

ALBEMARLE COUNTY SERVICE AUTHORITY

168 SPOTNAP ROAD
CHARLOTTESVILLE, VIRGINIA 22911



PROJECT MANUAL for Briarwood Water Main Replacement

Project Number: 2021-01

March 2025



4435 Waterfront Drive
Suite 205
Glen Allen, Virginia 23060

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**CONTRACT DOCUMENTS for
BRIARWOOD WATER MAIN REPLACEMENT**

Project Number: 2021-01



ALBEMARLE COUNTY SERVICE AUTHORITY
168 SPOTNAP ROAD
Charlottesville, Virginia 22911
Tel. (434) 977-4511
Fax (434) 979-0698

March 2025



Mar-07-2025

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ALBEMARLE COUNTY SERVICE AUTHORITY
PROJECT NUMBER 2021-01
BRIARWOOD WATER MAIN REPLACEMENT
ADVERTISEMENT FOR BIDS

The Albemarle County Service Authority (ACSA) is seeking proposals from qualified contractors to furnish and install approximately 5,900 linear feet of 4-inch through 8-inch zinc-coated ductile iron pipe (DIP) with V-Bio enhanced polyethylene encasement. Appurtenant work shall include crosses, bends, tees, sleeves, caps, plugs or other fittings; valves and valve boxes; hydrants; interconnections; water meters and meter boxes; water services and re-connections; sewer manhole frame and covers in asphalt roads, and other miscellaneous work. Project also includes abandonment of existing water mains, including an existing 10" diameter main, and restoration of the associated roads and surfaces disturbed during construction; and all other Work as shown on the Contract Documents. Proposals will be received at the office of the ACSA, 168 Spotnap Road, Charlottesville, Virginia 22911 until 2:00 p.m., local prevailing time, on Tuesday, April 8, 2025. At 2:30 p.m., April 8, the bids will be opened and read aloud by live streaming video.

A non-mandatory virtual Pre-Bid Conference will be held at 2:00 p. m., local prevailing time, on Thursday, March 27, 2025. Internet links to the virtual Pre-Bid Conference, Bid Opening and other pertinent project information can be found at:

<https://serviceauthority.org/briarwood-wmrp/>. (or <https://serviceauthority.org/>)

Bid Documents consisting of the Contract Drawings and Project Manual (PDF) are available for download FREE OF CHARGE from the ACSA at the website linked above. It shall be solely the Bidder's responsibility to ensure receipt of all issued documents relative to this solicitation, prior to submitting a Bid.

All bids shall be accompanied by a bid guarantee in the form of a bid bond, certified check, or cash escrow in an amount equal to five percent (5%) of the bid.

Electronic/digital bids will be accepted via e-VA website; it is important for electronic bids to include all documents required for a responsive bid; see Instructions to Bidders and General Terms, D. Receipt of Bids.

Bidders must be Class A licensed contractors in the Commonwealth of Virginia in accordance with requirements of Title 54.1, Chapter 11, of the Code of Virginia (1950), as amended. The procedure for withdrawal of bids shall be according to Virginia Code Section 2.2-4330.

Bidders on this work will be required to comply with Executive Orders concerning nondiscrimination in employment and maintaining a drug free workplace.

Albemarle County Service Authority
Jeremy M. Lynn, P.E.
Director of Engineering

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INSTRUCTIONS TO BIDDERS AND GENERAL TERMS

A. General

1. **CONTACT INFORMATION:** Questions concerning the project should be addressed to the following:

John E. Anderson, PE
Albemarle County Service Authority
168 Spotnap Road
Charlottesville, Virginia 22911
(434) 977-4511
janderson@serviceauthority.org
2. **COMPETITION INTENDED:** It is the ACSA's intent that this solicitation permit competition. It shall be the bidder's responsibility to advise the ACSA in writing if any language, requirement, specification, etc., or any combination thereof, stifles competition or inadvertently restricts or limits the requirements stated in this solicitation to a single source. The ACSA must receive such notification not later than five (5) business days prior to the deadline set for acceptance of the bids.
3. **TAX EXEMPTION:** The ACSA is exempt from the payment of any federal excise or any Virginia sales tax. The price bid must be net, exclusive of taxes. Tax exemption certificates will be furnished, if requested by the successful bidder.
4. **AVAILABILITY OF FUNDS:** It is understood and agreed between the contractor and the ACSA that the ACSA shall be bound hereunder only to the extent of the funds available or which hereafter become available for the purpose of the contract.
5. **PRECEDENCE OF TERMS:** In the event there is a conflict between any of the following sections: the Instructions to Bidders and General Terms, Standard General Conditions and the ACSA Supplementary Conditions, the ACSA Supplementary Conditions shall first apply, followed by the Instructions to Bidders and General Terms and then the Standard General Conditions.
6. **NONDISCRIMINATION OF CONTRACTORS:** A bidder, offeror, or contractor shall not be discriminated against in the solicitations or award of this contract because of race, religion, color, sex, national origin, age or disability.
7. **APPLICABLE LAW AND COURTS:** Any contract resulting from this solicitation shall be governed in any respects by the laws of Virginia, and any litigation with respect thereto shall be brought in the Circuit Court or General District Court of Albemarle County, Virginia. The contractor shall comply with applicable federal, state, and local laws and regulations.

B. Qualifications

1. **STATE REGISTRATION OF CONTRACTORS:** Attention is directed to Chapter 11, Title 54.1 of the Code of Virginia (Re: State registration of contractors), which requires that all bidders must show evidence of the proper license under the provision of this chapter before such bid is considered.
2. **DEBARMENT STATUS:** By submitting their bids, bidders certify that they are not currently debarred by the ACSA, the Commonwealth of Virginia, the Federal Government, any local government or government agency/entity/authority from submitting bids or proposals on

contracts for the type of goods and/or services covered by this solicitation, nor are they an agent of any person or entity that is currently so debarred.

3. **ETHICS IN PUBLIC CONTRACTING:** The provisions contained in Sections 2.2-4367 through 2.2-4377, Code of Virginia, as amended, shall be applicable to all contracts solicited or entered into by the ACSA. By submitting their bids, all bidders certify that their bids are made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other bidder, supplier, manufacturer or subcontractor in connection with their bid, and that they have not conferred on any public employee having official responsibility for this procurement, transaction of any payment, loan, subscription, advance, deposit of money, services or anything of more than normal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

The bidder certifies that to the best of their knowledge, no employee of the ACSA, nor any member thereof, nor any public agency or official impacted by the solicitation or resulting contract has any pecuniary interest in the business of the bidder, and that no person associated with the bidder has any interest that would conflict in any manner with the performance of the contract resulting from this solicitation.

4. **IMMIGRATION REFORM AND CONTROL ACT OF 1986:** By submitting their bids, the bidders certify that they do not and will not, during the performance of this contract, employ illegal alien workers or otherwise violate the provisions of the federal Immigration Reform and Control Act of 1986, as amended.
5. **ANTI-TRUST:** By entering into a contract, the contractor conveys, sells, assigns, and transfers to the ACSA all rights, title and interest in and to all causes of the action it may now have or hereafter acquire under the antitrust law of the United States and Albemarle County, relating to the particular goods or services purchased or acquired by the ACSA under said contract. Consistent and continued tie bidding could cause rejection of bids by the ACSA and/or investigation for Anti-Trust violations.
6. **ANTI-DISCRIMINATION:** By submitting their bid, bidders certify to the ACSA that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and Code of Virginia § 2.2-4311, as amended. If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, they shall be subject to audit by the public body. (Code of Virginia § 2.2-4343.1.E).
7. **DRUG-FREE WORKPLACE:** During the performance of this contract, the contractor agrees to (i) provide a drug-free workplace for the contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing

clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

8. RESPONSIBLE LAND DISTURBER: The contractor will be required to have on staff, and assigned to this project, a Responsible Land Disturber (RLD) in accordance with the Contract Documents, and the provisions set forth in the Virginia Erosion and Sediment Control (ESC) Program, established by revisions to the Virginia Erosion and Sediment Control Law (Title 10.1, Chapter 5, Article 4 of the Code of Virginia). Proof of certification for the RLD is not required as a part of the bid package; however, this information may be requested at a later date during the bid evaluation phase.

C. Bid Period

1. BRAND NAME OR EQUAL ITEMS: Unless otherwise provided in the solicitation, the name of a certain brand, make or manufacturer does not restrict bidders to the specific brand, make or manufacturer named; it conveys the general style, type, character, and quality of the article desired. Any article which the ACSA, in its sole discretion determines to be the equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, may be accepted. The bidder is responsible to clearly and specifically indicate the product being offered and to provide sufficient descriptive literature, catalog cuts and technical detail to enable the ACSA to determine if the product offered meets the requirements of the solicitation.
2. FORMAL SPECIFICATIONS: When a solicitation contains a specification which states no substitutes, no deviation therefrom will be permitted and the bidder will be required to furnish articles in conformity with that specification.
3. OMISSIONS & DISCREPANCIES: Any items or parts of any equipment or materials listed in this solicitation which are not fully described or are omitted from such specification, and which are clearly necessary for the completion of such equipment or material and its appurtenances, shall be considered a part of such equipment or material although not directly specified or called for in the specifications. The bidder shall abide by and comply with the true intent of the specifications and not take advantage of any unintentional error or omission, but shall fully complete every part as the true intent and meaning of the specifications and drawings. Whenever the mention is made of any articles, material or workmanship to be in accordance with laws, ordinances, building codes, underwriter's codes, AWWA regulations, A.S.T.M. regulations or similar expressions, the requirements of these laws, ordinances, etc., shall be construed as to the minimum requirements of these specifications.
4. EQUIPMENT AND MATERIAL STANDARDS: Any equipment and material delivered shall be standard new equipment and material, latest model, the best quality, and the highest grade work, except as otherwise specifically stated in the bid. Any part of nominal appurtenances which are usually provided in the manufacturer's stock model shall be furnished.
5. BIDDERS INTERESTED IN MORE THAN ONE BID: If more than one bid is offered by any one party, either directly or by or in the name of their clerk, partner, or other persons, all such bids

may be rejected. A party who has quoted prices on work, materials, or supplies to a bidder is not thereby disqualified from quoting prices to other bidders or firms submitting a bid directly for the work, materials or supplies.

D. Receipt of Bids

1. Sealed bids for the Briarwood Water Main Replacement Project (ACSA Project Number 2021-01) will be received by the Albemarle County Service Authority, at the office of the ACSA, 168 Spotnap Road, Charlottesville, Virginia, until 2:00 p.m., local prevailing time on April 8, 2025.

The signed bid and requested documents shall be submitted in a sealed envelope and identified with the following information:

- a. Bidder's name and complete mailing address
 - b. Contract number and title of project
 - c. Bid due date and time
2. OPENING: At the time fixed for the opening of responses to a bid, all bids will be opened and the names of the bidders and the amount bid shall be read aloud and made readily available to the public.

The bid package **must** include the following items and be signed by the individual signing the Bid Form; all signatures shall be in ink:

- a. A completed, signed, Bid Form, Section 00400 of these Contract Documents, including unit prices, if required, for performing the complete scope of work in accordance with these documents. The Contractor's Virginia license number will be required as a part of the bid package.
- b. A bid bond, a certified check upon a solvent bank or trust company, made payable to the order of the Albemarle County Service Authority, or cash escrow in the amount of five percent of the total bid price submitted.
- c. Completed Receipt of Addenda form, Section 00490 of these Contract Documents.
- d. Any additional information required.

The Qualification Statement (Section 00431) and Contractor's Financial Statement (Section 00432) may be required by the ACSA after receipt of Bids but are not required as a part of the bid package. A statement as to available machinery and equipment to undertake the work may also be requested.

3. NO CONTACT POLICY: No bidder shall initiate contact related to the solicitation with any ACSA employee, after the date and time established for receipt of bids. Any contact initiated by a bidder with any ACSA representative, concerning this solicitation, is prohibited and may cause the disqualification of the bidder from this procurement process.
4. USE OF ACSA BID FORM AND TERMS AND CONDITIONS: Failure to submit a solicitation on the official ACSA Bid Form provided for that purpose, or unauthorized modification of or additions to any portion of the solicitation documents, may be a cause for rejection of the bid. The ACSA reserves the right to decide, on a case-by-case basis, in its sole discretion, whether to reject any bid which has been modified. The ACSA shall not be responsible for any errors or omissions of the bidder. The Bid Form shall be signed by a representative authorized to legally bind the firm. Claims, as a result of failure to inspect the job site, shall not be considered by the ACSA.

The bidder shall fully complete the Bid Form in the manner indicated. All prices shall be entered in ink; and all changes in prices made by the bidder after the original entry shall also be made in ink, and the bidder shall initial such changes.

The bidder must sign the Bid Form correctly and legibly; and the bidder shall state their interest, title, or office in the company or firm submitting the bid. If the bid should be made by an individual, the name and address of the organization, and the full name of the individual, shall be shown; if made by a firm or partnership, the name and address of the organization, and the full names of each partner or person holding interest in the firm, shall be shown; and if made by a corporation, the name and address of the corporation, and the full names of the officers of the corporation shall be shown.

5. LATE BIDS: No bid will be received after the time specified for receipt of the bids. Bids received after the time specified shall be returned unopened.

The ACSA is not responsible for delays in the delivery of the mail by the U.S. Postal Service, private carriers or the inter-office mail system. It is the sole responsibility of the bidder to ensure their bid reaches the designated location by the date and hour specified.

6. WITHDRAWAL OF BIDS: A bidder for a contract other than for public construction may request withdrawal of their bid under the following circumstances:

- a. Bids received at the address shown in the solicitation, prior to the time of acceptance, may be withdrawn on written request from the bidder.
- b. No bid may be withdrawn after the time set for opening of bids has passed, except as provided for by the Code of Virginia, Chapter 43, Title 2.2, Section 4330, as amended, and in manner prescribed in the aforesaid Section 11.54, as amended. The ACSA reserves the right to hold the bids for a period of 90 days after the date set for receipt of bids.
- c. Bids shall not be withdrawn after award of a contract. No plea or claim of mistake in a solicitation or resulting contract shall be available as a defense in any legal proceeding.

No bid may be withdrawn when the result would be the awarding of the contract on another bid from the same bidder or of another bidder in which the ownership of the withdrawing bidder is more than five percent. If a bid is withdrawn, the lowest remaining bid shall be deemed to be the low bid. No bidder who is permitted to withdraw a bid shall, for compensation, supply any material or labor to, or perform any subcontract or other work agreement for the person or firm to whom the contract is awarded; or otherwise benefit, directly or indirectly, from the performance of the project for which the withdrawn bid was submitted.

7. ERRORS IN BIDS: When an error is made in extending total prices, the unit bid price will govern. When a discrepancy exists between the written word and the numeric amount, the written word shall govern.
8. FAMILIARITY: Each bidder, by making their bid, represents that they have read and understand the bidding documents, and have familiarized themselves with the local conditions under which the work is to be performed and all State laws and local ordinances and regulations which may affect the conduct of the work or those engaged or employed on the work.

