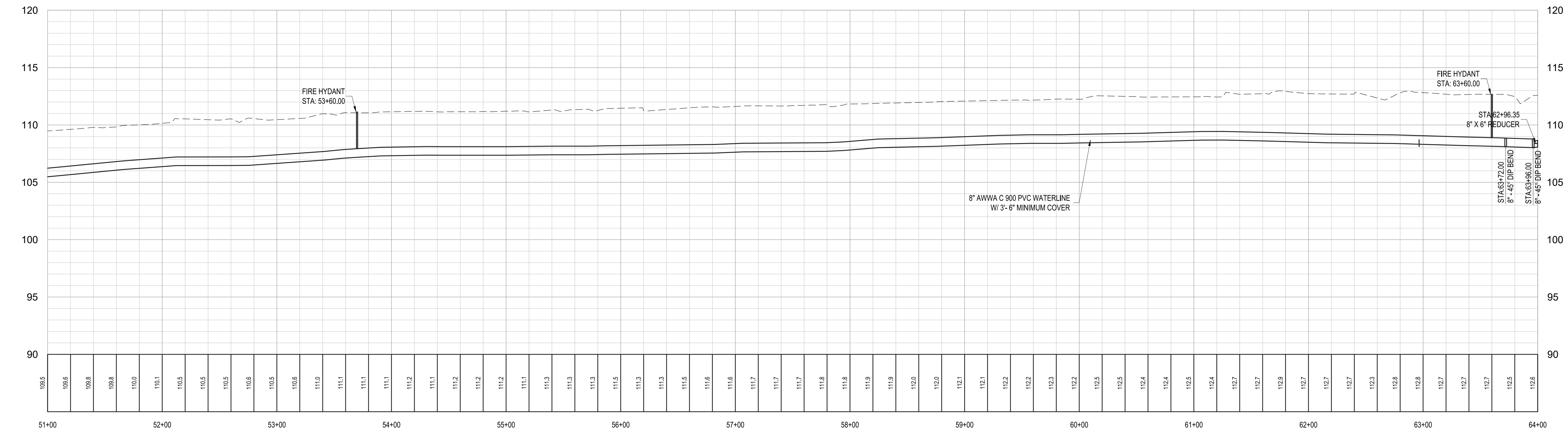
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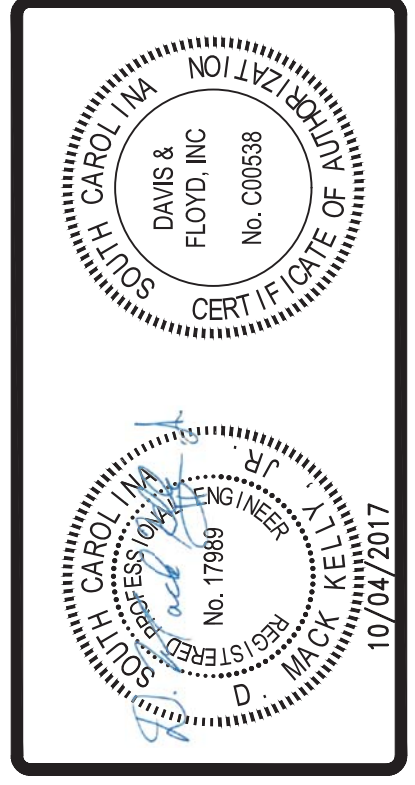
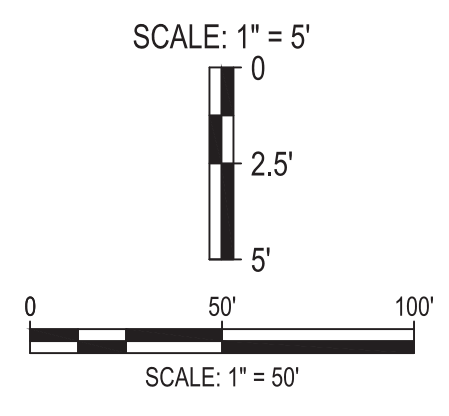


PLAN: LOW COUNTRY HIGHWAY
 STA. 51+00.0 - STA. 64+00.0

NOTE:
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PROFILE: LOW COUNTRY HIGHWAY
 STA. 51+00.0 - STA. 64+00.0



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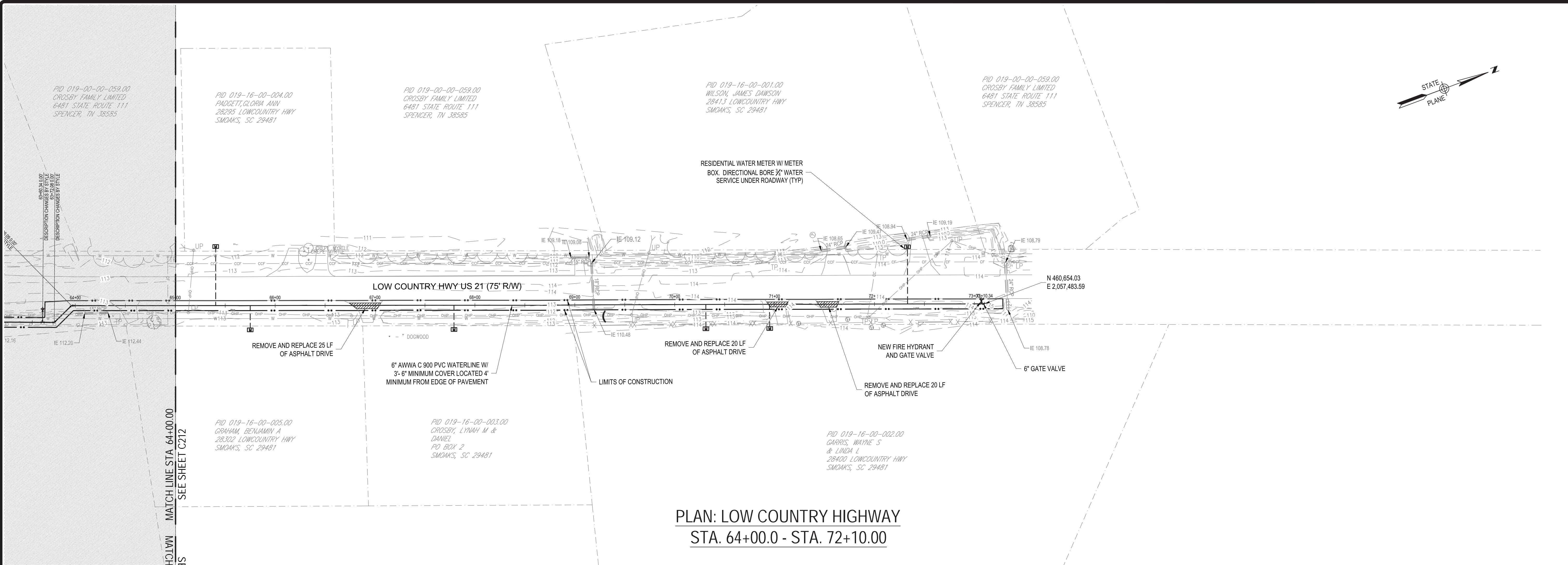
TOWN OF SMOAKS
 SMOAKS, SOUTH CAROLINA
 PROJECT TITLE
WATER SYSTEM IMPROVEMENTS

LOW COUNTRY HIGHWAY
 STA 51+00.0 - 64+00.0
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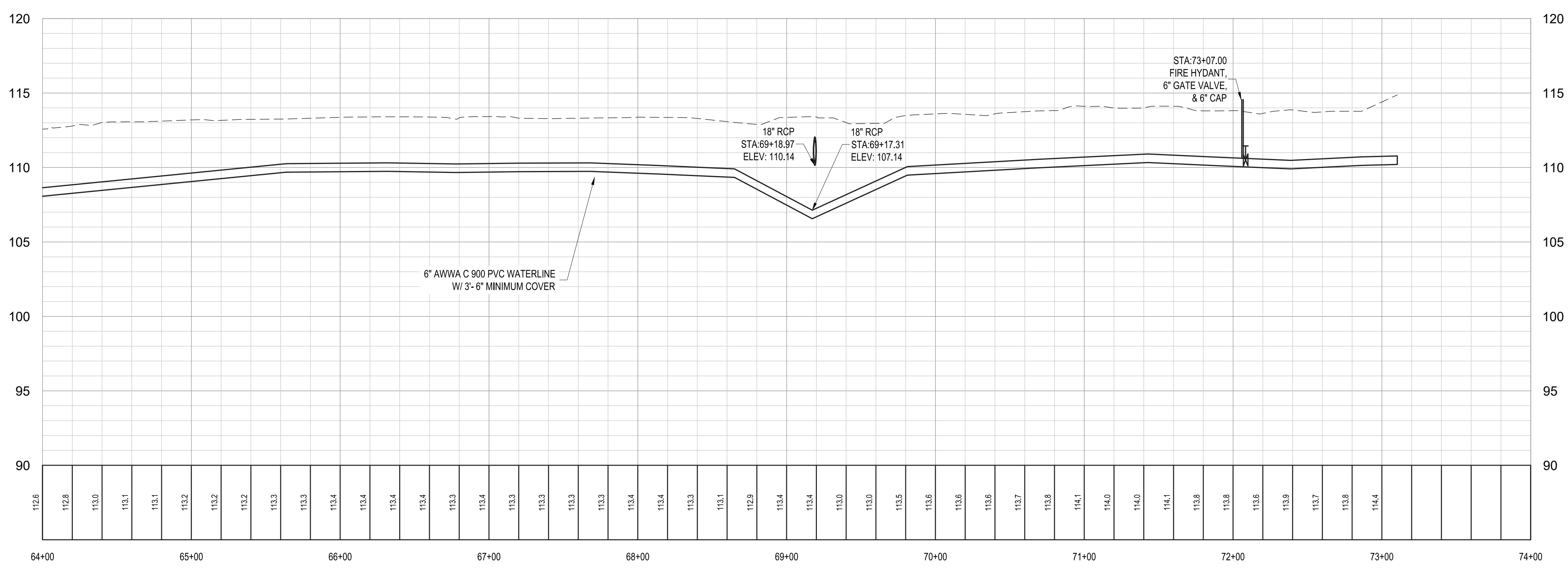
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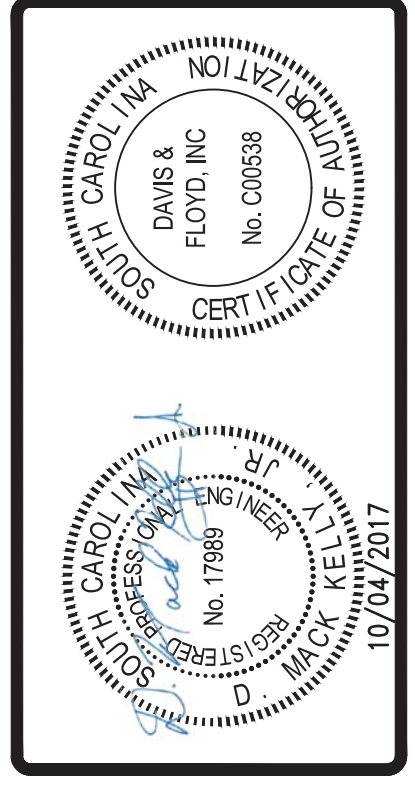
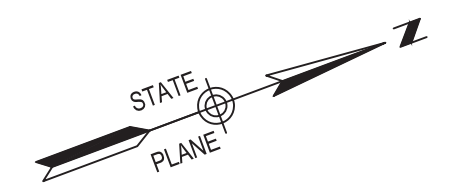
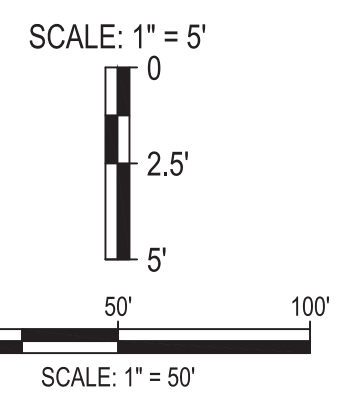