E. Acceptance of Bids

1. ACCEPTANCE OF BIDS: Unless otherwise specified, all formal bids submitted shall be valid for a minimum period of ninety (90) calendar days following the date established for acceptance. At the end of the ninety (90) calendar days, the bid may be withdrawn at the written request of the Bidder. If the proposal is not withdrawn at that time, it remains in effect until an award is made or the solicitation is canceled.
2. PRICING:
 - a. Prices should be stated in units of quantity as specified on the bid form.
 - b. Life cycle cost analysis may be considered when determining the lowest responsive and responsible bid. This analysis may consider, in addition to purchase price, any proposed upward or downward escalator clauses proposed for the initial contract term and any potential renewal terms; operating and related costs over the life of the item including maintenance, down time, energy costs, salvage value, etc.
 - c. Bid prices shall be for complete installation ready for ACSA use and shall include all applicable freight and installation charges; extra charges will not be allowed.
3. FACTORS OTHER THAN PRICE IN AWARD DECISION: The following factors, in addition to price (as they apply), shall be a consideration in the award decision:
 - a. The quality of performance/workmanship of previous contracts, services or products, or references which attest to other specific experiences;
 - b. The timely completion of previous contracts or services or the timely delivery of past orders; or references which attest to other specific experiences;
 - c. The sufficiency of financial resources and its impact on ability of the bidder to perform the contract or provide the services;
 - d. The ACSA reserves the right to conduct on-site inspections of any bidder's facilities prior to award. The results of said inspection will be considered by the ACSA in determining the bidder's capabilities of successfully administering to this contract;
 - e. The ability and availability of the bidder to provide both quality and timely maintenance, service, and/or parts;
 - f. The resale value, life cycle costing, and value analysis of a product;
 - g. The availability and capability of local and regional vendor support as it affects the quantity, quality, and timeliness of the work or products required;
 - h. Delivery of a product and timely completion of a project as stated by a vendor in the bid;
 - i. Substantial compliance or noncompliance with specifications set forth in the bid as determined by the ACSA;
 - j. Product or parts inventory capability as it relates to a particular bid; and

- k. Results of product testing.
- 4. TIE BIDS: In the case of a tie bid, the ACSA may give preference to goods, services and construction produced in Albemarle County. If such choice is not available, preference shall then be given to goods and services produced in the Commonwealth pursuant to the Code of Virginia § 2.2-4324. If no ACSA or Commonwealth choice is available, the tie shall be decided by lot.
- 5. BID SECURITY: The bid security of all except the three lowest responsive, responsible bidders will be returned within five days after the receipt of bids. The bid securities of the three lowest responsive, responsible bidders will be returned only after the required bonds and insurance are furnished and the contract executed with the successful bidder.

F. Award

- 1. AWARD OR REJECTION OF BIDS: The ACSA shall award the contract to the lowest, responsive and responsible bidder complying with all provisions of the Contract Documents, provided the bid price is reasonable and it is in the best interest of the ACSA to accept it. A “responsive” bid shall be evidenced by:
 - a. a complete Bid Form;
 - b. a Bid Form not evidencing any apparent unbalanced pricing for performance of the items of work;
 - c. a Bid Form without excisions, alterations, special conditions or qualifications made by the bidder; and
 - d. a Bid Form containing no alternative bids or offerings (by inclusion, attachment, or otherwise) for any items unless such alternative bids or offerings are requested in the Contract Documents.

That a bidder is “responsible” may be evidenced by the following facts:

- a. they maintain a permanent place of business;
- b. they have adequate financial capability for meeting the obligations inherent in the work;
- c. they have adequate equipment to properly perform the work within the time limit specified; and
- d. they have a competent and experienced organization.
- e. they have performed and completed similar work of similar magnitude in a satisfactory manner.

The ACSA may make such investigations as it deems necessary to determine the bidder’s ability to perform the work and the bidder shall furnish to the ACSA all such information and data for this purpose as the ACSA may request. The ACSA reserves the right to reject any bid if investigation of such bidder fails to satisfy the ACSA that the bidder is properly qualified to carry out the obligations of the contract.

By the tender of a bid for performing the work, the bidder warrants that they are experienced in such construction and are familiar with all phases of the work necessary for a complete job.

The Contractor shall have on the project at all times a superintendent who shall also be experienced in the particular type of construction and shall be familiar with all phases of the work.

The bidder must satisfy themselves of the accuracy of the estimated quantities in the Bid Form by examination of the site and a review of the drawings and specifications, including Addenda. After a bid has been awarded, the Contractor shall not assert that there was misunderstanding

concerning the quantities of work or of the nature of the work to be done as called for in the Contract Documents.

The Contract Documents contain the provisions required for the construction of the project. Information obtained from an officer, agent, or employee of the ACSA or any other person shall not affect the risks or obligations assumed by the Contractor or relieve them from fulfilling any of the conditions of the Contract Documents.

The ACSA reserves the right to award a contract by individual items, in the aggregate, or in combination thereof, or to reject any or all bids and to waive any informality in bids received whenever such rejection or waiver is in the best interest of the ACSA. The ACSA reserves the right to negotiate with the lowest responsive, responsible bidder should bids exceed available funds. The ACSA shall reject the bid if the bidder is deemed to be a non-responsive, or non-responsible bidder.

2. **ASSIGNMENT OF CONTRACT:** The Contractor shall not assign their Contract, nor any part thereof, nor any monies due, or to become due thereunder, without prior written approval of the ACSA.
3. **PROTEST OF AWARD OR DECISION TO AWARD:** Any bidder who desires to protest the award or decision to award a contract by the ACSA shall submit such protest in writing to the ACSA no later than ten (10) days after public notice of the award or announcement of the decision to award, whichever comes first. No protest shall lie for a claim that the selected bidder is not a responsible bidder. The written protest shall include the basis for the protest and the relief sought. The ACSA shall issue a decision in writing within five (5) days after receipt of the protest stating the reasons for the action taken. This decision shall be final unless the bidder appeals within ten (10) days of the written decision by instituting legal action. Nothing in this paragraph shall be construed to permit a bidder to challenge the validity of the terms or conditions of the solicitation.

G. Successful Bidder's Requirements

1. **PERFORMANCE BOND, PAYMENT BOND AND INSURANCE:** The bidder whose Bid is accepted shall enter into a written contract for the performance of the Work and furnish within 15 days after the date of a written Notice of Award by the ACSA, which has been delivered to such bidder personally or by mail to such bidder at the address given in their Bid, the following: (1) a performance bond in an amount equal to 100 percent of the contract sum conditioned on the faithful performance of the contract in strict conformity with the plans, specifications and conditions of the Contract Documents, (2) a payment bond in an amount equal to 100 percent of the contract sum, conditioned upon the prompt and faithful payment of all persons and entities who have and fulfill contracts which are directly with the Contractor for performing labor or furnishing materials in the prosecution of the work provided for in the Contract Documents, and (3) one or more certificates of insurance evidencing the types and amounts of insurance coverage required to be maintained by the Contractor under the contract documents.
2. **CONTRACT SECURITY:** If a bidder to whom the contract is awarded refuses or neglects to execute it or fails to furnish the required Performance and Payment Bonds and Insurance within fifteen (15) days of the date of Notice of Award, the amount of the bid security shall be forfeited and shall be retained by the ACSA as liquidated damages, and not as a penalty, since said sum is a fair estimate of the amount of damages to the ACSA. However, no forfeiture under a bid bond shall exceed the difference between the bid for which the bond was written and the next low bid.

In addition, if the bidder to whom the Contract is awarded refuses or neglects to execute it or fails to furnish the required Performance and Payment Bonds and Insurance as herein provided, the award of the contract may be annulled and the contract awarded to the next lowest responsive, responsible bidder and such bidder shall fulfill every stipulation of these documents as if they were the original party to whom it was made; or ACSA may reject all of the bids as its interest may require. Except as provided in the Contract Documents, no plea of mistake in the bid shall be available to the bidder for the recovery of their bid security or as a defense to any action based upon the neglect or refusal to execute a contract.

Any performance or payment bond required hereunder shall be in the form included in these Contract Documents and shall be executed by a surety company legally authorized to do business as a surety in the Commonwealth of Virginia and meeting the requirements stated in Article 14 of the General Conditions. In lieu of a payment or performance bond, the successful bidder may furnish a cash escrow or certified check payable to the order of ACSA.

3. **SUBCONTRACTORS:** No part of the Contract shall be sublet without prior written approval of the ACSA. The bidder shall, prior to execution of the Contract, immediately submit to the ACSA the names of Subcontractors when they propose to employ on the project.
4. **ESCROW AGREEMENT:** In accordance with Virginia Public Procurement Act, Article 2.2-4334, adopted July 1, 2001, the Contractor shall have fifteen calendar days after notification of award by the ACSA in which to execute and submit to the ACSA an escrow agreement. If the escrow agreement form is not submitted within the fifteen-day period, the Contractor shall forfeit their rights to the use of the escrow account procedure. A copy of an escrow agreement is included within these contract documents (Section 00850).
5. **NOTICE TO PROCEED:** The Contractor shall be notified by letter, giving Notice to Proceed, when work may begin under this Contract. Such notice will be issued as determined by the ACSA, but not before receipt and acceptance of the Contractor's Performance and Payment Bonds, Certificate of Insurance, and a fully executed Standard Form of Agreement.

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SECTION 00400

BID FORM

TO: ALBEMARLE COUNTY SERVICE AUTHORITY

FOR: Briarwood Water Main Replacement Project (ACSA Project Number 2021-01)

The undersigned, bidder, proposes to enter into a contract with the ACSA in accordance with the attached documents, to furnish all necessary materials, equipment, machinery, tools, and labor necessary to complete the work described herein.

The bidder hereby agrees to commence work under this bid when given the "Notice to Proceed" and to fully complete the contract within 210 consecutive calendar days. The bidder agrees that they will not make any claim for extra compensation should completion of work under the contract be affected in advance of the time specified.

The Bidder has carefully examined the site of the Work and that, from his own investigations, has been satisfied as to the nature and location of the Work; the character, quality and quantity of existing materials and all conditions likely to be encountered; the kind and extent of equipment and other facilities needed for the performance of the Work; the general and local conditions; and all other items which reasonably may be expected to affect the Work or its performance.

The undersigned, as Bidder, also declares that they have carefully examined and fully understand all the component parts of the Contract Documents and agrees to execute the Contract and furnish Performance and Payment Bonds and Insurance, if required by the Contract Documents, and will completely perform the Work in strict accordance with the terms of the Contract Documents for the prices set forth on the following page(s).

The bidder agrees that, upon receipt of a "Notice of Award" from the ACSA, they will, within fifteen (15) days from receipt of such notice, execute the Standard Form of Agreement bound herein, and will furnish with the Agreement the following: Certificate of Insurance coverage of all of their operations associated with the project, Performance Bond, and Payment Bond.

The bidder understands that the ACSA reserves the right, in the ACSA's sole discretion to reject any or all bids, to waive any informality in any bid, and to accept any bid considered to be advantageous to the ACSA.

The bidder agrees that this bid shall not be withdrawn for a period of ninety (90) calendar days after the date set for receipt of bids, except as allowed by law.

The undersigned, as bidder, hereby declares that the name (or names) of the only person (or persons) interested in this proposal, as principal (or principals), is (are) as herein below set out and that no person other than that (or those) herein below stated has any interest in the proposal, or in the Agreement to be entered into, that this proposal is made without connection with any other person, firm, or corporation making a proposal; and that it is in all respects fair, in good faith, and without collusion or fraud.

ALBEMARLE COUNTY SERVICE AUTHORITY
 Briarwood Water Main Replacement Project

INSTRUCTIONS: The Bidder shall fill in all blanks providing the following: The Bidder's proposed amount of cost per Unit Price in words; the Bidder's proposed Unit Price in figures; and the Bidder's proposed computed total price in figures, for each Contract Item described below. (The computed total price is obtained by multiplying the Estimated Quantity by the Bidder's Unit Price.) Written amounts shall govern in case of discrepancy between the amounts stated in writing and the amounts stated in figures. In case of discrepancy between unit prices and totals, unit prices will prevail. Refer to Section Advertisement for Bids for a detailed description of each contract item number.

All blanks shall be filled in:

CONTRACT ITEM NO.	DESCRIPTION OF WORK PRICE IN WORDS	ESTIMATED QUANTITY	UNIT PRICE	COMPUTED TOTAL PRICE
1	Mobilization <small>(Item not to exceed 3% of computed total amount for all contract items)</small> _____ Dollars and _____ Cents	1 LS	\$ _____	\$ _____
2	4-Inch Ductile Iron Water Main _____ Dollars and _____ Cents	288 LF	\$ _____	\$ _____
3	4-Inch Gate Valves w/ Boxes _____ Dollars and _____ Cents	2 EA	\$ _____	\$ _____
4	6-Inch Ductile Iron Water Main _____ Dollars and _____ Cents	2,166 LF	\$ _____	\$ _____
5	6 - inch Gate Valves with Boxes _____ Dollars and _____ Cents	3 EA	\$ _____	\$ _____

CONTRACT ITEM NO.	DESCRIPTION OF WORK PRICE IN WORDS	ESTIMATED QUANTITY	UNIT PRICE	COMPUTED TOTAL PRICE
6	8-Inch Ductile Iron Water Main _____ Dollars and _____ Cents	3,446 LF	\$ _____	\$ _____
7	8- inch Gate Valves with Boxes _____ Dollars and _____ Cents	23 EA	\$ _____	\$ _____
8	8-Inch Tapping Sleeve and Valve _____ Dollars and _____ Cents	2 EA	\$ _____	\$ _____
9	1-Inch Copper Water Service Line _____ Dollars and _____ Cents	3,458 LF	\$ _____	\$ _____
10	Water Service Connection - Not In Pavement _____ Dollars and _____ Cents	209 EA	\$ _____	\$ _____
11	Fire Hydrant Removal and Valve Abandonment _____ Dollars and _____ Cents	2 EA	\$ _____	\$ _____
12	Fire Hydrant Assembly _____ Dollars and _____ Cents	9 EA	\$ _____	\$ _____

CONTRACT ITEM NO.	DESCRIPTION OF WORK PRICE IN WORDS	ESTIMATED QUANTITY	UNIT PRICE	COMPUTED TOTAL PRICE
13	Blow-off Assembly _____ Dollars and _____ Cents	2 EA	\$ _____	\$ _____
14	Air Release Valve Assembly _____ Dollars and _____ Cents	1 EA	\$ _____	\$ _____
15	Flowable Fill _____ Dollars and _____ Cents	75 CY	\$ _____	\$ _____
16	Asphalt Pavement Restoration – Asphalt Base Course (Type IM-19.0) _____ Dollars and _____ Cents	1,450 TON	\$ _____	\$ _____
17	Asphalt Pavement Restoration – Asphalt Surface Course (Type SM-9.5A) _____ Dollars and _____ Cents	18,200 SY	\$ _____	\$ _____
18	Manhole Frame and Cover Replacement – In Pavement _____ Dollars and _____ Cents	7 EA	\$ _____	\$ _____
19	Traffic Control _____ Dollars and _____ Cents	1 LS	\$ _____	\$ _____

CONTINGENT BID ITEMS				
CONTRACT ITEM NO.	DESCRIPTION OF WORK PRICE IN WORDS	ESTIMATED QUANTITY	UNIT PRICE	COMPUTED TOTAL PRICE
20	Additional Excavation Below Specified Subgrade _____ Dollars and _____ Cents	200 CY	\$ _____	\$ _____
21	Test Pits Ordered by Engineer _____ Dollars and _____ Cents	5 EA	\$ _____	\$ _____
22	Select Fill - Aggregate Stone _____ Dollars and _____ Cents	200 CY	\$ _____	\$ _____
23	Select Fill – Suitable Earth _____ Dollars and _____ Cents	100 CY	\$ _____	\$ _____
24	Temporary Pavement Restoration _____ Dollars and _____ Cents	100 SY	\$ _____	\$ _____
25	PRV Replacement – Behind Water Meter _____ Dollars and _____ Cents	15 EA	\$ _____	\$ _____

Computed Total Amount for All Contract Items (Sum of Contract Items 1 through 25 above) _____ _____ _____ Dollars and _____ Cents	
--	--

The Bid must be sworn to by the person signing it in one of the following forms:

(Form of affidavit where Bidder is an individual)

_____ of _____
(City or County) (State or Commonwealth)

being duly sworn, deposes and says: That I am the person described in and who executed the foregoing Bid and that the several matters therein stated are in all respects true.

(Signature)

STATE OF VIRGINIA
CITY/COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of ____, ____, by _____
_____.

Notary Public

My Commission Expires: _____

Notary Registration Number: _____

(SEAL)

(Form of affidavit where Bidder is a partnership)

_____ of _____
(City or County) (State or Commonwealth)

being duly sworn, deposes and says: That I am a general partner of

the partnership described in and which executed the foregoing Bid; that I duly subscribed the name of the partnership thereunto on behalf of the partnership; and that the several matters therein stated are in all respects true.

(Signature)

STATE OF VIRGINIA
CITY/COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of ____, ____, by _____
_____.

Notary Public

My Commission Expires: _____

Notary Registration Number: _____

(SEAL)

(Form of affidavit where Bidder is a corporation)

_____ of _____
(City or County) (State or Commonwealth)

being duly sworn, deposes and says: That I reside in the City of _____; that I am the _____
_____ of _____
(Title) (Name of Company)

the corporation described in and which executed the foregoing instrument; that I know the seal of the corporation; that the seal affixed to this instrument is such corporate seal and was so affixed by order of the Board of Directors of the corporation; that I signed my name thereto by like order; and that I have knowledge of the several matters therein stated and they are in all respects true.

(Signature)

STATE OF VIRGINIA
CITY/COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of ____, ____, by _____
_____.

Notary Public

My Commission Expires: _____

Notary Registration Number: _____

(SEAL)

END OF SECTION 00400

SECTION 00430

BID BOND

KNOW ALL PERSONS BY THESE PRESENTS: That we the undersigned, _____
_____ as Principal (Bidder), and _____
_____ as Surety, are hereby held and firmly bound unto Albemarle
County Service Authority as Obligee (OWNER), in the amount of _____ Dollars (\$ _____
_____), being five (5) PERCENT OF THE DOLLAR VALUE OF THE BID, for the payment
whereof Principal and Surety jointly and severally bind themselves, their heirs, executors,
administrators, successors and assigns firmly by these presents.

WHEREAS, Principal has submitted a certain Bid attached hereto and hereby made a part hereof to
enter into an AGREEMENT, in writing, for the Briarwood Water Main Replacement Project (ACSA
Project number 2021-01).

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION is such that, if Principal shall not
withdraw his Bid during the period of 90 days following the opening of Bids, and if its Bid is
accepted, enter into a formal Contract in accordance with the AGREEMENT included as a part of the
Contract Documents and that the Performance Bond and the Payment Bond be given, then this
obligation shall be void; otherwise it shall remain in full force and effect and the Principal and
Surety will be liable to the Obligee for the lesser of: (1) the difference between the Bid for which the
Bond was written and the next low Bid, or (2) the face amount of the Bid Bond.

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

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

Signed and sealed this _____ day of _____ 20____.

(Principal)

(Seal)

By: _____
(Name and Title)

(Surety)

(Seal)

Resident Virginia Agent

By: _____
(Attorney-in-Fact)

IMPORTANT – Surety companies executing Bonds must be on the Treasury Department’s most current list (Circular 570, as amended) and be authorized to transact business in the State where the Project is located.

END OF SECTION 00430

5. List the construction projects your organization has under way on this date:

Contract Amt.	Class of Work	Percent Completed	Name and Address of Owner or Contracting Officer

6. List projects your organization has completed in past three years:

Contract Amt.	Class of Work	When Completed	Name and address of Owner

Use blank sheet if additional space is needed.

7. Have you ever failed to complete any work awarded to you? _____

If so, where and why?

8. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction contract?

If so, state name of individual, other organization and reason therefore

9. Has any officer or partner of your organization ever failed to complete a construction contract handled in his own name?

If so, state name of individual, name of Owner and reason therefore

10. In what other lines of business are you financially interested?

11. Give the names and addresses of all banks with whom you have done business during the past five years.

12. Give the names and addresses of all surety companies with whom you have done business during the last five years.

13. What is the construction experience of the principal individuals of your organization?

Individual Name	Present Position or Office	Years of Construction Experience	Magnitude and Type of Work	In What Capacity

14. In what manner have you inspected this proposed work? Explain in detail.

15. Explain your plan or lay out for performing the proposed work _____

16. The work, if awarded to you, will have the personal supervision of whom?

17. Do you intend to sublet any other portions of the work? _____

If so, state amount of sub-contract, and, if known, the name and address of the sub-contractor, amount and type of his equipment and financial responsibility _____

18. From which sub-contractors or agents do you expect to require a bond? _____

19. What equipment do you own that is available for the proposed work?

Quantity	Item	Description, Size, Capacity, Etc.	Condition	Years of Service	Present Location

20. What equipment do you intend to purchase for use on the proposed work, should the contract be awarded to you?

Quantity	Item	Description, Size, Capacity, Etc.	Approximate Cost

21. How and when will you pay for the equipment to be purchased? _____

22. Do you propose to rent any equipment for this work? _____

If so, state type, quantity and reasons for renting _____

23. Have you made contracts or received firm offers for all materials within prices used in preparing your proposal? _____

24. It is required that the Standard Form of Contractor's Financial Statement be filed with this Statement. Have you done so? _____

Dated at _____

this _____

day of _____, _____

Name of Organization

By _____

Title of Person Signing

STATE OF _____)

) S.S:

COUNTY OF _____)

_____ being duly sworn deposes and says
that he is _____ of _____

Name of Organization

and that the answers to the foregoing questions and all statements therein contained are true and correct.

Sworn to before me this

_____ day of _____, _____

Notary Public

My commission expires _____

END OF SECTION 00431

Condition at close of business _____ 20____												
ASSETS		DOLLARS										¢
1. Cash (a) On Hand \$ _____ (b) In bank \$ _____ (c) Elsewhere \$ _____												
2. Notes receivable:												
(a) Due within 90 days												
(b) Due after 90 days												
(c) Past due												
3. Accounts receivable from completed contracts, exclusive of claims not approved for payment.....												
4. Sums earned on uncompleted contracts as shown by Engineer's or Architect's estimate												
(a) Amount receivable after deducting retainage												
(b) Retainage to date, due upon completion of contracts												
5. Accounts receivable from source other than construction contracts												
6. Deposits for bids or other guarantees:												
(a) Recoverable within 90 days.....												
(b) Recoverable after 90 days												
7. Interest accrued on loans, securities, etc.....												
8. Real estate:												
(a) Used for business purposes												
(b) Not used for business purposes												
9. Stocks and bonds:												
(a) Listed-present market value												
(b) Unlisted-present value.....												
10. Materials in stock not included in Item 4:												
(a) For uncompleted contracts (present value).....												
(b) Other materials (present value).....												
11. Equipment, book value												
12. Furniture and Fixtures, book value												
13. Other assets.....												
Total assets												
LIABILITIES												
1. Notes payable:												
(a) To banks regular												
(b) To banks for certified checks.....												
(c) To others for equipment obligations.....												
(d) To others exclusive of equipment obligations.....												
2. *Accounts Payable:												
(a) Not past due.....												
(b) Past due.....												
3. Real estate encumbrances.....												
4. Other liabilities.....												
5. Reserves.....												
6. Capital stock paid up												
(a) Column												
(b) Common												
(c) Preferred.....												
(d) Preferred												
7. Surplus (net worth) Earned \$ _____ Unearned \$ _____												
Total Liabilities												
CONTINGENT LIABILITIES												
1. Liability on notes receivable, discounted or sold.....												
2. Liability on accounts receivable, pledged, assigned or sold.....												
3. Liability as Bondsman												
4. Liability as guarantor or contracts or on accounts of others												
5. Other contingent liabilities												
Total contingent liabilities												

DETAILS RELATIVE TO ASSETS

*List separately each item amounting to 10 percent or more of this total and combine the remainder.

1*	CASH		\$ _____	
	(a) on hand _____		\$ _____	
	(b) deposited in banks named below _____		\$ _____	
	(c) elsewhere - (state where) _____		\$ _____	
NAME OF BANK		LOCATION	DEPOSIT IN NAME OF	AMOUNT

2*	NOTES RECEIVABLE		\$ _____	
	(a) due within 90 days _____		\$ _____	
	(b) due after 90 days _____		\$ _____	
	(c) past due _____		\$ _____	
RECEIVABLE FROM: NAME AND ADDRESS	FOR WHAT	DATE OF MATURITY	HOW SECURED	AMOUNT
Have any of the above been discounted or sold? _____ If so, state amount, to whom, and reason _____				

3*	Accounts receivable from completed contracts exclusive of claims not approved for payment _____		\$ _____
	_____		\$ _____
NAME AND ADDRESS OF OWNER	NATURE OF CONTRACT	AMOUNT OF CONTRACT	AMOUNT RECEIVABLE
Have any of the above been assigned, sold or pledged? _____ If so, state amount, to whom, and reason _____			

4	Sums earned on uncompleted contracts, as shown by engineer's or architect's estimate:					
	(a) Amount receivable after deducting retainage _____				\$ _____	
*	(b) Retainage to date due upon completion of contract _____				\$ _____	
DESIGNATION OF CONTRACT AND NAME AND ADDRESS OF OWNER	AMOUNT OF CONTRACT	AMOUNT EARNED	AMOUNT RECEIVED	RETAINAGE		AMOUNT EXCLUSIVE OF RETAINAGE
				WHEN DUE	AMOUNT	
Have any of the above been sold, assigned, or pledged? _____ If so, state amount, to whom, and reason _____ _____ _____						

5	Accounts receivable not from construction contracts _____				\$ _____
RECEIVABLE FROM: NAME AND ADDRESS	FOR WHAT	WHEN DUE	AMOUNT		
What amount, if any, is past due \$ _____ \$ _____					

6	Deposits with bids or otherwise as guarantees _____				\$ _____
DEPOSITED WITH: NAME AND ADDRESS	FOR WHAT	WHEN RECOVERABLE	AMOUNT		

7	Interest accrued on loans, securities, etc. _____ \$ _____		
	ON WHAT ACCRUED	TO BE PAID WHEN	AMOUNT

8	Real Estate (a) Used for business purposes _____ \$ _____			
	Book Value (b) Not used for business purposes _____ \$ _____			
	DESCRIPTION OF PROPERTY	IMPROVEMENTS		TOTAL BOOK VALUE
		NATURE OF IMPROVEMENTS	BOOK VALUE	
1.				
2.				
3.				
4.				
	LOCATION	HELD IN WHOSE NAME	ASSESSED VALUE	AMOUNT OF
1.				
2.				
3.				
4.				

9	Stocks and Bonds: (a) Listed - present market value _____ \$ _____						
	(b) Unlisted - present value _____ \$ _____						
DESCRIPTION	ISSUING COMPANY	LAST INT. OR DIV. PAID		FAIR VALUE	PRESENT MARKET VALUE	QUAN-TITY	AMOUNT
		DATE	%				
1.							
2.							
3.							
WHO HAS POSSESSION	IF ANY ARE PLEDGED OR IN ESCROW, STATE FOR WHOM AND REASON AMOUNT PLEDGED OR IN ESCROW						
1.							
2.							
3.							

10	Materials in stock and not included in Item 4, Assets:		
	(a) For use on uncompleted contracts (present value) _____	\$ _____	
	(b) Other materials (present value) _____	\$ _____	
DESCRIPTION OF MATERIAL	QUANTITY	PRESENT VALUE	
		FOR UNCOMPLETED CONTRACT	OTHER MATERIALS

11*	Equipment at book value _____ \$ _____				
QUANTITY	DESCRIPTION AND CAPACITY OF ITEMS	AGE OF ITEMS	PURCHASE PRICE	DEPRECIATION CHARGED OFF	BOOK VALUE
Are there any liens against the above? _____ If so, state total amount _____					

12	Furniture and fixtures at book value _____ \$ _____
-----------	---

13	Other assets _____ \$ _____	
DESCRIPTION		Amount

TOTAL ASSETS \$ _____

DETAILS RELATIVE TO LIABILITIES

6	Capital Stock paid up _____ (a) Common _____ \$ _____ (b) Preferred _____ \$ _____
----------	--

7	Surplus: \$ _____ \$ _____
----------	----------------------------

TOTAL LIABILITIES \$ _____

If a corporation, answer this: Capital paid in cash, \$ _____ When incorporated _____ In what State _____ President's name _____ Vice-President's name _____ Secretary's name _____ Treasurer's name _____	If a co-partnership, answer this: Date of organization _____ State whether partnership is general, limited or association _____ _____ Name and address of partners: _____ _____ _____
---	--

The undersigned hereby declares: that the foregoing is a true statement of the financial condition of the individual, co-partnership or corporation herein first named, as of the date herein first given; that this statement is for the express purpose of inducing the party to whom it is submitted to award the submitted a contract; and that any depository, vendor or other agency herein named is hereby authorized to supply such party with any information necessary to verify this statement.

NOTE: A co-partnership must give firm name and signatures of all partners. A corporation must give full corporate name, signature of official and affix corporate seal.

AFFIDAVIT FOR INDIVIDUAL

STATE OF _____)
) ss.:
COUNTY OF _____)

_____ being duly sworn, deposes and says that the foregoing financial statement, taken from his books, is a true and accurate statement of his financial condition as of the date thereof and that the answers to the foregoing interrogatories are true.

Sworn to before me this _____
_____ (Applicant must also sign here)

_____ day of _____

(Notary Public)

AFFIDAVIT FOR CO-PARTNERSHIP

STATE OF _____)
) ss.:
COUNTY OF _____)

_____ being duly sworn, deposes and says that a member of the firm of _____; that they are familiar with the books of the said firm showing its financial condition; that the foregoing financial statement, taken from the books of the said firm, is a true and accurate statement of the financial condition of the said firm as of the date thereof and that the answers to the foregoing interrogatories are true.

(All members of firm must also sign here)

Sworn to before me this _____
_____ day of _____

(Notary Public)

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SECTION 00433

OSHA FORMS FOR RECORDING

WORK-RELATED INJURIES AND ILLNESSES

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SECTION 00490
Briarwood Water Main Replacement Project
(ACSA Project Number 2021-01)

RECEIPT OF ADDENDA

As a matter of convenience at the opening of bids, the Bidder is requested to acknowledge below the numbers of the Addenda received. Failure of any bidder to receive any addenda or interpretation shall not relieve said bidder from any obligation under their proposal as submitted.

This form should be included in the bid submittal.

The undersigned bidder has received the following addenda:

<u>Addendum Number</u>	<u>Date</u>
_____	_____
_____	_____
_____	_____

(Name of Bidder)

By _____
(Signature)

(Printed Name and Title)

END OF SECTION 00490

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SECTION 00500

**STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
ON THE BASIS OF A STIPULATED PRICE**

THIS AGREEMENT is by and between the Albemarle County Service Authority (ACSA) (hereinafter called **OWNER**) and _____ (hereinafter called **CONTRACTOR**).