PLAN: LOW COUNTRY HIGHWAY
 STA. 64+00.0 - STA. 72+10.00

- NOTE:
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PROFILE: LOW COUNTRY HIGHWAY
 STA. 64+00.0 - STA. 72+10.00



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 864-527-9800

OWNER: TOWN OF SMOAKS
 PROJECT TITLE: SMOAKS, SOUTH CAROLINA
 WATER SYSTEM IMPROVEMENTS

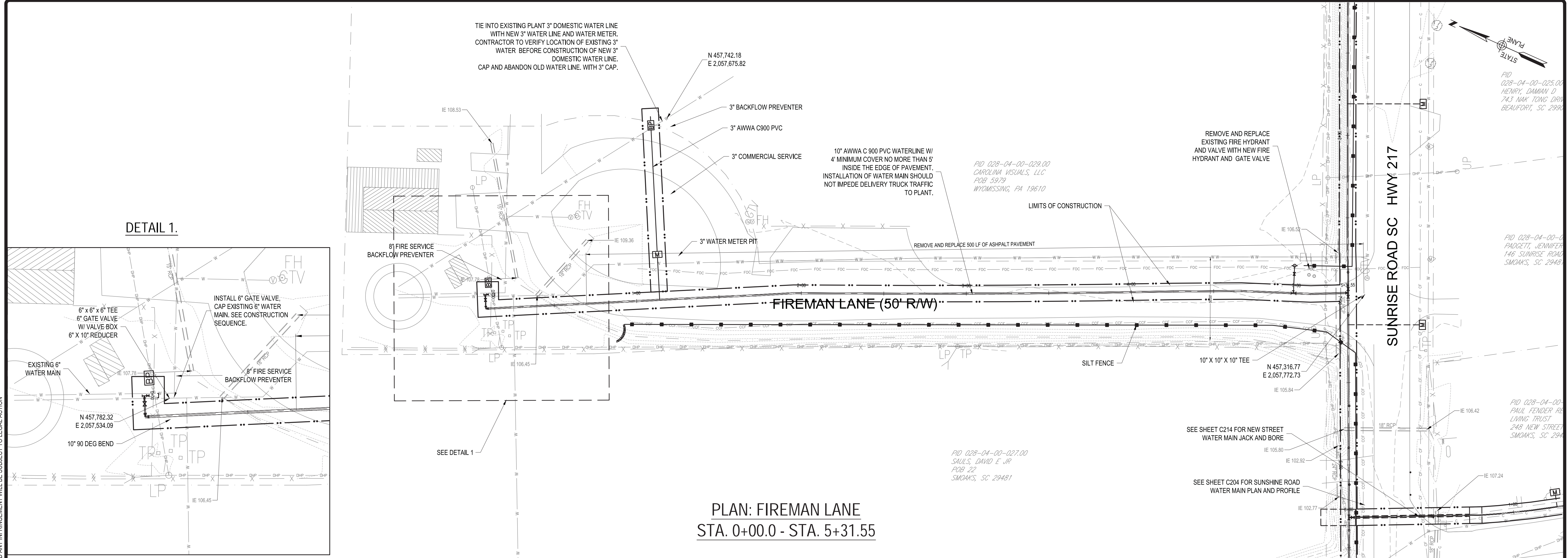
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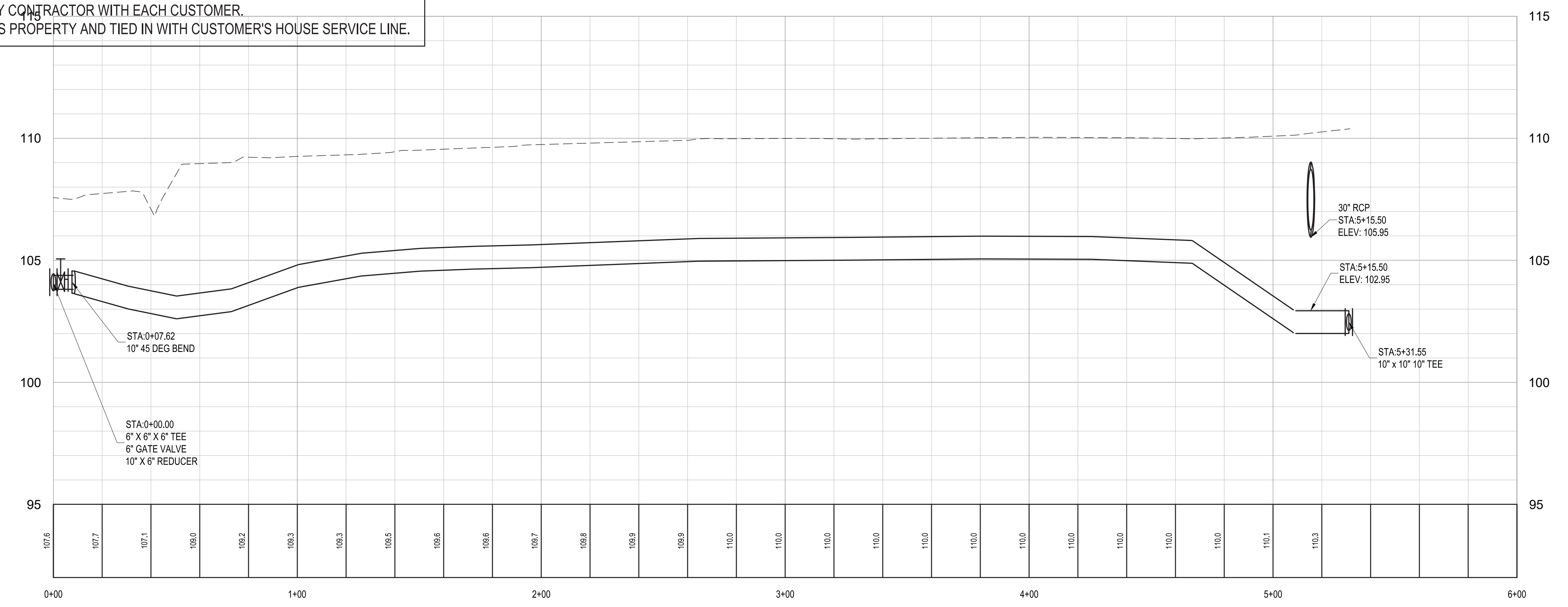
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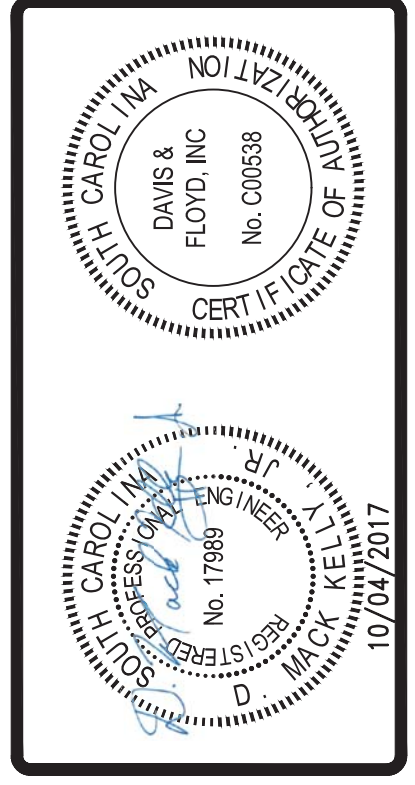
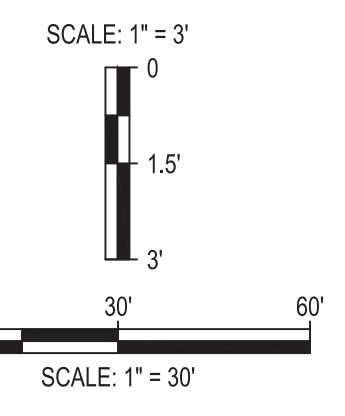
PLAN: FIREMAN LANE
 STA. 0+00.0 - STA. 5+31.55

- NOTE:**
1. NO VALVES SHALL BE LOCATED IN DITCHES.
 2. WATER METERS SHALL BE PLACED A MAXIMUM OF 1' OUTSIDE RW LINE.
 3. WATER METER LOCATION TO BE FIELD VERIFIED BY CONTRACTOR WITH EACH CUSTOMER.
 4. WATER METER MUST BE LOCATED ON CUSTOMER'S PROPERTY AND TIED IN WITH CUSTOMER'S HOUSE SERVICE LINE.