OWNER and **CONTRACTOR**, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 - WORK

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

The project includes furnishing and installing approximately 5,900 linear feet 4", 6" and 8" diameter ductile iron pipe and associated interconnections, hydrants, water services, appurtenances, and abandonment of existing water mains, and restoration of the associated roads and surfaces disturbed during construction; and all other Work as shown on the Contract Documents.

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:

Briarwood Water Main Replacement Project
(ACSA Project Number 2021-01)

ARTICLE 3 - ENGINEER

3.01 Ramboll is hereinafter called **ENGINEER** and is to assume all duties and responsibilities, and have the rights and authority assigned to **ENGINEER** in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT TIMES

4.01 *Time of the Essence*

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

4.02 *Days to Achieve Substantial Completion and Final Payment*

- A. The Work will be substantially completed within **180** calendar days after the date when the Contract Times commence to run as provided in paragraph 2.03 of the Standard General Conditions, and completed and ready for final payment in accordance with paragraph 14.07 of the Standard General Conditions within **210** calendar days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

- A. CONTRACTOR and OWNER recognize that time is of the essence 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 Standard 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 Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR, shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, 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 all the Work at the prices stated in the CONTRACTOR'S bid, attached hereto as an exhibit.

As provided in paragraph 11.03 of the Standard General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by ENGINEER as provided in paragraph 9.08 of the Standard General Conditions. Unit prices have been computed as provided in paragraph 11.03 of the Standard General Conditions.

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 Standard General Conditions. Applications for Payment will be processed by OWNER as provided in the Standard 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 30th day of each month during performance of the Work as provided in paragraphs 6.02.A.1 and 6.02.A.2. All such payments will be measured by the schedule of values established in paragraph 2.07.A of the Standard General Conditions (and in the case of Unit Price Work based on the number of units completed).
- B. OWNER shall handle retainage as follows:

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 ENGINEER may determine or OWNER may withhold, in accordance with paragraph 14.02 of the Standard General Conditions:
 - a. 95% of Work completed (with the balance being retainage).
 - b. 95% 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 95% of the Work completed, less such amounts as ENGINEER shall determine in accordance with paragraph 14.02.B.5 of the Standard General Conditions and less 100% of ENGINEER's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the Standard General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.07.

ARTICLE 7 - INTEREST

- 7.01 It is the option of the CONTRACTOR to establish an escrow account for deposit of retained funds. Forms and requirements to establish such an account are available from the OWNER upon request. Funds retained, but not so deposited, will not be subject to accrued interest.

ARTICLE 8 - CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:
- A. CONTRACTOR has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
 - 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 obtained and carefully studied (or assumes responsibility for having done 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 CONTRACTOR, including applying the specific means, methods, techniques, sequences, and procedures of construction, if any, expressly required by the Contract Documents to be employed by CONTRACTOR, and safety precautions and programs incident thereto.

- E. 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.
- F. 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.
- G. 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.
- H. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR has discovered in the Contract Documents, and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 Contents

- A. The Contract Documents include the following:
 - 1. This Agreement (pages 1 to 7, inclusive);
 - 2. Instructions to Bidders and ACSA General Terms (pages 1 to 9, inclusive);
 - 3. Performance Bond (pages 1 to 2, inclusive);
 - 4. Payment Bond (pages 1 to 2, inclusive);
 - 5. Standard General Conditions (pages 1 to 41, inclusive);
 - 6. Supplementary Conditions (pages 1 to 5, inclusive);
 - 7. All addenda (numbers _____ to _____ inclusive);
 - 8. Specifications as listed in the Table of Contents of the Project Manual;
 - 9. Drawings consisting of a cover sheet, sheets numbered G-1 through C-20, inclusive. Each sheet bears the following general title: Camelot Water Main Replacement Project (ACSA Project No. 2016-08).
 - 10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (as provided in Section 00400, inclusive);
 - b. Certificate of Insurance (as provided in Section 00620, inclusive);
 - c. Escrow Agreement (as provided in Section 00850, inclusive);
 - d. Bid Bond (as provided in Section 00430, inclusive);
 - e. Receipt of Addenda (as provided in Section 00490, inclusive).
 - 11. The following which may be delivered or issued on or after the Effective Date of the Agreement are not attached hereto:
 - a. Written Amendments;
 - b. Work Change Directives;
 - c. Change Order(s);
 - d. Notice to Proceed.

- B. The documents listed in paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. The Contract Documents may only be amended, modified, or supplemented as provided in paragraph 3.04 of the Standard General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

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

10.02 *Assignment of Contract*

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

10.03 *Successors and Assigns*

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

10.04 *Severability*

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

10.05 *Other Provisions*

- A. None.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in duplicate. One counterpart each has been delivered to **OWNER** and **CONTRACTOR**. 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 _____, 20__, which is the Effective Date of the Agreement.

OWNER:

CONTRACTOR:

Albemarle County Service Authority

By: _____

By: _____

[CORPORATE SEAL]

[CORPORATE SEAL]

Attest

Attest

Address for giving notices:

Address for giving notices:

168 Spotnap Road

Charlottesville, Virginia 22911

(Contractors Name)

(Contractors Address)

(If OWNER is a corporation, attach evidence of authority to sign. If OWNER is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of OWNER – CONTRACTOR Agreement).

Va. Contractor's Registration No.:

Agent for Service of Process:

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

Designated Representatives:

Name: John E. Anderson P.E.

Title: Civil Engineer

Address: 168 Spotnap Road

Charlottesville, VA 22911

Phone: (434) 531-7450

Facsimile: (434) 979-0698

Designated Representatives:

Name: _____

Title: _____

Address: _____

Phone: _____

Facsimile: _____

END OF SECTION 00500

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**SECTION 00600
Performance Bond**

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

CONTRACTOR (Name and Address):

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

OWNER (Name and Address):

CONTRACT

Date:

Amount:

Description (Name and Location): **Briarwood Water Main Replacement Project**

BOND

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: _____ (Corp. Seal)

Signature: _____

Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____

Name and Title:

(Attach Power of Attorney)

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

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____

Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____

Name and Title:

EJCDC No. 1910-28-A (1996 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Contract, which is incorporated herein by reference.

2. If the CONTRACTOR performs the Contract, the Surety and the 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, the Surety's obligation under this Bond shall arise after:

3.1. The OWNER has notified the CONTRACTOR and the Surety at the addresses described in paragraph 10 below, that the OWNER is considering declaring a CONTRACTOR Default and has requested and attempted to arrange a conference with the CONTRACTOR and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Contract. If the OWNER, the CONTRACTOR and the Surety agree, the CONTRACTOR shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive the OWNER's right, if any, subsequently to declare a CONTRACTOR Default; and

3.2. The OWNER has declared a CONTRACTOR Default and formally terminated the CONTRACTOR's right to complete the Contract. Such CONTRACTOR Default shall not be declared earlier than twenty days after the CONTRACTOR and the Surety have received notice as provided in paragraph 3.1; and

3.3. The OWNER has agreed to pay the Balance of the Contract Price to:

3.3.1. The Surety in accordance with the terms of the Contract;

3.3.2. Another contractor selected pursuant to paragraph 4.3 to perform the Contract.

4. When the OWNER has satisfied the conditions of paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1. Arrange for the CONTRACTOR, with consent of the 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 the OWNER for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the OWNER and the contractor selected with the 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 the OWNER the amount of damages as described in paragraph 6 in excess of the Balance of the Contract Price incurred by the OWNER resulting from the 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;

4.4.1. After investigation, determine the amount for which it may be liable to the OWNER and, as soon as practicable after the amount is determined, tender payment therefor to the OWNER; or

4.4.2. Deny liability in whole or in part and notify the OWNER citing reasons therefor.

5. If the Surety does not proceed as provided in paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the OWNER to the Surety demanding that the Surety perform its obligations under this Bond, and the OWNER shall be entitled to enforce any remedy available to the OWNER. If the Surety proceeds as provided in paragraph 4.4, and the OWNER refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the OWNER shall be entitled to enforce any remedy available to the OWNER.

6. After the OWNER has terminated the CONTRACTOR's right to complete the Contract, and if the Surety elects to act under paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the OWNER shall not be greater than those of the CONTRACTOR under the Contract, and the responsibilities of the OWNER to the Surety shall not be greater than those of the OWNER under the Contract. To a limit of the amount of this Bond, but subject to commitment by the OWNER of the Balance of the Contract Price to mitigation of costs and damages on the Contract, the Surety is obligated without duplication for:

6.1. The responsibilities of the CONTRACTOR for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional and delay costs resulting from the CONTRACTOR's Default, and resulting from the actions or failure to act of the Surety under paragraph 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 the CONTRACTOR.

7. The Surety shall not be liable to the OWNER or others for obligations of the 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 the OWNER or its heirs, executors, administrators, or successors.

8. The Surety hereby waives notice of any change, including changes of time, to the 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 the CONTRACTOR ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the OWNER or the 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 or other legal requirement in the location where the Contract was performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal 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 the OWNER to the CONTRACTOR under the Contract after all proper adjustments have been made, including allowance to the CONTRACTOR of any amounts received or to be received by the OWNER in settlement of insurance or other Claims for damages to which the CONTRACTOR is entitled, reduced by all valid and proper payments made to or on behalf of the CONTRACTOR under the Contract.

12.2. Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.

12.3. CONTRACTOR Default: Failure of the 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 the OWNER, which has neither been remedied nor waived, to pay the CONTRACTOR as required by the Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY--Name, Address and Telephone)
AGENT or BROKER: OWNER'S REPRESENTATIVE (Engineer or other party):

SECTION 00610

Construction Payment Bond

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

CONTRACTOR (Name and Address):

SURETY (Name and Principal
Place of Business):

OWNER (Name and Address):

CONTRACT

Date:

Amount:

Description (Name and Location): **Briarwood Water Main Replacement Project**

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____
Name and Title:

SURETY

Company:

Signature: _____
Name and Title:

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____
Name and Title:

SURETY

Company:

Signature: _____
Name and Title:

EJCDC No. 1910-28-B (1996 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, the American Institute of Architects, the American Subcontractors Association, and the Associated Specialty Contractors.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the OWNER to pay for labor, materials and equipment furnished for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to the OWNER, this obligation shall be null and void if the CONTRACTOR:

- 2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
- 2.2. Defends, indemnifies and holds harmless the OWNER from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Contract, provided the OWNER has promptly notified the CONTRACTOR and the 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 the CONTRACTOR and the Surety, and provided there is no OWNER Default.

3. With respect to Claimants, this obligation shall be null and void if the CONTRACTOR promptly makes payment, directly or indirectly, for all sums due.

4. The Surety shall have no obligation to Claimants under this Bond until:

- 4.1. Claimants who are employed by or have a direct contract with the CONTRACTOR have given notice to the Surety (at the addresses described in paragraph 12) and sent a copy, or notice thereof, to the 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 the CONTRACTOR:

1. Have furnished written notice to the CONTRACTOR and sent a copy, or notice thereof, to the 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 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 the CONTRACTOR, or not received within 30 days of furnishing the above notice any communication from the CONTRACTOR by which the 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 the Surety and sent a copy, or notice thereof, to the OWNER, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the CONTRACTOR.

5. If a notice required by paragraph 4 is given by the OWNER to the CONTRACTOR or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

- 6.1. Send an answer to the Claimant, with a copy to the 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. The 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 the Surety.

8. Amounts owed by the OWNER to the CONTRACTOR under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any Performance Bond. By the CONTRACTOR furnishing and the OWNER accepting this Bond, they agree that all funds earned by the CONTRACTOR in the performance of the Contract are dedicated to satisfy obligations of the CONTRACTOR and the Surety under this Bond, subject to the OWNER's priority to use the funds for the completion of the Work.

9. The Surety shall not be liable to the OWNER, Claimants or others for obligations of the CONTRACTOR that are unrelated to the Contract. The 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. The 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 the Surety, the OWNER or the CONTRACTOR shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, the OWNER or the 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 or other legal requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal 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, the 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 the CONTRACTOR or with a Subcontractor of the 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 the CONTRACTOR and the CONTRACTOR's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2. Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.

15.3. OWNER Default: Failure of the OWNER, which has neither been remedied nor waived, to pay the CONTRACTOR as required by the Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY--Name, Address and Telephone)

AGENCY or BROKER: OWNER'S REPRESENTATIVE (Engineer or other party):

SECTION 00620

CERTIFICATE OF INSURANCE

**Coverage shall comply with the requirements of
SECTION 00800 - Supplemental Conditions**

END OF SECTION 00620

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SECTION 00630

NOTICE OF AWARD

Dated:

TO:

ADDRESS:

PROJECT: Briarwood Water Main Replacement Project
(ACSA Project Number 2021-01).

You are notified that your bid, dated _____, for the above Project has been considered.
You are the apparent successful bidder and have been awarded a contract for:

Briarwood Water Main Replacement Project
(ACSA Project Number 2021-01).

The Contract Price of your Contract is: \$ _____

Three copies of the Standard Form of Agreement and Contract Drawings accompany this Notice of Award.

You must comply with the following conditions within fifteen days of the date of this Notice of Award:

1. Deliver to the ACSA (3) three fully executed Standard Form of Agreements.
2. Deliver with the executed Standard Form of Agreements: Payment, Performance and other bonds as specified in the Standard General Conditions (Article 5) and the Instructions to Bidders and General Terms.
3. Deliver Certificate of Insurance as specified in the Standard General Conditions (Paragraph 5.03) and amended per the ACSA Supplemental Conditions.

Failure to comply with these conditions within the time specified will entitle the ACSA to consider your bid in default and to annul this Notice of Award.

Within fifteen (15) days after you comply with the above conditions, the ACSA will return to you one fully executed counterpart of the Standard Form of Agreement.

Albemarle County Service Authority

By: _____

Executive Director

END OF SECTION 00630

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SECTION 00640
NOTICE TO PROCEED

To:

Project: Briarwood Water Main Replacement Project
(ACSA Project Number 2021-01)

Amount of Contract: \$

You are hereby notified to commence work on the referenced Project on or before _____ and shall fully complete all of the work of said Project within 210 consecutive calendar days thereafter. Your completion date is therefore _____.

The Contract provides for an assessment of the sum of \$500 as liquidated damages for each consecutive calendar day after the above established Project completion date that the work remains incomplete.

Dated this ___ day of _____.

By: _____
Jeremy M. Lynn, P.E.

Title: Director of Engineering

Acceptance of Notice

Receipt of the foregoing Notice to Proceed is hereby acknowledged.

By _____

this _____ day of _____ 20____.

By _____

Title _____

END OF SECTION 00640

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SECTION 00700

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

STANDARD
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
a practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

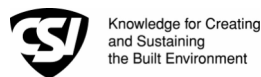
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The Associated General Contractors of America



Construction Specifications Institute

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National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314

American Council of Engineering Companies
1015 15th Street, N.W., Washington, DC 20005

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400

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

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

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

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

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

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

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

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

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

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

9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract

Times, issued on or after the Effective Date of the Agreement.

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

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

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

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

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

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

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

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

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

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

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but

which does not involve a change in the Contract Price or the Contract Times.