PROFILE: FIREMAN LANE
 STA. 0+00.0 - STA. 5+31.55

SCALES: 1" = 30' HORIZONTAL 1" = 10' VERTICAL



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 101 N. MAIN STREET, SUITE 901
 GREENVILLE, SC 29601
 864-527-9800

OWNER: TOWN OF SMOAKS
 PROJECT TITLE: SMOAKS, SC
 WATER SYSTEM IMPROVEMENTS

PROJECT TITLE: FIREMAN LANE
 STA 0+00.0 - 5+31.55
 PLAN & PROFILE

NO.	DATE	RELEASED	CHECKED	DATE	BY	DATE	BY
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		DMK	DMK				
		DMW	DMW				

C216
 PAGE 18 OF 24

SCDHEC STANDARD NOTES:

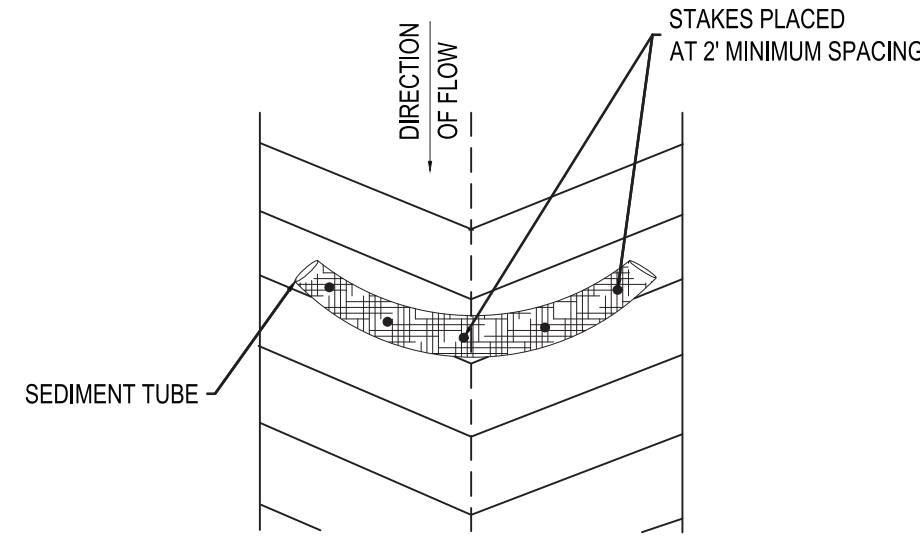
- IF NECESSARY, SLOPES WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS. IN ADDITION TO HYDROSEEDING, IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMS MAY BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.
- STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW.
 - WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS, STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE.
 - WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.
- AFTER CONSTRUCTION ACTIVITIES BEGIN, ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK AND AFTER EACH STORM EVENT AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE. IF PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INAPPROPRIATELY, OR INCORRECTLY INSTALLED, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.
- PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED, AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER, AND TEMPORARY SEEDINGS AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE ANY SEDIMENTS BEFORE BEING PUMPED BACK INTO ANY WATERS OF THE STATE.
- ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFF-SITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
- THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO PAVED ROADWAY(S) FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL REMOVE MUD/SOIL FROM PAVEMENT DAILY AS REQUIRED.
- RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH S.C. REG. 72-300 ET SEQ. AND SCR100000.
- TEMPORARY DIVERSION BERMS AND/OR DITCHES SHALL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.
- ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, SHALL BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE SHALL BE PROVIDED IN AREAS WHERE A 50-FOOT BUFFER CAN NOT BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS.
- LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.
- A COPY OF THE SWPPP, INSPECTION RECORDS, AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR A NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO THE DATE THAT FINAL STABILIZATION IS REACHED.
- INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND-DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.
- MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE PRESERVE TOPSOIL.
- MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATERS. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE.
- MINIMIZE THE DISCHARGES OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMP'S (SEDIMENT BASIN, FILTER BAG, ETC.)
- THE FOLLOWING DISCHARGES FROM SITES ARE PROHIBITED:
 - WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL.
 - WASTEWATER FROM WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS.
 - FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE.
 - SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.
- AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTIONS MUST BE CONDUCTED AT A MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE.
- IF EXISTING BMP'S NEED TO BE MODIFIED OR IF ADDITIONAL BMP'S ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THIS PERMIT AND/OR SC'S WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER POSSIBLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMP'S MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.
- A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE WITH AN APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES. FOR NON-LINEAR PROJECTS THAT DISTURB 10 ACRES OR MORE, THIS CONFERENCE MUST BE HELD ON-SITE UNLESS THE DEPARTMENT HAS APPROVED OTHERWISE.

CONSTRUCTION SEQUENCE

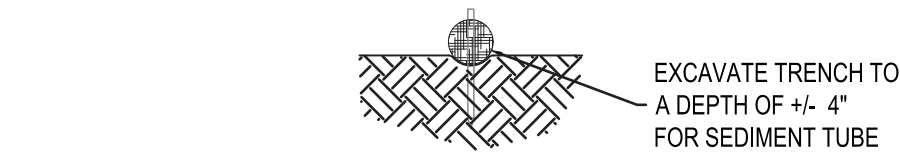
- CONTACT PUPS FOR UTILITY LOCATE.
- OBTAIN ALL APPLICABLE APPROVALS AND PERMITS. PRE-CONSTRUCTION MEETING WITH CITY OF GREENWOOD AND DAVIS & FLOYD, INC. CONTACT CITY OF GREENWOOD AT 864-677-4444 AND DAVIS & FLOYD AT 864-229-5211.
- LOCATE AND MARK LIMITS OF DISTURBANCE / TEMPORARY CONSTRUCTION EASEMENT.
- PERFORM PRE-REHABILITATION CLEANING AND TELEVISION WORK.
- PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS INDICATED ON THE PLANS AS PIPELINE CONSTRUCTION PROGRESSES AND AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION / REHABILITATION.
- COMPLETE ALL REHABILITATION WORK, PROVIDING TEMPORARY GRASSING AS NEEDED. CONSTRUCTION / REHABILITATION TO BE DONE IN PHASES TO REDUCE THE AREA OF DISTURBANCE TO MANAGEABLE PORTIONS. INSTALL CONTROL DEVICES AS NEEDED, AS CONSTRUCTION PROGRESSES.
- REGRADE ALL NECESSARY AREAS.
- PROVIDE TEMPORARY OR PERMANENT GRASS ON DISTURBED AREAS.
- PERFORM POST-REHABILITATION INSPECTIONS AND TESTING.
- REMOVE SILT FENCES AND OTHER TEMPORARY DEVICES AFTER FINAL STABILIZATION.
- FINAL SUBMITTAL TO OWNER.

SEEDING AND GRASSING

- SEE SCDOT TECHNICAL SPECIFICATION SC-M-810-2 (MOST RECENT REVISION)
- FERTILIZER SHALL BE RECOMMENDED FOR GRASS WITH 50 PERCENT OF THE ELEMENT DERIVED FROM ORGANIC SOURCES TO THE FOLLOWING PROPORTIONS: NITROGEN 4 PERCENT, PHOSPHORIC ACID 12 PERCENT, SOLUBLE POTASH 12 PERCENT.



PLAN



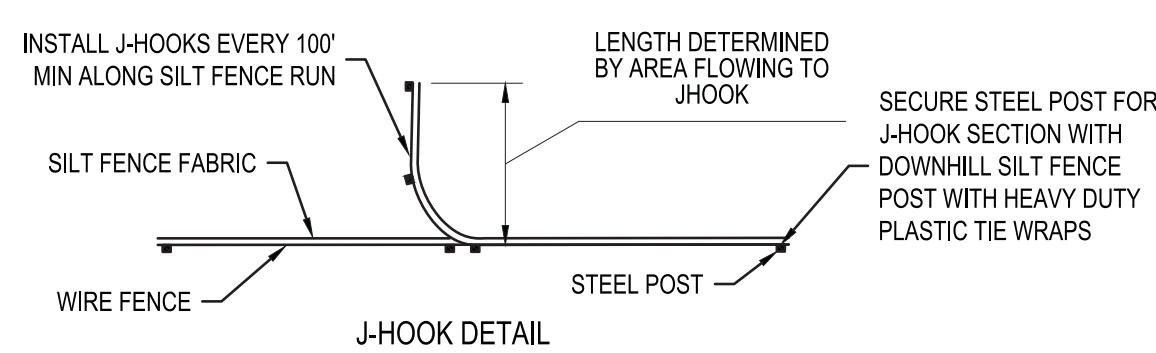
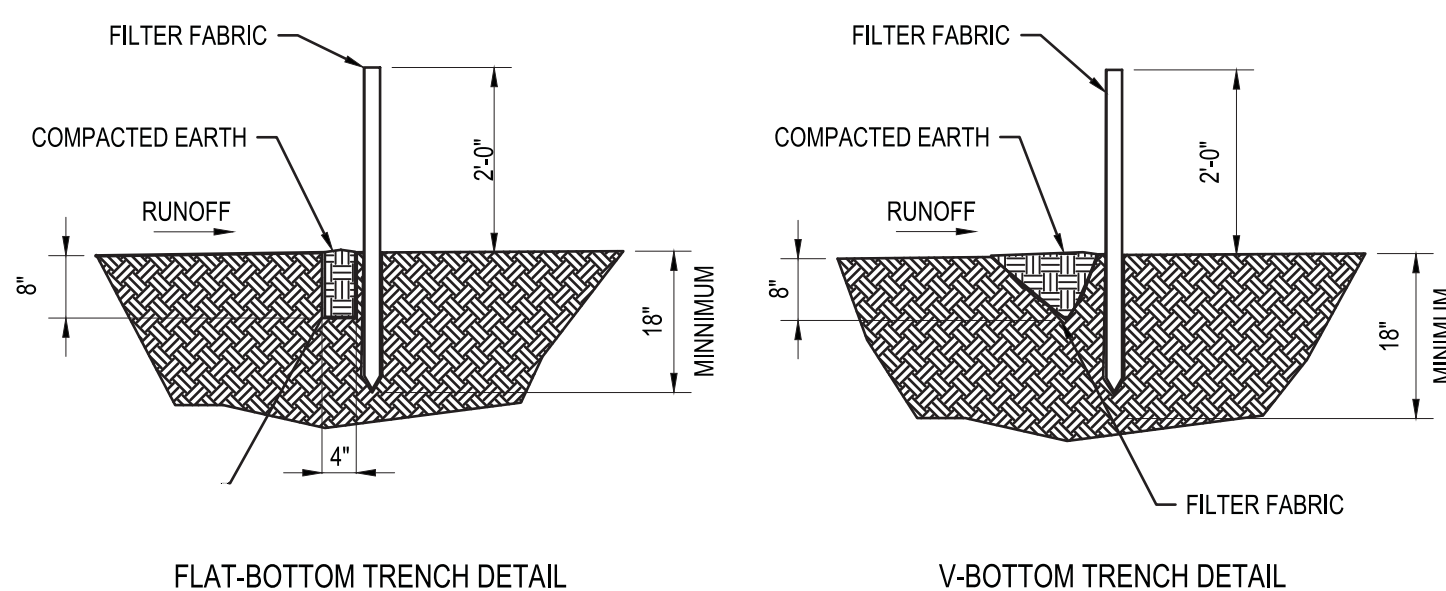
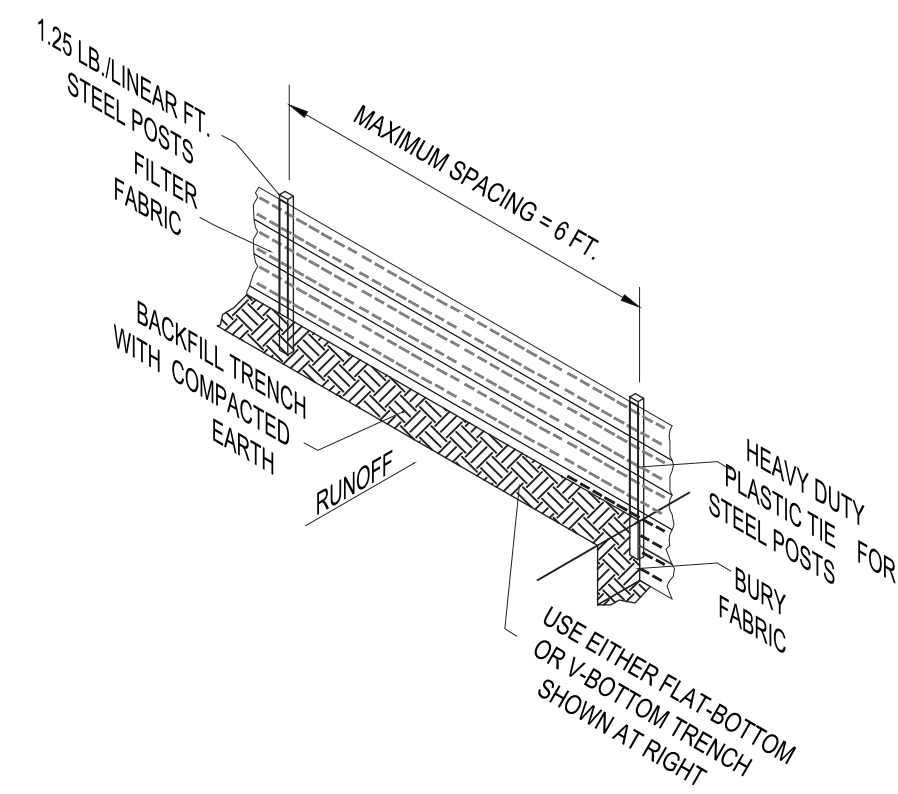
ELEVATION