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

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

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

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

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

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

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

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the 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 Engineer 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 Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion 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, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

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

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

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

52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be

performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

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

B. Intent of Certain Terms or Adjectives

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

C. Day

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

D. Defective

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

- a. does not conform to the Contract Documents, or
- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
- c. has been damaged prior to Engineer's - recommendation of final payment (unless responsibility for the protection thereof has been

assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

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

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

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

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

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

ARTICLE 2 - PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

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

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

2.02 *Copies of Documents*

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

2.03 *Commencement of Contract Times; Notice to*

Proceed

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

2.04 *Starting the Work*

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

2.05 *Before Starting Construction*

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

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

2. a preliminary Schedule of Submittals; and

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

2.06 *Preconstruction Conference*

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

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with

Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

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

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

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

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

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

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

3.02 *Reference Standards*

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

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

except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

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

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

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

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

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

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

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

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

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

3.06 *Electronic Data*

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

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

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

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

4.01 *Availability of Lands*

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

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

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

4.02 *Subsurface and Physical Conditions*

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

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

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

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

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

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

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

4.03 *Differing Subsurface or Physical Conditions*

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

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

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

C. Possible Price and Times Adjustments

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

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

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

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

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

Contractor prior to Contractor's making such final commitment; or

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

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

4.04 *Underground Facilities*

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

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

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

a. reviewing and checking all such information and data,

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

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

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

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any

Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

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

4.05 *Reference Points*

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

4.06 *Hazardous Environmental Condition at Site*

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

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified

in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

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

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

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

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

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

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

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

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

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

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

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

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

5.02 *Licensed Sureties and Insurers*

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

5.03 *Certificates of Insurance*

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

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

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 Engineer, and

any other individuals or entities identified in the Supplementary Conditions, 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 in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

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

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

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

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

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, 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.

5.05 *Owner's Liability Insurance*

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

5.06 *Property Insurance*

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

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

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

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

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

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

6. include testing and startup; and

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

B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and

subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

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

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

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

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities

identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

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

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

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

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

5.08 *Receipt and Application of Insurance Proceeds*

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

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary

shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

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

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

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

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

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with

the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

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

6.02 *Labor; Working Hours*

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

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

6.03 *Services, Materials, and Equipment*

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

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used,

cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

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

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

6.05 *Substitutes and "Or-Equals"*

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

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

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

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

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

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

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

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

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

2. Substitute Items

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

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

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

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

1) shall certify that the proposed substitute item will:

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

b) be similar in substance to that specified, and

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

2) will state:

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

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

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

3) will identify:

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

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

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

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

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

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

E. Engineer's Cost Reimbursement: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

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

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

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

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

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

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

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

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

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

by any Subcontractor or Supplier, Contractor will obtain the same.

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 Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or

Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 Taxes

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

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable,

brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

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 Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities

not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

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

6.15 *Hazard Communication Programs*

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

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent

threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*: Contractor shall also submit Samples to Engineer for review and approval in 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 Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals , any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria,

installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. 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. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners,

employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, 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.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

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

8.04 *Pay When Due*

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

8.05 *Lands and Easements; Reports and Tests*

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

8.06 *Insurance*

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

8.07 *Change Orders*

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

8.08 *Inspections, Tests, and Approvals*

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

8.09 *Limitations on Owner's Responsibilities*

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

8.10 *Undisclosed Hazardous Environmental Condition*

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

8.11 *Evidence of Financial Arrangements*

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

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

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

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

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

such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

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

9.05 *Rejecting Defective Work*

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

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be

final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

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

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be respon

sible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

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 Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

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

10.05 *Claims*

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such

Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,
2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

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.

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

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim.

Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

- a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. 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 Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit 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.

**ARTICLE 12 - CHANGE OF CONTRACT PRICE;
CHANGE OF CONTRACT TIMES**

12.01 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - 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 Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract

Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

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

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to

Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

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

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and
3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor

without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

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

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and 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 Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

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

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply

with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

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

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

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

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, 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. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the

results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may

be necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

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

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. there are other items entitling Owner to a set-off 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 Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld 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 Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to

Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

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

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with

Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

- a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;
- b. consent of the surety, if any, to final payment;
- c. a list of all Claims against Owner that Contractor believes are unsettled; and
- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment

and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

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

14.08 *Final Completion Delayed*

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

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except 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.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which 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 Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

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) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision

becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered 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 in which the Project is located.

17.06 *Headings*

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

END OF SECTION 00700

SECTION 00800

ACSA SUPPLEMENTARY CONDITIONS

SUPPLEMENTS

These supplementary conditions modify, change, delete from, or add to the Standard General Conditions of the Construction Contract, EJCDC Document C-700, 2002 edition, to the extent indicated. Where any article, paragraph, subparagraph, or clause of the Standard General Conditions is altered by these supplements, the unaltered provisions of the article, paragraph, subparagraph, or clause shall remain in effect.

DEFINITIONS

Revise Article 1 - Definitions as follows: Revise the definition of the term "Engineer" to read "The Albemarle County Service Authority or the representative of the owner as designated by the Albemarle County Service Authority."

COPIES OF DOCUMENTS

Delete paragraph 2.02.A, and replace with the following:

- "A. The Owner shall furnish two print or hard copies of the Drawings and two print or hard copies of the Project Manual. Additional copies will be furnished upon request at the cost of reproduction."

HAZARDOUS ENVIRONMENTAL CONDITION AT SITE

Delete 4.06.G in its entirety.

CERTIFICATES OF INSURANCE

Add the following to paragraph 5.03 as subparagraph 5.03.C and 5.03.D:

- 5.03.C The contractor shall assume and agree to hold harmless, indemnify, save, protect, and defend the Albemarle County Service Authority, their officers, agents and employees, against any and all liability for injuries and damages to contractor himself and to contractor's employees, agents, subcontractors, and guests, third parties or otherwise, incident to or resulting from any and all operations performed under the terms of this contract. In addition to any other forms of insurance or bonds required under contracts and specifications pertaining to this project, the following public liability insurance schedule shall apply to all work performed under the terms of this contract. The insurance specified shall be with an insurance company acceptable to the parties hereto and licensed to do business in the Commonwealth of Virginia.
- 5.03.D Insurance Schedule: The contractor shall carry public liability insurance in amount not less than those specified below, including the contractual liability assumed by the contractor, and shall deliver certificates of insurance from carriers, acceptable to the owner specifying such limits, with the Albemarle County Service Authority, their

officers, agents and employees named as additional insureds.

1. Workman's Compensation and Employer's Liability Insurance shall be in strict accordance with the requirements of the current and applicable Workman's Compensation Laws of the State. The insurance shall cover all of the contractor's employees employed or associated with the project; and where any part of the work is subcontracted, the contractor shall require the subcontractor to provide similar Workman's Compensation and Employer's Liability Insurance for all employees of the subcontractor unless such employees are covered by the protection afforded by the contractor. In case any class of employees engaged in hazardous work under this contract is not protected under the Workman's Compensation Statute, the contractor shall provide, and shall cause such subcontractor to provide, adequate coverage for the protection of all employees on the project not otherwise protected under applicable provisions of the Statutes relating to Workman's Compensation and Employer's Liability Insurance. The minimum limits of coverage shall be as follows:

A. State	Statutory
B. Applicable Federal	Statutory
C. Employer's Liability	\$500,000
D. Benefits required by union labor contracts	As Applicable
E. Voluntary Compensation	\$500,000
F. Broad Form	All States Endorsement

2. Comprehensive General Liability Insurance shall protect the contractor and any subcontractors performing work under this contract from any claims for bodily injury, for sickness or disease, for death, for personal injury, and for property damages which may arise either directly or indirectly out of, or in connection with, the performance of work under this contract. The Comprehensive General Liability Insurance Coverage shall include: Premises Operations; Independent Contractor's Protection; Products Liability and Completed Operations; and Broad Form Property Damage. The minimum limits of coverage shall be as follows:

A. Bodily Injury	\$1,000,000 Each Occurrence \$1,000,000 Annual Aggregate
B. Property Damage	\$1,000,000 Each Occurrence \$1,000,000 Annual Aggregate
C. Property Damage	Liability shall provide Explosion, Collapse and Underground coverages

3. Contractual Liability: Minimum limits of coverage shall be as follows:

A. Bodily Injury	\$1,000,000 Each Occurrence
B. Property Damage	\$1,000,000 Each Occurrence

\$1,000,000 Annual Aggregate

4. Personal injury (with Employment Exclusion deleted). The minimum limits of coverage shall be as follows:

A. Annual Aggregate \$1,000,000

5. Comprehensive Automobile Liability Insurance (owner, non-owner, hired) shall protect the contractor and any subcontractor performing work under this contract from any claims for bodily injury, for death, and for property damages which may arise either directly or indirectly out of, or in connection with, the performance of work under this contract. The minimum limits of coverage shall be as follows:

Combined single limits for bodily injury and property damage.

A. Bodily \$1,000,00 Each Occurrence

B. Property Damage \$1,000,000 Each Occurrence

6. Aircraft Liability (owned and non-owned), when applicable. The minimum limits of coverage shall be as follows:

Combined single limits for bodily injury and property damage.

A. Bodily Injury \$1,000,000 Per Seat

B. Property Damage Included

7. Umbrella Excess Liability over Primary Insurance. The minimum limits of coverage shall be as follows:

A. Each Occurrence \$3,000,000

B. Aggregate \$3,000,000

8. Contractual Liability covers the following indemnity agreement:

The contractor shall indemnify and hold harmless the Albemarle County Service Authority, its officers, agents and employees against and from all liability, claims, damages, demands and costs, including attorney fees of every kind in nature and attributable to bodily injury, sickness, disease or death or to damage or destruction of property resulting from or in any manner arising out of or in connection with the project and the performance of the work under this contract.

9. Additional liability coverage for owner will be provided by endorsement as additional insureds on contractor's general liability policy.

OWNER'S LIABILITY INSURANCE

Delete paragraph 5.05 in its entirety.

PROPERTY INSURANCE

Delete paragraph 5.06.B, and replace with the following:

“B. Contractor shall purchase and maintain such boiler and machinery insurance as may be required by the Special Conditions or by law.”

Delete paragraph 5.06.C in its entirety.

Delete paragraph 5.06.E in its entirety.

WAIVER OF RIGHTS

Delete the last sentence in paragraph 5.07.A in its entirety.

RECEIPT AND APPLICATION OF INSURANCE PROCEEDS

Delete paragraph 5.08.A in its entirety.

Delete paragraph 5.08.B in its entirety.

ACCEPTANCE OF BONDS AND INSURANCE; OPTION TO REPLACE

Delete paragraph 5.09.A, and replace with the following:

“A. If Owner has any objections to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by Contractor on the basis of its not complying with the Contract Documents, owner will notify Contractor in writing thereof within ten days of the date of delivery of such certificates to Owner.”

PERMITS

Concerning Article 6, paragraph 6.08.A, the permits to be obtained and the utility connection charges to be paid by the Owner are specified in Special Conditions. All other permits and charges shall be the responsibility of the Contractor.

LABOR; WORKING HOURS

Delete paragraph 6.02.B, and replace with the following:

“B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday, without exception.”

LAWS AND REGULATIONS

Add the following subparagraph to Article 6, paragraph 6.09:

- “D. The provisions of Section 2.2-4201, 2.2-4311 and 2.2-4312 of the Code of Virginia, as amended, prohibiting employment discrimination by the Contractor and the Contractor’s responsibility to maintain a drug free work place, are made a part of the Contract Documents. The Contractor shall familiarize themselves and comply with the provisions of Section 2.2-4201, 2.2-4311 and 2.2-4312.”

PROGRESS PAYMENTS

Progress payments shall conform to the requirements specified in the Standard Form of Agreement. For requirements not covered in the Standard Form of Agreement, Article 14 of the Standard General Conditions (Payments to Contractor and Completion) shall apply.

Subject to the provisions of Article 14 of the Standard General Conditions, the Agreement shall stipulate that the Owner will make progress payments on or about the 30th day of the month following each application for payment. The Contractor shall submit their application for payment on or about the 1st day of the month. The application shall include work through the last day of the preceding month.

It is the Contractor's option to utilize the Owner's escrow accounting procedures for retainage held on this contract. If the Contractor desires to utilize these procedures, they must complete an Escrow Agreement available from the Owner and return it with the executed Standard Form of Agreement.

DISPUTE RESOLUTION – METHODS AND PROCEDURES

Add the following subparagraph to Article 16, paragraph 16.01.C as subparagraph 4:

- “4. Venue for purposes of resolution in the court system shall be in the Albemarle County General District Court or the Albemarle County Circuit Court.”

END OF SECTION 00800

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SECTION 00810

ACSA SPECIAL CONDITIONS

The following special conditions apply for this project:

In the event any provision of this Section modifies, differs or contradicts a provision contained elsewhere in this Contract, the provisions of this Section shall govern.

1. CONTRACT AND SPECIFICATIONS

The Contractor is hereby advised that the Albemarle County Service Authority General Water and Sewer Construction Specifications and Sewer Approved Products List are made a part of this contract. The Contractor may obtain a copy of the referenced documents from the Authority's website and shall keep it on the job site at all times.

2. EROSION CONTROL DEVICES AND REQUIREMENTS

Erosion control devices shall be installed as directed by the Owner or other regulatory agencies. The Contractor shall be responsible for installing all erosion control devices required to minimize soil erosion (silt fence, sediment traps, diversion ditches, check dams, etc.). Erosion control shall be in accordance with standards established by VDOT, Virginia Department of Conservation and Recreation, the Virginia Erosion and Sediment Control Handbook, latest edition, Virginia Regulations VR 625-02-00 Erosion and Sediment Control Regulations and the Albemarle County Service Authority. Installing all necessary and required erosion control devices shall be considered incidental to the work, and the costs shall be included in the various bid items. Where a device must be placed before construction, removed during construction and replaced following construction, no extra payment will be made for the removal and replacement operations.

3. CONSTRUCTION CONFERENCES

A pre-construction conference will be held prior to any work being performed.

The Contractor will be accompanied at this conference by his Project Manager, General Superintendent, and each Foreman and by a representative of any subcontractor with whom he has executed a binding agreement. The Contractor shall submit his detailed and complete project schedule for any assigned work orders, materials/manufacturer's list, request for subcontractor approval, and emergency contact list at the pre-construction conference. The Contractor will also submit the name(s) of his "competent person" for OSHA trenching regulations. If the required parties do not attend, the conference will be canceled and rescheduled. No additional payment will be made for attendance at the rescheduled pre-construction conference.

Additional construction conferences will be scheduled as needed, when requested by the Owner, the Contractor, the Virginia Department of Transportation, or other controlling agency.

It is anticipated that at least one conference (progress meeting) will be required each month. At the monthly progress meetings, the Contractor will be required to present (distribute handouts to all attendees) updated schedules, status of the work, remaining work, work

planned for the next month, etc. for his work and all subcontractors. The Contractor's handouts will be used to conduct the meeting.

Weekly meetings with the on-site representative are also anticipated.

4. CONTRACT TIME AND LIQUIDATED DAMAGES

The Contractor will be required to submit a schedule upon receipt of each work order assigned under this Contract. The schedule shall include proposed Substantial and Final Completion dates for the individual task order; these dates will be negotiated by the Owner, as necessary, finalized and agreed upon by both parties. The Contractor will be required to complete all work, including testing and complete restoration, associated with each individual work order within the time negotiated and agreed upon by both parties at the start of each task order from the date specified in the individual task order Notice to Proceed from the Owner to the Contractor. Liquidated Damages of \$250.00 per calendar day shall be applied to each calendar day exceeding the completion date.

The unit prices bid shall remain in effect during the Contract Period. Projects may be assigned to the Contractor at any time within the Contract period.