SEDIMENT TUBE SPACING

SLOPE	MAXIMUM SEDIMENT TUB SPACING
LESS THAN 2%	150-FEET
2%	100-FEET
3%	75-FEET
4%	50-FEET
5%	40-FEET
6%	30-FEET
GREATER THAN 6%	25-FEET

SEDIMENT TUBE DETAIL:

NO SCALE



SILT FENCE DETAIL:

NO SCALE



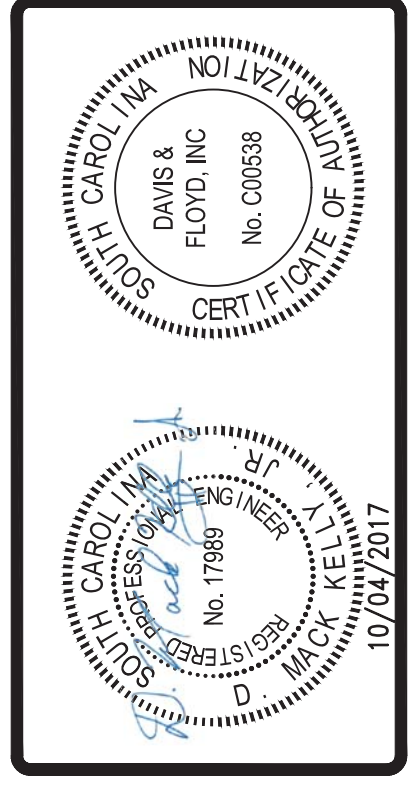
SEDIMENT TUBE NOTES:

- DESCRIPTION:** SEDIMENT TUBES ARE ELONGATED TUBES OF COMPACTED GEOTEXTILES, CURLED EXCELSIOR WOOD, NATURAL COCONUT FIBER OR HARDWOOD MULCH. STRAW, PINE NEEDLE AND LEAF MULCH-FILLED SEDIMENT TUBES ARE NOT PERMITTED UNDER THIS SPECIFICATION.
- WHEN AND WHERE TO USE IT:** INSTALL SEDIMENT TUBES ALONG CONTOURS, IN DRAINAGE CONVEYANCE SWALES, AND AROUND INLETS TO HELP REDUCE THE EFFECTS OF SOIL EROSION BY ENERGY DISSIPATION AND RETAIN SEDIMENT.
- MATERIALS:** SEDIMENT TUBES FOR DITCH CHECKS AND TYPE E INLET STRUCTURE FILTERS EXHIBIT THE FOLLOWING PROPERTIES:
 - PRODUCED BY A MANUFACTURER EXPERIENCED IN SEDIMENT TUBE MANUFACTURING.
 - COMPOSED OF COMPACTED GEOTEXTILES, CURLED EXCELSIOR WOOD, NATURAL COCONUT FIBERS, HARDWOOD MULCH OR A MIX OF THESE MATERIALS ENCLOSED BY A FLEXIBLE NETTING MATERIAL.
 - STRAW, STRAW FIBER, STRAW BALES, PINE NEEDLES AND LEAF MULCH ARE NOT ALLOWED UNDER THIS SPECIFICATION.
 - UTILIZES OUTER NETTING THAT CONSISTS OF SEAMLESS, HIGH-DENSITY POLYETHYLENE PHOTODEGRADABLE MATERIALS TREATED WITH ULTRAVIOLET STABILIZERS OR A SEAMLESS, HIGH-DENSITY POLYETHYLENE NON-DEGRADABLE MATERIALS. DIAMETER RANGING FROM 18-INCHES TO 24-INCHES.
 - CURLED EXCELSIOR WOOD, OR NATURAL COCONUT ROLLED EROSION CONTROL PRODUCTS (RECPs) THAT ARE ROLLED UP TO CREATE A SEDIMENT TUBE ARE NOT ALLOWED UNDER THIS SPECIFICATION.
- INSTALLATION:**
 - INSTALL OVER BARE SOIL, MULCHED AREAS OR EROSION CONTROL BLANKETS.
 - THE MINIMUM DIAMETER SHALL BE 18 INCHES.
 - SEDIMENT TUBES SHOULD BE STAKED USING WOODEN STAKES (2-INCH X 2-INCH) OR STEEL POSTS (STANDARD "U" OR "T" SECTIONS WITH A MINIMUM WEIGHT OF 1.25 POUNDS PER FOOT) A MINIMUM OF 48-INCHES IN LENGTH PLACED ON 2-FOOT CENTERS.
 - STAKES SHOULD BE INTERTWINED WITH THE OUTER MESH ON THE DOWNSTREAM SIDE AND DRIVEN IN THE GROUND TO A MINIMUM DEPTH OF 1.5 FEET LEAVING LESS THAN 1 FOOT OF STAKE EXPOSED ABOVE THE SEDIMENT TUBE. ALWAYS REFER TO THE MANUFACTURER'S RECOMMENDATIONS FOR THE STAKING DETAIL.
 - INSTALL ALL SEDIMENT TUBES INSURING THAT NO GAPS EXIST BETWEEN THE SOIL AND THE BOTTOM OF THE SEDIMENT TUBE. THE ENDS OF ADJACENT SEDIMENT TUBES SHOULD BE LAPPED 6 INCHES TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT. IN NO SITUATIONS SHOULD SEDIMENT TUBES BE STACKED ON TOP OF ONE ANOTHER.
 - CONSTRUCT A TRENCH THAT IS 20% OF THE TUBE DIAMETER TO INSTALL THE TUBE IN.
 - AVOID DAMAGE TO SEDIMENT TUBES WHILE INSTALLING THEM. IF THE SEDIMENT TUBE BECOMES DAMAGED DURING INSTALLATION, A STAKE SHOULD BE PLACED ON BOTH SIDES OF THE DAMAGED AREA TERMINATING THE TUBE SEGMENT AND A NEW TUBE SEGMENT SHOULD BE INSTALLED.
 - SEDIMENT TUBES SHOULD CONTINUE UP THE SIDE SLOPES A MINIMUM OF 1 FOOT ABOVE THE DESIGN FLOW DEPTH.
- INSPECTION AND MAINTENANCE:**
 - SEDIMENT TUBES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS. SHOULD THE INSPECTION NOTE/ OR IDENTIFY BMP'S THAT ARE NOT OPERATING EFFECTIVELY, MAINTENANCE SHALL BE PERFORMED AS SOON AS POSSIBLE AND BEFORE THE NEXT STORM EVENT.
 - REMOVE LARGE DEBRIS, TRASH, AND LEAVES.
 - IF EROSION CAUSES THE EDGES TO FALL TO A HEIGHT EQUAL TO OR BELOW THE HEIGHT OF THE CENTER, MAKE REPAIRS IMMEDIATELY.
 - REMOVE ACCUMULATED SEDIMENT FROM THE UPSTREAM SIDE OF THE SEDIMENT TUBE WHEN THE SEDIMENT HAS REACHED A HEIGHT OF APPROXIMATELY ONE-THIRD OF THE EXPOSED HEIGHT OF THE TUBE (MEASURED AT THE CENTER).
 - ACCUMULATED SEDIMENT SHOULD BE REMOVED PRIOR TO REMOVING SEDIMENT TUBES.
 - SEDIMENT TUBE REMOVAL SHOULD BE COMPLETED ONLY AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN COMPLETELY STABILIZED. PERMANENT VEGETATION SHOULD REPLACE AREAS FROM WHICH GRAVEL, STONE, SEDIMENT TUBES, OR OTHER MATERIALS HAVE BEEN REMOVED.