5. BID ITEMS

The Bid Form in Section 00400 includes bid items that may or may not be used throughout this Contract. The quantities in the Bid Form have been estimated to allow for a comparison of bids only; no minimum quantities are guaranteed. Payment shall be based on actual quantities installed of each bid item. The Contractor shall not be due any adjustments in unit prices because of quantity over-runs or under-runs.

6. SUBSTITUTIONS AND PRODUCT OPTIONS

The Specifications include specific product names that are approved for installation in this Contract. Whenever a product name is specified followed by the phrase "or equal," the specific product mentioned shall be the basis upon which bids are to be prepared, and shall be understood as establishing the type, function, dimension, appearance and quality desired.

Other manufacturer's or vendor's products not named will be considered as substitutions if a written request for such substitution is made at least seven (7) days prior to the scheduled bid opening. The requests for substitution shall include complete data (including product literature, reference standards and performance and test data) substantiating compliance of the proposed substitution with the requirements stated in the Specifications. A list of product installations by the Contractor and proposed superintendent/foreman including quantities installed, dates of installation, and references (name, address, and phone numbers) shall also be submitted. Any approved substitutions and/or additions shall be made by addendum only.

The requests for substitution must include a written and signed statement from the Contractor and/or manufacturer stating that the Contractor/manufacturer will adhere to all parts and requirements of the Specifications outlined herein and that no exceptions to any part of the Specifications will be taken.

The Owner's decision regarding evaluation and acceptance of substitutions shall be final and binding.

7. UTILITY PROTECTION PLAN

The Contractor shall submit a Utility Protection Plan (UPP) prior to starting any construction on this Project. The UPP shall be a detailed and thorough description of the plans the Contractor will employ to protect existing in-service utilities from initial excavation through final backfill. The UPP may include plans, descriptions, drawings and/or calculations. The plan shall include documentation that all Commonwealth laws will be adhered to at all times and shall include step- by-step processes starting with calling in utility locates per State codes to documentation of locates to excavation around utilities to final backfill. Internal documentation, communication procedures, processes shall also be defined, including employee training, safety meetings, and disciplinary procedures for not following the UPP. A complete listing of the Contractor's available equipment (such as shoring) shall be noted. All Subcontractors shall abide by the General Contractor's UPP. A detailed Safety Plan shall also be submitted with the UPP.

8. SAFETY

The Contractor agrees to perform all work in a safe and careful manner, to furnish and use and require its employees to use safety devices and equipment as necessary, and to comply with all laws, rules, codes and regulations applicable to the safe performance of the work. The Contractor's employees shall be required to wear safety vests or orange shirts (orange shirts cannot be substituted for safety vests at night or when they are not allowed by ACSA or Virginia Law) and hard hats while in construction areas. The Contractor shall provide traffic control signs, signals, flashing lights, guards, plates, enclosures, barricades and notices, including all special design signs as may be required by the ACSA or the Virginia Department of Transportation, as necessary to protect both its employees, the ACSA's employees, and the public at large against damage to property and bodily injury or death. Truck mounted crash cushions, if needed, shall be negotiated on an individual basis. The Contractor shall comply with the Virginia Department of Transportation Flagging Certification Program. The contractor shall also comply with OSHA Regulation 29 CFR, Part 1926, Subpart P – Excavations.

9. GENERAL CONTRACTOR EXPERIENCE

The General Contractor shall be experienced in performing and managing large sewer rehabilitation projects as documented by verifiable project references. The Contractor and Subcontractors shall be fully qualified and experienced to perform the work included in this Project. Specific experience requirements are included in the Specifications for various rehabilitation methods.

For the excavation work, the Contractor shall be fully experienced in sewer rehabilitation construction including handling wastewater flow through bypass pumping, working around existing utilities and in tight corridors, trench shoring and sheeting including around existing utilities, connecting new sewers to existing sewers and manholes, grass and asphalt restoration including patching, dealing with the public and residents, providing thorough traffic control, and all else required to replace existing sewers and service laterals.

Specific project references may be requested by the Owner after receipt of bids and prior to award of this Contract as part of the bid review process. Experience with rehabilitation projects is a mandatory requirement for this Contract.

10. SUBCONTRACTORS

The Bidder shall submit with the bid a list giving the names and addresses of subcontractors proposed to be used, together with the scope of their respective parts of the work. Should any subcontractor be disapproved by the ACSA, the Contractor shall submit additional names for approval. The ACSA will act promptly in the approval of subcontractors, and when approval of the list is given, no changes of subcontractors will be permitted except for cause or reason considered justifiable by the ACSA. All subcontractors shall have experience performing the specific rehabilitation work that they are proposed for as documented by verifiable project references. All subcontractors must be approved by the ACSA prior to performing any work on this project.

11. PROJECT MANAGEMENT AND SUPERVISION

- A. The Contractor shall provide adequate project management and supervision throughout this Contract. At a minimum, the Contractor shall provide a full-time, Project Manager and a full-time, on-site General Superintendent. In addition, each crew, including subcontractor's crews, must have an experienced, English-speaking foreman. The Contractor's General Superintendent(s) must be on-site to observe the work at all times when work is being performed, including work performed by subcontractors. Work shall cease whenever the General Superintendent(s) is not on-site to observe the work. The Owner may allow the Contractor's foremen to act on behalf of the General Superintendent if so requested but will not allow subcontractor's foremen to act in such a manner. The Contractor's General Superintendent(s) must observe all work performed by subcontractors.
- B. The Contractor's full-time Project Manager shall manage and supervise this Contract throughout its duration. The Project Manager shall have a minimum of 5 years of experience managing and supervising this type of construction, including excavation, sewer rehabilitation work, and manhole rehabilitation, backed up by project references. The references must clearly indicate that the proposed person acted as the Project Manager. The Project Manager's obligations, duties and responsibilities shall include, but not be limited to, the following:
1. serve as main point of contact for Owner with authority to act on behalf of the Contractor
 2. prepare, process, submit and administer shop drawings and other submittals
 3. perform field engineering
 4. coordinate with property owners and the public
 5. coordinate with other utilities
 6. coordinate with VDOT
 7. prepare and process proposals, change orders, field orders, etc.
 8. administer and coordinate subcontracts to ensure that quality work is being performed
 9. coordinate, prepare and submit all required schedules and accurately update schedules for presentation at progress meetings
 10. prepare, modify, coordinate and administer payment applications
 11. prepare accurate and complete record drawings
 12. provide general quality control to ensure that all Contract work meets or exceeds the Contract requirements
 13. attend all project meetings
- C. The Contractor's full-time, on-site General Superintendent(s) shall be on-site during all construction activities including work by subcontractors. The General Superintendent shall have at least 5 years of experience managing and supervising this type of construction, including excavation, sewer rehabilitation work, sewer lining, and manhole rehabilitation,

and supervising subcontractors as backed up by project references. The references must clearly indicate that the proposed person(s) acted as the General Superintendent. The General Superintendent's obligations, duties and responsibilities shall include, but not be limited to, the following:

1. serve as main contact point for Owner's on-site representative
 2. work with Owner's on-site representative to ensure a high-quality project that meets the Owner's expectations and the Contract requirements - failure to work with the Owner's representative in good faith shall result in removal of the superintendent from the job and replacement with a suitable superintendent
 3. coordinate all work and work schedules with the Owner's representative
 4. supervise all field work including work of Contractor's forces (foreman, laborers, etc.) and subcontractors
 5. ensure that all discussions with the Owner's representative are implemented by Contractor's forces
 6. coordinate with property owners and the public and supervise the distribution of project notifications
 7. ensure that all approved submittals and traffic control plans are being followed and implemented by Contractor's forces
 8. review quantities being requested for monthly payment applications with the Owner's representative
 9. provide general quality control to ensure that all Contract work meets or exceeds the Contract requirements
 10. attend all project meetings
- D. Each foreman proposed to act as such on this Contract must have a minimum of 2 years of experience as a foreman for the specific work he/she is proposed to supervise. References must be submitted to demonstrate that the proposed person(s) have the required experience. The references must clearly indicate that the proposed person(s) acted as a foreman.
- E. The resumes and project references (names and phone numbers) of the proposed Project Manager, General Superintendent(s) and foremen shall be submitted to the Owner for review and approval prior to the preconstruction conference. The Owner will contact references to determine if the proposed persons meet the requirements specified herein. The findings of the Owner will be issued prior to the preconstruction conference if adequate time is available or at the preconstruction conference. The Owner may request interviews with the proposed person(s). The Owner's decision on the acceptability of the proposed person(s) shall be final, and the Contractor shall immediately propose alternate personnel that meet the specified requirements if the proposed person(s) is denied. No waivers of these requirements shall be permitted. No work shall begin until the Project Manager, General Superintendent and foremen are approved and are on-site working on this project.
- F. The Contractor shall not replace or substitute the Project Manager, General Superintendent(s) and foremen without obtaining prior approval from the Owner. The Contractor shall make any such request to change supervision in writing, and the Owner will respond within 10 business days of the request. Work shall cease on the project any time such a change is made until approval of new supervision is granted to the Contractor. Additional or alternate supervisory personnel must meet all of the above requirements.
- G. Payment for all project management and supervision shall be a mandatory subsidiary obligation under the Contract, and no separate payment will be made by the Owner

14. PAY ESTIMATES

Pay estimates shall conform to Section 00800 of these Contract Documents.

Sample pay estimate forms are included in these Contract Documents. The Contractor will be required to modify all forms and pay estimate documentation to meet the needs of the Owner. Detailed breakdowns for all work performed will be required (broken down into specific work per specific work order, etc.). The Contractor shall work with the Owner at the first pay estimate submittal to develop all final forms for pay estimates.

- A. The Contractor will provide the following documents with each payment request:
1. Signed Estimate Forms.
 2. Schedule of values showing work completed.
 3. Detailed breakdowns of all work performed by work order.
 4. Microsoft Excel files of all breakdowns and schedule of values.
 5. Survey of all new waterlines, and services (including meter boxes), installed where payment is being requested.
 6. Acceptance testing as specified including all pressure testing and disinfection performed.
- B. Contract Closeout Documents: The Contractor will provide the following documents with the final payment request:
1. Consent of Surety to Final Payment.
 2. Contractor's affidavit - Release and Waiver of Claim.
 3. Signed estimate forms.
- C. Final payment will not be authorized until these documents have been properly completed and submitted by the Contractor, and all deficiencies noted at the final inspection have been corrected and approved.
- D. No payment will be made for stored materials.

15. PEDESTRIAN ACCESSIBILITY IN THE PUBLIC RIGHT-OF-WAY DURING CONSTRUCTION

Prior to initiating work, the Contractor shall submit a plan to the Owner detailing the Contractor's methods for maintaining pedestrian access in work areas located within the public right-of-way, including streets and sidewalks. The submitted plan must be approved by the Owner prior to initiating work; changes to the plan shall be made, as required, based upon the Owner's review.

16. WARRANTY PERIOD

The Contractor shall warrant all work and materials installed in this Contract for one year from the date of final acceptance unless a longer warranty period is dictated in a separate specification section of these Contract Documents; the longer warranty period shall govern. The date of final acceptance shall be the date that final payment (for the initial contract or any subsequent renewals) is made to the Contractor. Prior to final acceptance, the Contractor shall submit a written plan on how warranty issues will be addressed including manhole issues and restoration issues.

17. PROJECT FORMS

Forms that will/may be used in this Project are provided in Appendix C. The forms include:

- Application for Payment Summary Page
NOTE: this is just the summary page; the Contractor shall attach a schedule of values summarizing all quantities included in the invoice and paid to date and shall also provide a detailed breakdown of work by work order/area as specified. The Owner may revise the summary page as deemed necessary to comply with their accounting requirements and needs.
- Work Change Directive (1 page)
- Change Order (2 pages)
- Field Order (1 page)
- Change Proposal Request (1 page)
- Shop Drawing Transmittal (1 page)
- Contractor's Affidavit of Release and Waiver of Claim (1 page).

END OF SECTION 00810

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SECTION 00850
ALBEMARLE COUNTY SERVICE AUTHORITY
ESCROW AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 20____
by and among the Albemarle County Service Authority, a public body politic and corporate,
organized and existing under the laws of the Commonwealth of Virginia (the "ACSA"), _____

a _____ corporation,
("Contractor"),

(Name of Bank)

(Address of Bank)

a trust company, bank or savings and loan institution with its principal office located in the
Commonwealth (hereinafter referred to as "Bank"); and _____
_____ (the "Surety") provides:

ACSA and Contractor have entered into a contract for the ACSA's Briarwood Water Main Replacement Project (ACSA Project Number 2021-01). This Agreement is pursuant to, but in no way amends or modifies, the Contract. Payments made hereunder or the release of funds from escrow shall not be deemed approval or acceptance of performance by the Contractor.

In order to assure full and satisfactory performance by the Contractor of its obligations under the Contract, the ACSA is required thereby to retain certain amounts otherwise due the Contractor. The Contractor has, with the approval of the ACSA, elected to have these retained amounts held in escrow by the Bank. This Agreement sets forth the terms of the escrow. The Bank shall not be deemed a party to, bound by, or required to inquire into the terms of the Contract or any other instrument or agreement between the ACSA and the Contractor.

The ACSA shall, from time to time, pursuant to the Contract, pay to the Bank amounts retained by it under the Contract. Except as to amounts actually withdrawn from escrow by the ACSA, the Contractor shall look solely to the Bank for the payment of funds retained under the Contract and paid by the ACSA to the Bank.

The risk of loss by diminution of the principal of any funds invested under the terms of this Contract shall be solely upon the Contractor.

Funds and securities held by the Bank pursuant to this Escrow Agreement shall not be subject to levy, garnishment, attachment, lien, or other process whatsoever. The Contractor agrees not to assign, pledge, discount, sell or otherwise transfer or dispose of his interest in the escrow account or any part thereof, except to the Surety following written notice to ACSA.

Upon receipt of checks or warrants drawn by the ACSA and made payable to the Bank as escrow agent, the Bank shall promptly notify the Contractor, negotiate the same and deposit or invest and reinvest the proceeds in approved securities in accordance with the written

instructions of the Contractor. In no event, shall the Bank invest the escrowed funds in any security not approved in accordance with the terms hereof.

The following securities, and none other, are approved securities for all purposes of this Agreement:

1. United States Treasury Bonds, United States Treasury Notes, United States Treasury Certificates of Indebtedness or United States Treasury Bills;
2. Bonds, notes and other evidences of indebtedness unconditionally guaranteed as to the payment of principal and interest by the United States;
3. Bonds or notes of the Commonwealth of Virginia;
4. Bonds of any political subdivision of the Commonwealth of Virginia, if such bonds carried, at the time of purchase by the Bank or deposit by the Contractor, a Standard and Poor's or Moody's Investors Service rating of at least "A"; and
5. Certificates of deposit issued by commercial banks located within the Commonwealth of Virginia, including, but not limited to, those insured by the Bank and its affiliates.

Any bonds, notes, or other evidences of indebtedness listed in Section (1) through (3) above, may be purchased pursuant to a repurchase agreement with a bank, within or without the Commonwealth of Virginia having a combined capital, surplus and undivided profit of not less than \$25,000,000, provided the obligation of the Bank to repurchase is within the time limitations established for investments as set forth herein. The repurchase agreement shall be considered a purchase of such securities even if title, and/or possession of such securities is not transferred to the escrow agent, so long as the repurchase obligation of the Bank is collateralized by the securities themselves, and the securities have on the date of the repurchase agreement a fair market value equal to at least 100% of the amount of the repurchase obligation of the Bank, and the securities are held by a third party, and segregated from other securities owned by the Bank.