SILT FENCE NOTES:

- WHEN AND WHERE TO USE IT:** SILT FENCE IS APPLICABLE TO AREAS:
 - WHERE THE MAXIMUM SHEET OR OVERLAND FLOW PATH LENGTH TO THE FENCE IS 100 FEET.
 - WHERE THE MAXIMUM SLOPE STEEPNESS (NORMAL [PERPENDICULAR] TO FENCE LINE) IS 2H:1V.
 - THAT DO NOT RECEIVE CONCENTRATED FLOWS GREATER THAN 0.5 CFS.
 - DO NOT PLACE SILT FENCE ACROSS CHANNELS OR USE IT AS A VELOCITY CONTROL BEST MANAGEMENT PRACTICE (BMP).
 - THE CONTRACTOR SHALL INSTALL SILT FENCE ALONG THE DOWNSTREAM SIDE OF ALL CONSTRUCTION ACTIVITIES WHETHER SHOWN ON THE DRAWINGS OR NOT.
 - THE SILT FENCES SHALL BE INSTALLED PRIOR TO ANY WORK INCLUDING CLEARING.
- MATERIALS:**
 - STEEL POSTS MINIMUM PHYSICAL REQUIREMENTS:
 - COMPOSED OF HIGH STRENGTH STEEL WITH MINIMUM YIELD STRENGTH OF 50,000 PSI.
 - STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-IN AND NOMINAL "T" LENGTH OF 1.48-IN.
 - WEIGH 1.25 POUNDS PER FOOT (8%).
 - HAVE A SOIL STABILIZATION PLATE AS DESCRIBED IN (B) BELOW.
 - PAINTED WITH A WATER BASED BAKED ENAMEL PAINT.
 - HAVE A MINIMUM LENGTH OF 4 FEET, WITH PROJECTIONS TO AID IN FASTENING THE FABRIC.
 - THE SOIL PLATES MINIMUM PHYSICAL REQUIREMENTS:
 - COMPOSED OF MINIMUM 15 GAUGE STEEL.
 - HAVE A MINIMUM CROSS SECTION AREA OF 17-SQ INCH, AND BE SECURELY WELDED TO THE POST.
 - GEOTEXTILE FILTER FABRIC:
 - COMPOSED OF FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS COMPOSED OF AT LEAST 85% BY WEIGHT OF POLYOLEFINS, POLYESTERS, OR POLYAMIDES. FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, FREE OF ANY TREATMENT OR COATING WHICH MIGHT ADVERSELY ALTER ITS PHYSICAL PROPERTIES AFTER INSTALLATION. FREE OF DEFECTS OR FLAWS THAT SIGNIFICANTLY AFFECT ITS PHYSICAL AND/OR FILTERING PROPERTIES. CUT TO A MINIMUM WIDTH OF 36 INCHES.
 - FABRIC SHALL BE BACKED BY A 6"X8" MESH WIRE FABRIC.
 - USE ONLY FABRIC APPEARING ON SCDOT APPROVAL SHEET #34 MEETING THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
- INSPECTION AND MAINTENANCE**
 - THE CONTRACTOR SHALL PROTECT AGAINST SOIL EROSION INTO NEARBY STREAMS AND STORM DRAINS AT ALL TIMES.
 - SILT FENCE SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK AND AFTER EVERY STORM EVENT. IF THE PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INAPPROPRIATELY OR INCORRECTLY INSTALLED, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.
 - CHECK FOR SEDIMENT BUILDUP AND FENCE INTEGRITY.
 - CHECK AREAS WHERE RUNOFF HAS ERODED A CHANNEL BENEATH THE FENCE, OR WHERE THE FENCE HAS SAGGED OR COLLAPSED FROM STORM WATER OVERTOPPING.
 - SHOULD THE FENCE FABRIC TEAR, BEGINS TO DECOMPOSE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE SECTION OF FENCE IMMEDIATELY.
 - REMOVE SEDIMENT ACCUMULATED ALONG THE FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE, ESPECIALLY IF HEAVY RAINS ARE EXPECTED.
 - REMOVE TRAPPED SEDIMENT FROM THE SITE OR STABILIZE IT ON SITE.
 - REMOVE SILT FENCE WITHIN 30 DAYS AFTER FINAL STABILIZATION IS ACHIEVED OR AFTER TEMPORARY BMP'S ARE NO LONGER NEEDED.
 - PERMANENTLY STABILIZE AREAS DISTURBED FROM SILT FENCE REMOVAL.

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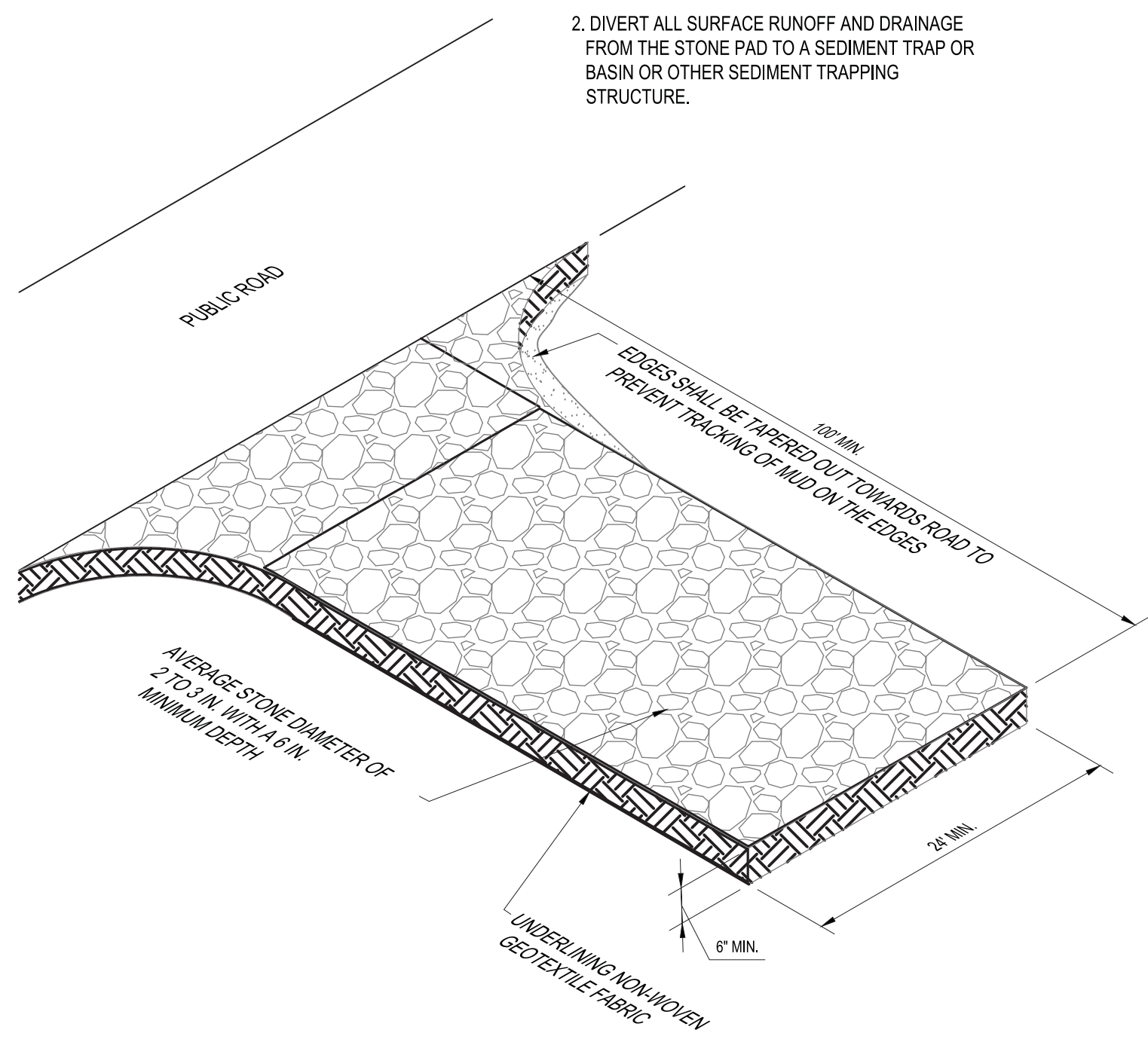
TOWN OF SMOAKS
SMOAKS, SC
WATER SYSTEM IMPROVEMENTS

EROSION CONTROL DETAILS
SHEET 1 OF 3

DATE	BY	DATE	BY	DATE	BY	DATE	BY
13486.00	CS						
AUGUST 2017	CS						
DATE	BY	DATE	BY	DATE	BY	DATE	BY
13486.00	CS						
AUGUST 2017	CS						

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PAGE 21 OF 24

NOTE:
 1. INSTALL CULVERT PIPE ACROSS THE ENTRANCE WHEN NEEDED TO PROVIDE POSITIVE DRAINAGE.
 2. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN OR OTHER SEDIMENT TRAPPING STRUCTURE.



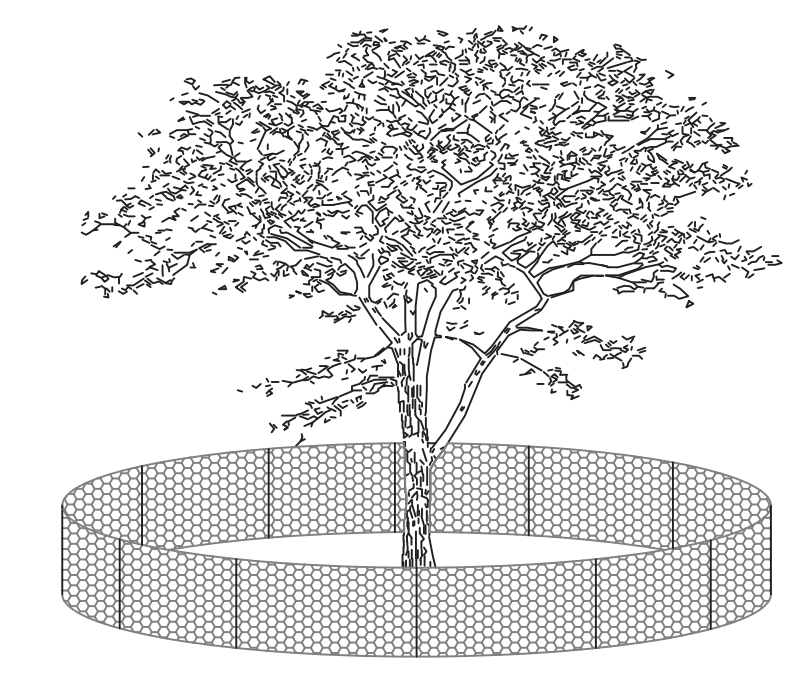
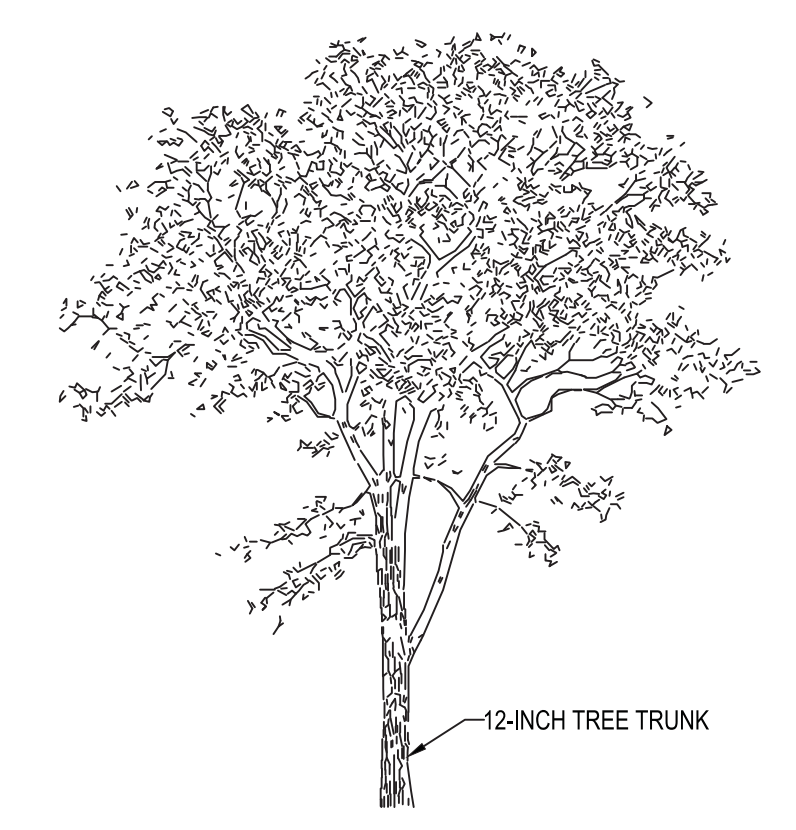
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CONSTRUCTION ENTRANCE NOTES:

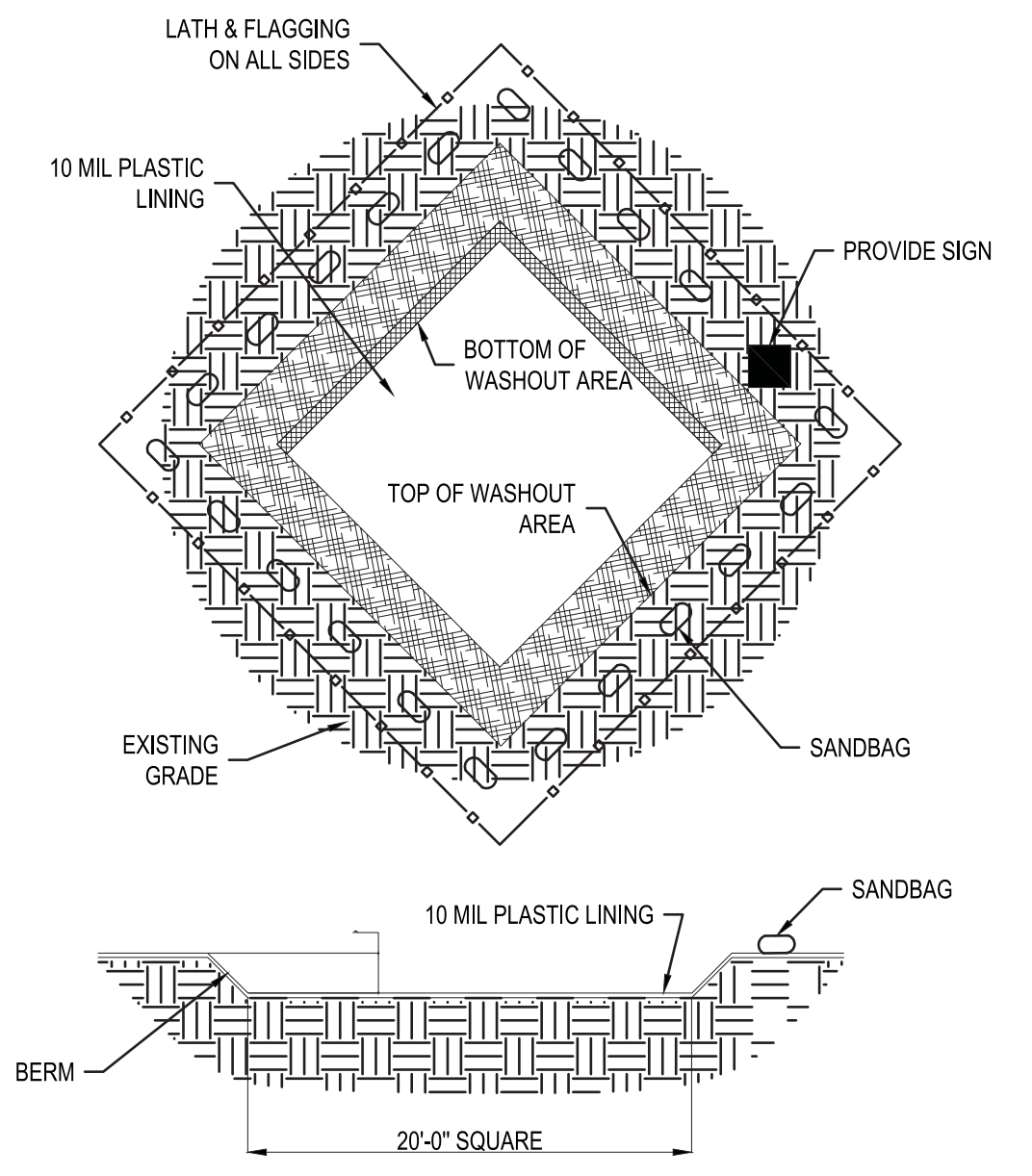
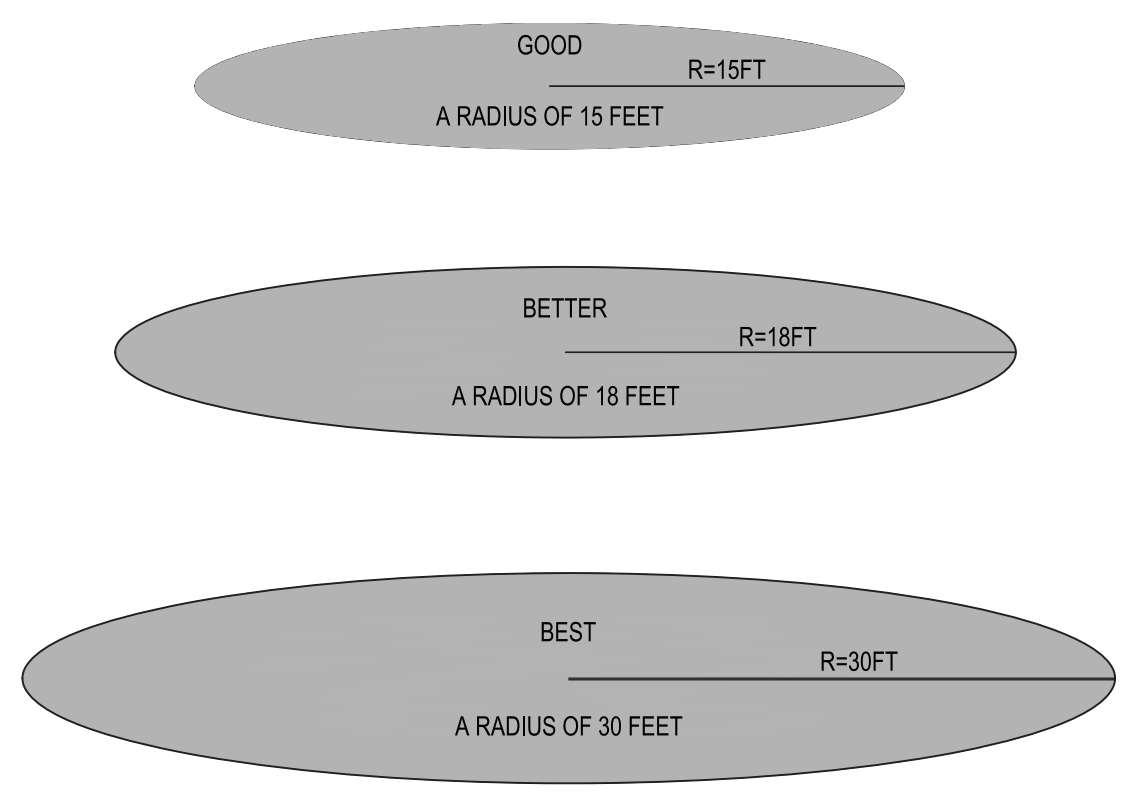
- WHEN AND WHERE TO USE IT
 STABILIZED CONSTRUCTION ENTRANCES SHOULD BE USED AT ALL POINTS WHERE CONSTRUCTION TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD.
- IMPORTANT CONSIDERATIONS
 A. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF SITE. WASH DOWN FACILITIES SHALL BE REQUIRED AS DIRECTED BY SCDHEC AS NEEDED. WASH DOWN AREAS IN GENERAL MUST BE ESTABLISHED WITH CRUSHED GRAVEL AND DRAIN INTO A SEDIMENT TRAP OR SEDIMENT BASIN.
 B. CONSTRUCTION ENTRANCES SHOULD BE USED IN CONJUNCTION WITH THE STABILIZATION OF CONSTRUCTION ROADS TO REDUCE THE AMOUNT OF MUD PICKED UP BY VEHICLES.
- MATERIAL
 A. THE ENTRANCE SHALL CONSIST OF 2-INCH TO 3-INCH D50 STONE AT A MINIMUM DEPTH OF 6-INCHES.
 B. MINIMUM DIMENSIONS OF THE ENTRANCE SHALL BE 24-FOOT WIDE BY 100-FOOT LONG. THE DIMENSION MAY BE INCREASED AS NECESSARY TO ACCOMMODATE SITE CONDITIONS.
 C. THE EDGES OF THE ENTRANCE SHALL BE TAPERED OUT TOWARDS THE ROAD TO PREVENT TRACKING OF MUD AT THE EDGE OF THE ENTRANCE.
- INSTALLATION
 A. REMOVE ALL VEGETATION AND ANY OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA.
 B. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM STONES TO A SEDIMENT TRAP OR BASIN.
 C. INSTALL A NON-WOVEN GEOTEXTILE FABRIC PRIOR TO PLACING STONE.
 D. INSTALL A CULVERT PIPE ACROSS THE ENTRANCE WHEN NEEDED TO PROVIDE POSITIVE DRAINAGE.
- INSPECTION AND MAINTENANCE
 A. STABILIZED ENTRANCE SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK AND AFTER STORM EVENTS. IF THE PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INAPPROPRIATELY OR INCORRECTLY INSTALLED, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.
 B. RESHAPE THE STONE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.
 C. WASH OR REPLACE STONES AS NEEDED AND AS DIRECTED BY INSPECTOR. THE STONE IN THE ENTRANCE SHOULD BE WASHED OR REPLACED WHENEVER THE ENTRANCE FAILS TO REDUCE MUD BEING CARRIED OFF-SITE BY VEHICLES. FREQUENT WASHING WILL EXTEND USEFUL LIFE OF STONE.
 D. IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY BRUSHING OR SWEEPING. FLUSHING SHOULD ONLY BE USED WHEN THE WATER CAN BE DISCHARGED TO A SEDIMENT TRAP OR BASIN.
 E. REPAIR ANY BROKEN OR DAMAGED ROADWAY PAVEMENT IMMEDIATELY.