No security is approved hereunder which matures more than five years after the date of its purchase by Bank or deposit by Contractor.

In the event that the amounts paid to the Bank by the ACSA constitute proceeds of bonds issued by the ACSA, then, to the extent that the rate of interest paid on any funds invested under the terms of the Contract exceeds the rate of interest on the ACSAs bonds, such "excess interest" shall be paid to the ACSA.

The Contractor may from time to time withdraw the whole or any portion of the escrowed funds by depositing with the Bank approved securities in an amount equal to, or in excess of, the amount so withdrawn. Any securities so deposited or withdrawn shall be valued at such time of deposit or withdrawal at the lower of par or market value, the latter as determined by the Bank. Any securities so deposited shall thereupon become a part of the escrowed fund.

Upon receipt of a written direction signed by an authorized representative of the ACSA, the Bank shall pay and deliver the principal of the fund, or any specified amount thereof, to the

Contractor, in cash or in kind, as may be specified by the Contractor. Such payment and delivery shall be made as soon as possible after receipt of the direction.

For its services hereunder the Bank shall be entitled to a reasonable fee in accordance with its published schedule of fees or as may be agreed upon by the Bank and the Contractor. Such fee and any other costs of administration of this Escrow Agreement shall be paid from the income earned upon the escrowed fund and, if such income is not sufficient to pay the same, by the Contractor.

The net income earned and received upon the principal of the escrowed fund shall be paid over to the Contractor in quarterly or more frequent installments. Until so paid or applied to pay the Bank's fee or any other costs of administration, such income shall be deemed a part of the principal of the fund.

The Surety undertakes no obligation, hereby, but joins in this Escrow Agreement for the sole purpose of acknowledging that its obligation as surety for the Contractor's performance of the contract are not affected hereby.

WITNESS the following signatures, all as of the day and year first above written.

Albemarle County Service Authority

By: _____

Executive Director

COMMONWEALTH OF VIRGINIA)

) to-wit:

ALBEMARLE COUNTY)

Subscribed and sworn to before me, the undersigned Notary Public, by _____,
Executive Director of Albemarle County Service Authority, a public body politic and corporate
organized and existing under the laws of the Commonwealth of Virginia, this _____ day of _
_____, 20____.

Notary Public

Notary Registration Number

My Commission Expires:

(SEAL)

[CONTRACTOR]

By: _____

Name: _____

Title: _____

COMMONWEALTH OF VIRGINIA)

) to-wit:

_____ COUNTY/CITY)

Subscribed and sworn to before me, the undersigned Notary Public, by _____, of
_____, this _____ day of _____, 20____.

Notary Public

Notary Registration Number

My Commission Expires:

(SEAL)

[BANK]

By: _____

Name: _____

Title: _____

COMMONWEALTH OF VIRGINIA)

) to-wit:

_____ COUNTY/CITY)

Subscribed and sworn to before me, the undersigned Notary Public, by _____, of
_____, this _____ day of _____, 20____.

Notary Public

Notary Registration Number

My Commission Expires:

(SEAL)

[SURETY]

By: _____
Attorney-in-fact

COMMONWEALTH OF VIRGINIA)

) to-wit:

_____ COUNTY/CITY)

Subscribed and sworn to before me, the undersigned Notary Public, by _____, of
_____, this _____ day of _____, 20_____.

Notary Public

Notary Registration Number

My Commission Expires:

(SEAL)

END OF SECTION 00850

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SECTION 00900

ADDENDA

PART 1 – GENERAL

- 1.01 Addenda, if issued, shall be inserted following this page. Addendum No. 1 will begin on page 00910-1, Addendum No. 2 will begin on page 00920-1, etc.
- 1.02 The bidder is reminded to complete Section 00490 entitled “Receipt of Addenda” when preparing Bid Form for submission.

END OF SECTION 00900

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SECTION 01 02 00

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 BASIS FOR MEASUREMENT AND PAYMENT

Measurement and Payment will be made for only those items included in the Contract Bid Form or Contract Change Order(s) for the Project.

- A. All Measurement for payment will be for completed work performed according to Contract Drawings, Specifications, Construction Details and the Bid Form. The Owner shall measure the work in accordance with the methods outlined below.
- B. Payment for any item is full compensation for furnishing all labor, materials and equipment required to acceptably complete the item of the work. Any work and material paid for under one item will not be paid for under another item though the work and material may enter another item.

PART 2 – CONTRACT ITEMS

Contract Items include those items which are fully defined in the contract drawings and specifications and anticipated to be required for completion of the work.

2.1 MOBILIZATION (BID ITEM NO. 1)

- A. Measurement
 - 1. Measurement for mobilization shall be the job, with no accrual unit of measure taken, and shall include:
 - a. Movement to, placement and set-up on project site of personnel of any type, equipment, supplies, and accessory items.
 - b. Establishment of Contractor offices, buildings, proper sanitary facilities and other needed project facilities plus utility work and connections needed for these facilities.
 - c. Scheduling details, coordination, and any other work and expense appropriate that is prior to the start of work under contract pay items.
 - d. The cost of required insurance and bonds and/or any initiation of the contract work is also included in this item.
 - e. The cost of acquiring required permits and approvals as necessary in order to complete the Work.
 - f. Site preparation and set up including clearing and grubbing, removal of temporary utilities, and site restoration.
 - g. Installation of sediment and erosion control measures and removal of same upon completion of the work.
 - h. All labor, materials, and equipment required to control and maintain traffic patterns in a safe and efficient manner on roadways, parking lot areas, public access ways, and paved roadway shoulders during installation activities.
 - i. Pre- and post-construction photographic and video documentation.

- j. Demobilization from project site, including removal of personnel, equipment, supplies, and accessories.
 - k. All other work required for a complete project, which is not included in other bid items.
2. No additional payment will be made for demobilization and remobilization due to shutdowns, suspensions of the work or for other mobilization activities. The Contractor's total price for Mobilization shall not exceed three percent (3%) of the total bid price for the project, including contingent items.

B. Payment

1. Payment for Mobilization will be made at the Lump Sum price as stated in the Bid Form.
2. Payment shall be made in two installments. The first fifty percent (50%) of the amount bid for this Item shall be made payable to the Contractor as part of the Contractor's first progress payment request. The second and final payment of fifty percent (50%) of the amount bid for this Item shall be made payable to the Contractor in conjunction with Final Payment of the project.
3. Payment of the Contract lump sum price for mobilization and furnishing all labor, materials, tools, and equipment needed to complete work will not be made more than once, regardless of the fact that the Contractor may have, for any reason, shut down his work on the project or moved equipment away from the project and then back again.

2.2 FURNISH AND INSTALL DUCTILE IRON WATER MAIN (BID ITEMS NO. 2, 4, AND 6)

A. Measurement

1. Unit of Measurement for Ductile Iron Pipe shall be the linear foot of each size installed and accepted following testing. Measurement shall include all labor, materials, and equipment required to install ductile iron pipe and fittings as shown on the Contract Documents and as specified herein.

B. Payment

1. Payment for ductile iron pipe shall be at the contract unit price per linear foot installed, including all fittings and appurtenances as shown on the Contract Drawings. Payment and price shall constitute full compensation for all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the Contract Documents including, but not limited to:
 - a. Survey, layout and measurement;
 - b. Test pits;
 - c. Excavation (including rock), dewatering, bedding, and suitable backfill/select fill, aggregate stone, and aggregate base course.
 - d. Replacing utility segments that are damaged or removed during the installation;
 - e. Temporary road restoration for all trenches, as required;
 - f. Concrete and mechanical thrust restraint systems;
 - g. Insulation and polyethylene encasement, as specified;
 - h. Concrete cradle, as specified;
 - i. Water main disinfection and testing; leakage testing; and compaction testing;
 - j. Abandonment of existing water mains, indicated in the Contract Documents;

- k. Removal/disposal of existing fire hydrants, meter boxes, valves, blow-offs and associated appurtenances as indicated in the Contract Documents.
 - l. Site clearing and grubbing, including tree removal.
 - m. Surface restoration, including restoration of asphalt driveways, concrete sidewalks, concrete curbs and gutters, and/or concrete v-ditch.
 - n. Temporary water service, as required.
2. Excavation shall be made in accordance with the trenching details provided in the Contract Documents. Additional excavation due to the Contractor's means and methods for construction or when not required due to unknown utility conflicts shall be not paid as additional work. No payment shall be made for unsuitable backfill not ordered or approved by the Engineer.

2.3 FURNISH AND INSTALL GATE VALVES AND BOXES (BID ITEM NO. 3, 5, AND 7)

- A. Measurement
- 1. Unit of measure for Gate Valves shall be for each gate valve, valve box, and valve box extension installed and shall include all labor, materials, and equipment required to install the gate valve, riser, valve box and appurtenances in accordance with the Contract Documents. Measurement will be based on the actual number of gate valves installed. Gate valves and valve box installed as part of a Fire Hydrant Assembly are not included.
- B. Payment
- 1. Payment for gate valves and boxes shall be at the contract unit price per each installed. Payment and price shall constitute full compensation for excavation (including rock), suitable backfill, thrust restraint, valve, riser, valve box, all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the Contract Documents.

2.4 8-INCH TAPPING SLEEVE AND VALVE (BID ITEM NO. 8)

- A. Measurement
- 1. Unit of measure for 8-Inch Tapping Sleeve and Valve shall be for each tapping sleeve, tapping valve, valve box, and valve box extension installed and shall include all labor, materials, and equipment required to install the tapping sleeve and valve on the existing water main, tap the main, install riser, valve box and appurtenances in accordance with the Contract Documents. Measurement will be based on the actual number of tapping sleeves and valves installed.
- B. Payment
- 1. Payment for tapping sleeve and valve shall be at the contract unit price per each installed. Payment and price shall constitute full compensation for excavation (including rock), cleaning existing pipe, suitable backfill, thrust restraint, tapping sleeve, tapping valve, riser, valve box, all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the Contract Documents

2.5 FURNISH AND INSTALL 1-INCH COPPER WATER SERVICE LINE (BID ITEM NO. 9)

- A. Measurement

1. Unit of measurement for 1-inch copper water service line shall be per linear foot installed. Measurement shall include all labor, materials and equipment required to install 1-inch copper water service pipe and fittings to provide service to the current and future customers. Measurement will be the actual linear foot of 1-inch copper pipe installed and accepted following testing. Measurement includes fittings, piping, fill material, 2-inch casing pipe (PVC SDR 21 or HDPE DR11) and appurtenances.

B. Payment

1. Payment for water 1-inch copper water service line shall be at the contract unit price per linear foot installed. Payment and price shall constitute full compensation for all labor, materials, excavation (including rock), dewatering, bedding, suitable backfill/select fill, aggregate stone, and aggregate base course, surface restoration, tools and equipment required to install 1-inch copper water service pipe, fittings, and incidentals necessary to instate the new water service and to complete the work as indicated on the Contract Documents. Unless otherwise indicated, excavation shall be made in accordance with the details as provided in the Contract Documents. Unless otherwise indicated

2.6 FURNISH AND INSTALL WATER SERVICE CONNECTION - NOT IN PAVEMENT (BID ITEM NO. 10)

A. Measurement

1. Unit of measurement for water service connections – not in pavement shall be for each meter installed and water service connection furnished and installed in an unpaved surface. Measurement shall include all labor, materials and equipment required to locate and install the meter box with lid, water meter (5/8" – 1"), meter setter, corporation stop, tap and all related appurtenances; and to reconnect water service, including installation of 1" HDPE pipe (PE3408, DR 9) from the existing meter to new meter, as shown on the Contract Documents. Proposed water meters will be provided by Albemarle County Service Authority for Contractor to install. Restoration of asphalt pavement surfaces in public roads is not included.

B. Payment

1. Payment for the water service connection – not in pavement shall be at the contract unit price per each installed. Payment and price shall constitute full compensation for all labor, materials, excavation (including rock), dewatering, bedding, suitable backfill, surface restoration (including restoration of asphalt driveways, concrete sidewalks, concrete curbs and gutters, and concrete v-ditch), tools and equipment required to locate and install the meter box, and incidentals necessary to reconnect the water service and complete the work as indicated on the Contract Documents. Unless otherwise indicated, excavation shall be made in accordance with the details as provided in the Contract Documents.

2.7 FIRE HYDRANT REMOVAL AND VALVE ABANDONMENT (BID ITEM NO. 11)

A. Measurement

1. Unit of measurement for fire hydrant removal shall be for each existing fire hydrant removed and disposed of off-site. The fire hydrant branch gate valve shall be abandoned in place and the valve box riser filled below grade. Measurement shall include all labor, materials and equipment

required to remove the top section of the fire hydrant and valve box below finish grade, backfill and surface restoration as noted on the Contract Documents.

C. Payment

1. Payment for fire hydrant removals shall be at the contract unit price per each removal. Payment and price shall constitute full compensation for all labor, materials, excavation, suitable backfill, surface restoration (including restoration of asphalt driveways and lawns, tools and equipment required to dismantle the fire hydrant, proper off-site disposal of materials, and incidentals necessary to complete the work as indicated on the Contract Documents. Unless otherwise indicated, excavation shall be made in accordance with the details as provided in the Contract Documents.

2.8 FURNISH AND INSTALL FIRE HYDRANT ASSEMBLY (BID ITEM NO. 12)

A. Measurement

1. Unit of measure for fire hydrant assembly shall be for each fire hydrant assembly installed and shall include all labor, materials and equipment required to install the fire hydrant; vertical riser piping; tees/taps from the water main; lead and branch pipe; valve, valve box, and valve box extension; bends on lead piping; and other related appurtenances for the complete and functional installation of the fire hydrant assembly as shown on the Contract Documents

B. Payment

1. Payment for fire hydrant assembly shall be at the contract unit price per each fire hydrant assembly installed. Payment and price shall constitute full compensation for excavation (including rock), suitable backfill/select fill, aggregate stone, and aggregate base course, thrust blocks, fittings, restraining; testing; painting, salvaging of the existing fire hydrant, and all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the contract drawings and in the Contract Documents.

2.9 BLOW-OFF ASSEMBLY (BID ITEM NO. 13)

A. Measurement

1. Unit of measure for blow-off assembly shall be for each blow-off assembly installed and shall include all labor, materials and equipment required for the complete and functional installation of the blow-off assembly as shown on the Contract Documents.

B. Payment

1. Payment for blow-off assembly shall be the contract unit price per each blow-off assembly installed. Payment and price shall constitute full compensation for excavation (including rock), suitable backfill/select fill, aggregate stone, and aggregate base course, fittings, testing, painting, all labor, materials equipment, tools and incidentals necessary to complete the work as indicated in the Contract Documents.