MATURE TREE PROTECTION ZONE RADIUS

TRUNK DIAMETER	GOOD PROTECTION	BETTER PROTECTION	BEST PROTECTION
8-INCHES	10 FEET	12 FEET	20 FEET
12-INCHES	15 FEET	18 FEET	30 FEET
16-INCHES	20 FEET	24 FEET	40 FEET
20-INCHES	25 FEET	30 FEET	50 FEET



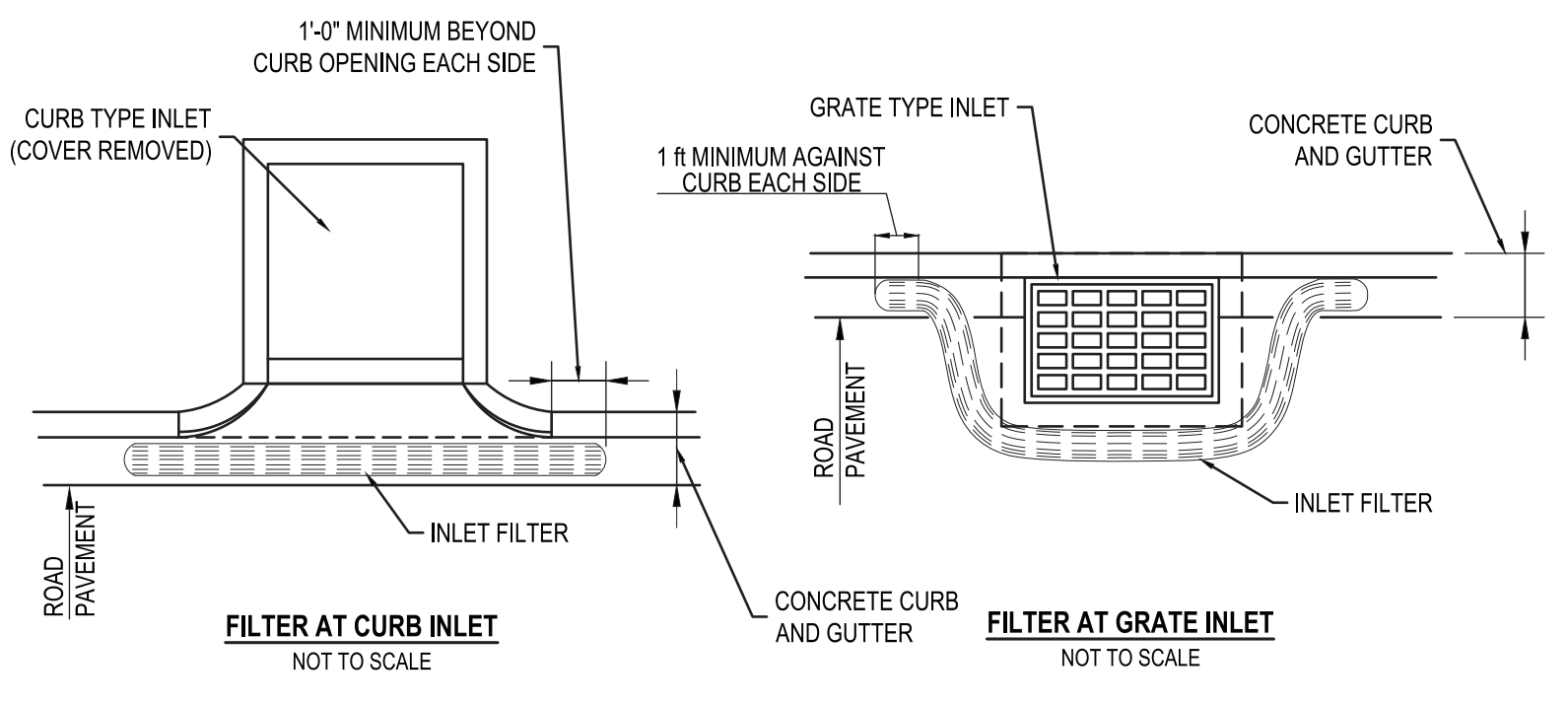
MATURE TREE PROTECTION DETAIL
 SCHEMATIC



CONCRETE TRUCK WASHOUT:

- DO NOT DISPOSE OF TRUCK WASHOUT BY DUMPING INTO A SANITARY SEWER, STORM DRAIN OR ONTO SOIL OR PAVEMENT THAT CARRIES STORMWATER RUNOFF. WASHOUT AREA SHALL BE LOCATED AT A MIN. OF 50 FT FROM ANY STORM DRAIN OR WATERCOURSE UNLESS DETERMINED FEASIBLE BY THE ENGINEER.
 - THE WASHOUT FROM A CONCRETE TRUCK SHOULD BE DISPOSED OF INTO:
 - A DESIGNATED AREA THAT WILL LATER BE BACKFILLED; A SLURRY PIT.
 - AN AREA WHERE THE CONCRETE WASH CAN HARDEN, BE BROKEN UP AND THEN DISPOSED OF AS SOLID WASTE PER SOLID WASTE MANAGEMENT
 - A LOCATION WHICH IS NOT SUBJECT TO SURFACE WATER RUNOFF, AND MORE THAN 50-FOET AWAY FROM A STORM DRAIN, OPEN DITCH, OR RECEIVING WATER.
 - PUMP EXCESS CONCRETE IN CONCRETE PUMP BIN BACK INTO CONCRETE MIXER TRUCK.
 - CONCRETE WASHOUT FROM CONCRETE PUMPER BINS CAN BE WASHED INTO CONCRETE PUMPER TRUCKS AND DISCHARGED INTO DESIGNATED WASHOUT AREA OR PROPERLY DISPOSED OFFSITE.
 - PROVIDE A SIGN IDENTIFYING THE WASHOUT AREA.
 - A BERMED AREA SHALL BE CONSTRUCTED OF SUFFICIENT VOLUME TO COMPLETELY CONTAIN ALL LIQUID AND WASTE GENERATED BY WASHOUT PROCEDURES.
- INSPECTION AND MAINTENANCE:
- MONITOR EMPLOYEES AND SUBCONTRACTORS THROUGHOUT THE DURATION OF THE CONSTRUCTION PROJECT TO ENSURE APPROPRIATE PRACTICES ARE BEING IMPLEMENTED.
 - INSPECT WASHOUT SUMP REGULARLY AND REMOVE LIQUIDS AND SEDIMENT AS NEEDED.
 - WHEN WASHOUT AREA REACHES 75% FULL, THE AREA SHALL BE CLEANED OR NEW FACILITIES SHOULD BE CONSTRUCTED.

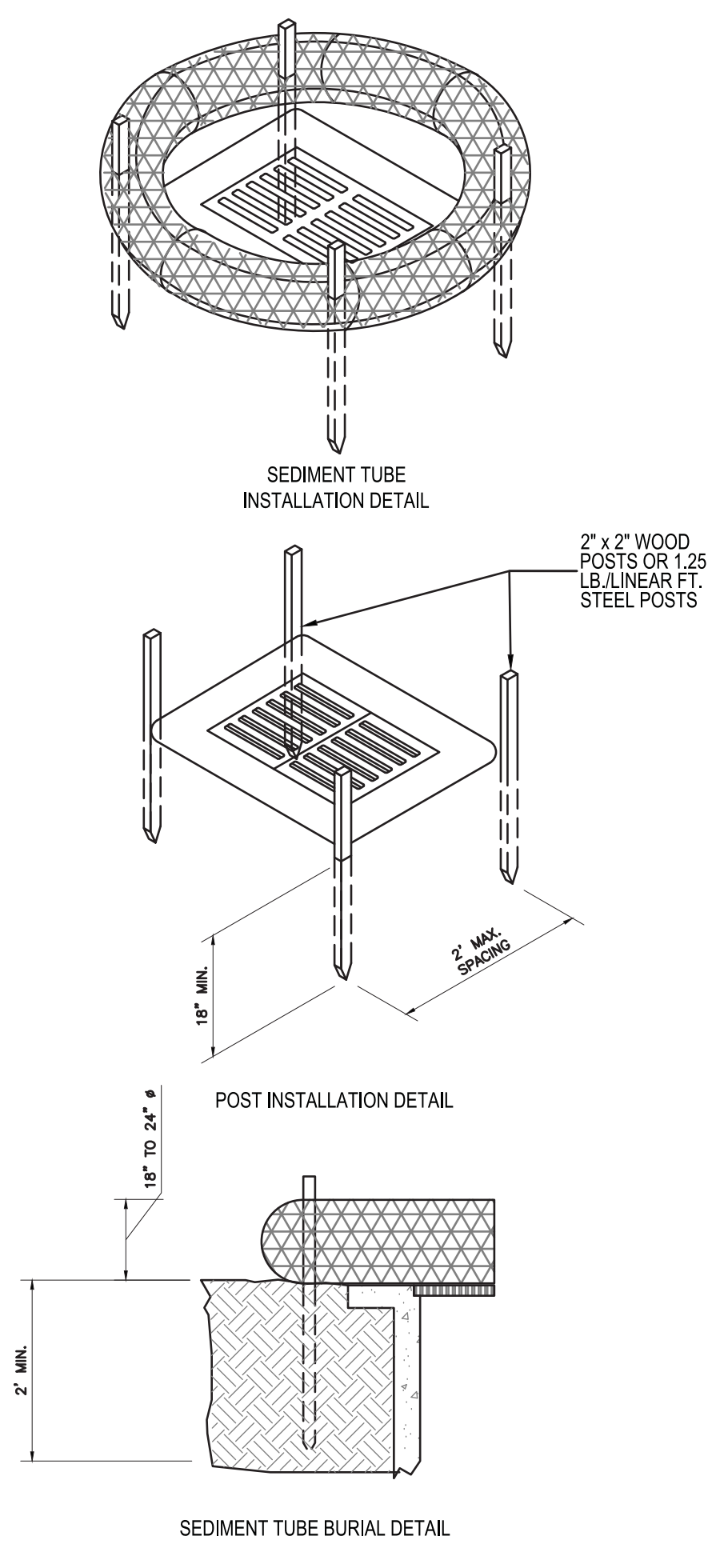
CONCRETE WASHOUT DETAIL
 NO SCALE



TYPE E - SURFACE COURSE CURB INLET FILTERS

- MATERIALS:
 - ONLY USE SURFACE COURSE INLET FILTERS THAT HAVE A MINIMUM HEIGHT OR DIAMETER OF 9 INCHES AND HAVE A MINIMUM LENGTH THAT IS 2 FEET LONGER THAN THE LENGTH OF THE CURB OPENING.
 - SURFACE COURSE INLET FILTERS SHALL BE CONSTRUCTED WITH A SYNTHETIC MATERIAL THAT WILL ALLOW STORM WATER TO FREELY FLOW THROUGH WHILE TRAPPING SEDIMENT AND DEBRIS.
 - THE GEOTEXTILE SHALL BE NON-BIODEGRADABLE AND RESISTANT TO DEGRADATION BY ULTRAVIOLET EXPOSURE AND RESISTANT TO CONTAMINANTS COMMONLY ENCOUNTERED IN STORM WATER.
 - STRAW, STRAW FIBER, STRAW BALES, PINE NEEDLES AND LEAF MULCH SHALL NOT BE USED AS FILTER MATERIALS.
 - SURFACE COURSE INLET FILTERS SHALL HAVE AGGREGATE COMPARTMENTS FOR STONE, SAND OR OTHER WEIGHTED MATERIALS OR MECHANISMS TO HOLD THE UNIT IN PLACE.
 - USE FILTER FABRIC THAT IS CAPABLE OF REDUCING EFFLUENT CONCENTRATIONS BY NO LESS THAN 80% UNDER TYPICAL SEDIMENT MIGRATION CONDITIONS.
 - APPLICABLE TYPE E INLET FILTERS MAY BE SELECTED FROM THE SCDOT APPROVED PRODUCTS LIST.
- INSTALLATION:
 - TYPE E SURFACE COURSE INLET FILTERS ARE APPLICABLE FOR ROAD INLETS AFTER THE ROAD SURFACE IS PLACED. PLACE A SURFACE COURSE INLET FILTER AT EACH ROADSIDE INLET.
 - FILL THE AGGREGATE COMPARTMENT TO A LEVEL (AT LEAST 1/2 FULL) THAT WILL KEEP THE SURFACE COURSE INLET FILTER IN PLACE AND CREATE A SEAL BETWEEN THE INLET FILTER AND THE ROAD SURFACE.
 - INSTALL SURFACE COURSE INLET FILTERS IN A MANNER TO ALLOW OVERFLOWS TO ENTER THE INLET. DO NOT COMPLETELY BLOCK THE INLET OPENING WITH THE INLET FILTER.
- INSPECTION AND MAINTENANCE:
 - INLET PROTECTION SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS. SHOULD THE INSPECTION NOTED IDENTIFY BMPs ARE NOT OPERATING EFFECTIVELY, MAINTENANCE SHALL BE PERFORMED AS SOON AS PRACTICAL OR AS REASONABLY POSSIBLE AND BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE.
 - REPAIR ANY DAMAGE TO THE FILTER IMMEDIATELY AFTER EACH INSPECTION.
 - PONDING IS LIKELY IF SEDIMENT IS NOT REMOVED REGULARLY.
 - CLEAN THE SURFACE COURSE CURB INLET FILTER IF A VISUAL INSPECTION SHOWS SILT AND DEBRIS BUILD UP AROUND THE FILTER.

TYPE "E" INLET PROTECTION (SURFACE COURSE INLET FILTER)
 NO SCALE



TYPE "A" SEDIMENT TUBE INLET PROTECTION
 NO SCALE

SEDIMENT TUBE INLET PROTECTION

GENERAL NOTES:

- SEDIMENT TUBES ARE ELONGATED TUBES OF COMPACTED GEOTEXTILES, CURLED EXCELSIOR WOOD, NATURAL COCONUT FIBER, OR HARDWOOD MULCH, STRAW, PINE NEEDLE, AND LEAF MULCH-FILLED SEDIMENT TUBES ARE NOT PERMITTED.
- THE OUTER NETTING OF THE SEDIMENT TUBE SHOULD CONSIST OF SEAMLESS, HIGH-DENSITY POLYETHYLENE PHOTODEGRADABLE MATERIALS TREATED WITH ULTRAVIOLET STABILIZERS OR A SEAMLESS, HIGH DENSITY POLYETHYLENE NON-DEGRADABLE MATERIAL.
- SEDIMENT TUBE DIAMETERS SHALL RANGE FROM 18-INCHES TO 24-INCHES. SEDIMENT TUBES WITH SMALLER DIAMETERS ARE PROHIBITED WHEN USED AS INLET PROTECTION.
- CURLED EXCELSIOR WOOD, OR NATURAL COCONUT PRODUCTS THAT ARE ROLLED UP TO CREATE A SEDIMENT TUBE ARE NOT ALLOWED.
- SEDIMENT TUBES SHOULD BE STAKED USING WOODEN OAK STAKES (2-INCH x 2-INCH) OR STEEL POSTS (STANDARD "U" OR "T" SECTIONS WITH A MINIMUM WEIGHT OF 1.25 POUNDS PER FOOT) AT A MINIMUM OF 48-INCHES IN LENGTH PLACED ON 2-FOOT CENTERS.
- INSTALL ALL SEDIMENT TUBES TO ENSURE THAT NO GAPS EXIST BETWEEN THE SOIL AND THE BOTTOM OF THE TUBE. MANUFACTURER'S RECOMMENDATIONS SHOULD ALWAYS BE CONSULTED BEFORE INSTALLATION.
- THE ENDS OF ADJACENT SEDIMENT TUBES SHOULD BE OVERLAPPED 6-INCHES TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE JOINT.
- SEDIMENT TUBES SHOULD NOT BE STACKED ON TOP OF ANOTHER.
- EACH SEDIMENT TUBE SHOULD BE INSTALLED IN A TRENCH WITH A DEPTH EQUAL TO 1/2 THE DIAMETER OF THE SEDIMENT TUBE.
- INSTALL STAKES AT A DIAGONAL FACING INCOMING RUNOFF.

INSPECTION AND MAINTENANCE:

- THE KEY TO FUNCTIONAL INLET PROTECTION IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.
- REGULAR INSPECTIONS OF SEDIMENT TUBE INLET PROTECTION SHALL BE CONDUCTED ONCE EVERY CALENDAR WEEK AND, AS RECOMMENDED, WITHIN 24-HOURS AFTER EACH RAINFALL EVEN THAT PRODUCES 1/2-INCH OR MORE OF PRECIPITATION.
- ATTENTION TO SEDIMENT ACCUMULATIONS IN FRONT OF THE SEDIMENT TUBE IS EXTREMELY IMPORTANT. ACCUMULATED SEDIMENT SHOULD BE CONTINUALLY MONITORED AND REMOVED WHEN NECESSARY.
- REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES 1/2 THE HEIGHT OF THE SEDIMENT TUBE. WHEN A SUMP IS INSTALLED IN FRONT OF THE INLET PROTECTION, SEDIMENT SHALL BE REMOVED WHEN IT FILLS APPROXIMATELY 1/2 OF THE DEPTH OF THE SUMP.
- REMOVED SEDIMENT SHALL BE PLACED IN STOCKPILE STORAGE AREAS OR SPREAD THINLY ACROSS DISTURBED AREA. STABILIZE THE REMOVED SEDIMENT AFTER IT IS RELOCATED.
- LARGE DEBRIS, TRASH, AND LEAVES SHOULD BE REMOVED FROM IN FRONT OF TUBES WHEN FOUND.
- INLET PROTECTION STRUCTURES SHOULD BE REMOVED AFTER THE DISTURBED AREAS ARE PERMANENTLY STABILIZED. REMOVE ALL CONSTRUCTION MATERIAL AND SEDIMENT. DISPOSE OF THEM PROPERLY. GRADE THE DISTURBED AREA TO THE ELEVATION OF THE DROP INLET STRUCTURE CREST. STABILIZE ALL BARE AREAS IMMEDIATELY.



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TOWN OF SMOAKS
 SMOAKS, SC
 PROJECT TITLE
WATER SYSTEM IMPROVEMENTS

EROSION CONTROL DETAILS
 SHEET 2 OF 3

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 PAGE 22 OF 24

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