2.10 FURNISH AND INSTALL AIR RELEASE VALVE ASSEMBLY (BID ITEM NO. 14)

A. Measurement

1. Unit of measure for air release valve assembly shall be for each air release valve assembly installed and shall include all labor, materials and equipment required to install the air release valve, copper pipe, manhole cone section and lid, corporation stop, brass/bronze pipe and other related appurtenances for the complete and functional installation of the air release valve assembly as shown on the Contract Documents.
 - B. Payment
 1. Payment for air release valve assembly shall be the contract unit price per each air release valve assembly installed. Payment and price shall constitute full compensation for excavation (including rock), suitable backfill/select fill, aggregate stone, and aggregate base course, fittings, testing, painting, all labor, materials, equipment, tools and incidentals necessary to complete the work as indicated on the Contract Documents.
- 2.11 FLOWABLE FILL (BID ITEM NO. 15)
- A. Measurement
 1. Unit of measure for flowable fill shall be for each cubic yard of flowable fill placed and shall include all labor, equipment and materials required to abandon existing water mains, as indicated on the Contract Documents, and remove them from service following acceptance of the new mains.
 - B. Payment
 1. Payment for flowable fill will be the contract unit price per cubic yard of flowable fill. Payment and price shall constitute full compensation for all excavation (including rock), suitable backfill/select fill, labor, materials, equipment, tools and incidentals necessary to completely abandon existing water mains to the limits indicated on the Contract Documents.
- 2.12 ASPHALT PAVEMENT RESTORATION – ASPHALT BASE COURSE (TYPE IM-19.0) (BID ITEM NO. 16)
- A. Measurement
 1. Unit of measure for asphalt base course shall be the actual tonnage of IM-19.0 pavement mix that is satisfactorily placed, as specified and/or detailed in the Contract Documents. Measurements shall include labor, materials, tools, equipment, and services necessary, including pavement milling where required, to complete the work specified.
 - B. Payment
 1. Payment for asphalt base course shall be made at the Contract unit price per ton of IM-19.0 pavement mix that is satisfactorily placed, as specified and/or detailed in the Contract Documents. Price and payment shall include labor, materials, tools, equipment, and incidentals needed, including pavement milling where required, to complete the work specified.
- 2.13 ASPHALT PAVEMENT RESTORATION – ASPHALT SURFACE COURSE (TYPE SM-9.5A) (BID ITEM NO. 17)
- A. Measurement
 1. Unit of measure for asphalt surface course shall be the actual square yardage of SM-9.5A pavement mix that is satisfactorily overlaid on top of the existing pavement surface, as specified and/or detailed on the Contract

Documents. Measurements shall include labor, materials, tools, equipment, and services necessary, including pavement milling where required, to complete the work specified.

- B. Payment
 - 1. Payment for asphalt surface course shall be made at the Contract unit price per square yard of SM-9.5A pavement mix that is satisfactorily overlaid on top of the existing pavement surface, as specified and/or detailed on the Contract Documents. Price and payment shall include labor, materials, tools, equipment, and incidentals needed, including pavement milling where required, to complete the work specified.

2.14 REPLACING EXISTING FRAME AND COVERS (BID ITEM NO. 18)

- A. Measurement
 - 1. Unit of measure for replacing existing frame and covers will be the actual number of each type of frame and cover replaced and shall include all materials, equipment and work required to replace existing frames and covers in paved areas as specified and in accordance with Specification Sections 33 05 13 – Precast Concrete Manhole and 33 01 30.81 – Manhole Rehabilitation.
- B. Payment
 - 1. Payment for replacing existing frame and covers will be based on the unit price bid per each frame and cover replaced, which price and payment shall include all labor, materials, tools, equipment and incidentals needed to complete the work specified.

2.15 TRAFFIC CONTROL (BID ITEM NO. 19)

- A. Measurement
 - 1. Unit of measure for Traffic Control shall be on a lump sum basis for providing, operating and maintaining VDOT approved arrow boards, message boards, water filled barriers and/or crash trucks where required by VDOT and/or as directed by the Engineer and/or Owner, and shall include all labor, materials, tools, equipment, and services necessary to complete the work as specified and in accordance with VDOT standards.
 - 2. All other traffic control measures (i.e. cones, flaggers, signs, etc.) will not be measured separately for payment but will be considered incidental to the work being performed.
- B. Payment
 - 1. Payment for traffic control will be made at the contract unit price per lump sum, which, price and payment shall include all labor, materials, tools, equipment and incidentals needed to complete the work specified
 - 2. Traffic control measures utilized under this Bid Item must be approved by the Engineer and/or Owner prior to the work being performed. If these Bid Items are used without approval, no payment will be made.

PART 3 – CONTINGENT ITEMS

Contingent items include those items which may be required during the course of the performance of the work.

3.1 ADDITIONAL EXCAVATION BELOW SPECIFIED SUBGRADE (BID ITEM NO. 20)

A. Measurement

1. Where excavation below specified grade is performed as directed by the Owner or Engineer, measurement and payment shall be for each cubic yard of specified subgrade excavated. This item shall include all labor, equipment and disposal for removal of additional material.

B. Payment

1. Basis of Payment shall be for each cubic yard of specified subgrade excavated. Payment and price shall constitute full compensation for excavation (including rock) including all labor, equipment, tools and incidentals necessary to complete the work as directed by the Owner or Engineer, including removal and disposal of spoil. No payment shall be made for excavation not specifically directed by the Owner or Engineer.

3.2 TEST PITS ORDERED BY ENGINEER (BID ITEM NO. 21)

A. Measurement

1. This work shall consist of the labor, materials and equipment necessary for, and incidental to the provision and excavation of test pits as directed by Engineer or Owner including, but not limited to excavation (including rock), backfilling, and all restoration required in obtaining depth and location of existing structures or utilities. For the purpose of the bid price, the Contractor shall assume an excavation and backfill quantity of 1 cubic yard for each test pit, whether or not this number is actual. Method of Measurement shall be on a per each basis including all excavation, backfill, etc. required to complete the work. Locations for test pits will be as designated or directed by Engineer or Owner.

B. Payment

1. Basis of payment for test pits shall be at the contract unit price for each test pit excavated. Payment and price shall constitute full compensation for excavation, backfill, and paving, furnishing all labor, equipment, tools and incidentals necessary to complete the work. No payment under this item shall be made for test pits not ordered by the Engineer or Owner.

3.3 SELECT FILL – AGGREGATE STONE (BID ITEM NO. 22)

A. Measurement

1. This work shall include all stone backfill below specified grade when required by unforeseen trench conditions as set forth in the Contract Documents. Aggregate Stone will be measured based on the actual cubic yardage of aggregate stone placed and approved for use by the Owner and shall include all labor, materials, tools, equipment, and services necessary to complete the work specified.

B. Payment

1. Basis of payment for Aggregate Stone shall be at the contract unit price for each cubic yard of stone placed, as ordered by Owner or Engineer. Price and payment shall be inclusive of all labor, materials, tools, equipment and

incidentals needed to complete the work as specified. No separate payment will be made for standard bedding; it is an incidental part of the work element to which it applies.

3.4 SELECT FILL – SUITABLE EARTH (BID ITEM NO. 23)

A. Measurement

1. This work shall include all select fill placed and compacted below specified grade when required by unforeseen trench conditions as set forth in the Contract Documents and as directed by Owner or Engineer. Select fill will be measured based on the actual compacted cubic yardage of material placed, inclusive of all labor, materials, tools, equipment, and services necessary to complete the work specified.

B. Payment

1. Basis of payment for select fill shall be at the contract unit price for each cubic yard of material placed, as ordered or approved by Owner or Engineer. Price and payment shall be inclusive of all labor, materials, tools, equipment and incidentals needed to complete the work as specified. No separate payment will be made for standard bedding; it is an incidental part of the work element to which it applies.

3.5 TEMPORARY PAVEMENT RESTORATION (BID ITEM NO. 24)

A. Measurement

1. Unit of measure for temporary pavement restoration will be the square yard of temporary pavement (BM-25.0 base mix or “cold patch”) placed that is satisfactorily installed as directed by Owner or Engineer. The work shall include all labor, materials, tools, equipment and services necessary to complete the work specified.

B. Payment

1. Payment for temporary pavement restoration will be made at the contract unit price per square yard of temporary pavement (BM-25.0 base mix or “cold patch”) placed as designated, which price and payment shall include all labor, materials, tools, equipment and incidentals needed to complete the work. No payment shall be made under this item unless temporary pavement restoration is ordered or directed by Owner or Engineer.

3.6 FURNISH AND INSTALL PRESSURE REDUCING VALVE (PRV) – BEHIND WATER METER (BID ITEM NO. 25)

A. Measurement

1. Unit of measurement for furnishing and installing pressure reducing valve (PRV) – behind water meter shall be for each PRV installed. Measurement shall include all labor, materials and equipment required to locate and install the PRV and all related appurtenances; and to reconnect water service. Proposed PRVs will be provided by Albemarle County Service Authority for Contractor to install. Restoration of asphalt pavement surfaces in public roads is not included.

B. Payment

1. Payment for the furnishing and installing pressure reducing valve (PRV) – behind water meter shall be at the contract unit price per each installed.

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Payment and price shall constitute full compensation for all labor, materials, excavation (including rock), dewatering, bedding, suitable backfill, surface restoration (including restoration of asphalt driveways, concrete sidewalks, concrete curbs and gutters, and concrete v-ditch), tools and equipment required to locate and install the PRV, and incidentals necessary to reconnect the water service and complete the work as indicated on the Contract Documents. Unless otherwise indicated, excavation shall be made in accordance with the details as provided in the Contract Documents.

END OF SECTION

SECTION 01 32 33

PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes furnishing the services of a competent photographer to provide color photographs of the progress of the project.

PART 2 - PRODUCTS

2.1 GENERAL

- A. The submitted photographs shall be printed (hardcopy) or digital copies shall be provided.
 - 1. If printed photographs are submitted, they shall be on 4 inch by 6 inch sheets, two sets of each taking shall be furnished to the Engineer within two weeks of the date taken.
 - 2. All photographs and negatives shall be consecutively numbered.
 - 3. Each print shall have the photograph number, date taken, and project number clearly marked on the back.
 - 4. Digital photographs shall be date and time stamped and the filename shall reference the project name/number. Digital photographs may be submitted on CD, or DVD.
 - 5. Digital videos shall be date and time stamped or time and date information may be stated in the video. The file name shall reference the project name/number. Digital video may be submitted on CD or DVD.

PART 3 - EXECUTION

3.1 GENERAL

- A. Photographs/video shall be taken of each watermain segment pre-construction, final construction, during installation, prior to backfilling, and at connections to existing watermains, at a minimum.
- B. A minimum of twenty-five (25) photographs (or one (1) video file) shall be taken monthly to document construction progress.
- C. The pre-construction and final photographs or videos shall be taken from the same locations. None of the pre- and final photographs or videos are required to be aerial.
- D. Upon the completion of the project, the Contractor shall submit a complete file of the negatives or digital files on CD/DVD to the Engineer.

END OF SECTION

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SECTION 03 30 00

CONCRETE FOR PIPELINES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes cast-in-place concrete used in the construction of pipelines and appurtenances including cradles, encasements, thrust blocks, anchors, and manholes; cast-in-place concrete used in the construction of sidewalks, gutters, curbs and other items of restoration; and reinforcing steel, formwork, and items of concrete accessories required for the completion of the work.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
 - 1. American Society for Testing and Materials (ASTM)
 - 2. American Concrete Institute (ACI)

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
 - 1. Name and location of concrete supplier.
 - 2. Concrete mix design indicating amount of all ingredients for each class of concrete to be used in the work.
 - 3. Manufacturer's literature for curing compounds, joint materials, admixtures, etc.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cement
 - 1. Cement shall conform to ASTM C150, Type I.
 - 2. Type II or III may be employed with the Engineer's acceptance.
- B. Fine and Coarse Aggregates
 - 1. Aggregates shall comply in all respects to ASTM C33.
 - 2. Maximum size of coarse aggregate:
 - a. General concrete – 1½ inches (Size No. 467)
 - b. Sidewalks, curbs and gutters ¾ inches (Size No. 67)
- C. Water
 - 1. Water shall be obtained from the public potable water supply and shall be clear and free from injurious substances.
- D. Admixtures
 - 1. Water reducing admixtures shall conform to ASTM C 494, Type A.
 - 2. Air-entraining admixtures shall conform to ASTM C260.

- E. Reinforcing steel bars shall be deformed new billet steel conforming to ASTM A615, Grade 60. Wire fabric shall be cold drawn steel conforming to ASTM A185.
- F. Expansion joint material shall be resilient and nonextruding type premolded bituminous impregnated fiberboard, 2-inch thickness and of the width required for full depth joints.
- G. Membrane curing compound shall be pigmented and conform to the requirements of ASTM C309.
- H. Grout
 1. All grout shall be non-shrink, non-metallic, non-gas forming, preblended and ready for use requiring only the addition of water.

PART 3 - EXECUTION

3.1 MIX DESIGN

- A. Mix design shall be established by the concrete supplier based on a proven strength record for concrete made with similar ingredients.
- B. Mix designs shall conform to ACI 211, except as specified herein, using approved materials.
- C. The various classes of concrete are designated as follows:

<u>Class</u>	<u>Design Compressive Strength at 28 Day, psi</u>	<u>Maximum Water/Cement Ratio by Weights</u>	<u>Minimum Sack of Cement Per Cu. Yd.</u>
A - High Early Strength	5000		6
B (non air-entrained)	4000	0.50	6
B (air-entrained)	4000	0.44	6
C	3000	0.64	5

- D. Maximum Slump
 1. General - 4 inches
 2. Sidewalks, curbs and gutters - 3 inches
 3. Use minimum water possible subject to workability.
- E. Except where otherwise specified, all concrete exposed to the weather, or in contact with sewage shall be air-entrained in the range of 5% to 7%.
- F. High early strength concrete shall be used for thrust blocking under paved area to allow backfill of trench excavation within 3 days.

3.2 BATCHING AND MIXING

- A. Batching

1. The Contractor shall have at his disposal a modern and dependable batch plant within a reasonable distance from the work.
2. Batching shall conform to ACI 304.
3. Use only approved materials.

B. Mixing and Delivery

1. Mixing and delivery shall conform to ASTM C94.

3.3 PLACING CONCRETE

A. Placing shall conform to ACI 304.

B. Forms shall be substantially free from surface defects and sufficiently tight to prevent leakage of mortar. They shall be properly braced and tied so as to maintain position and shape during and after placing of concrete.

C. The Contractor shall build into the concrete reinforcing steel, sleeves, waterstops, etc., as shown on the Contract Drawings, or in restoration work, reinforcing steel and other embedded items equal to that found in the concrete being replaced.

D. All concrete shall be thoroughly consolidated by the use of vibrators or by spading or puddling sticks and tampers.

E. No concrete shall be deposited under water without written permission of the Engineer and then only in accordance with proper tremie techniques.

F. Cold weather concreting shall conform to ACI 306.

G. Hot weather concreting shall conform to ACI 305.

3.4 FINISHING

A. All formed concrete surfaces to be exposed shall be given a rubbed finish. In the case of restoration, the rubbed finish shall be equal to that of the concrete surface being replaced.

B. Inverts, benchwalls, floors or structures and similar surfaces shall be given a float finish.

C. Sidewalks shall be hand floated using a magnesium float and given a broom finish perpendicular to traffic, edges of slabs to be tooled.

3.5 CURING

A. Concrete shall be maintained in a moist condition for seven days using methods that will induce complete and continuous saturation.

B. Sidewalks, curbs and gutters may be cured by the use of a pigmented membrane curing compound applied in accordance with the manufacturer's directions.

3.6 NON-SHRINK GROUTING

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- A. For openings that are left in new concrete or where made in existing concrete for the insertion of wall castings, pipes or other fixtures, the space around these items shall be made watertight by completely filling with a non-shrink grout unless another means is specified elsewhere in the Contract Documents.
- B. All work shall be done in strict accordance with the manufacturer's recommendations.

3.7 QUALITY CONTROL

- A. The Contractor shall be solely responsible for the quality control of all concrete.
- B. Concrete which does not meet the requirements of these specifications may be rejected by the Engineer.

END OF SECTION

SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes excavation and backfilling including the loosening, removing, refilling, transporting, storage and disposal of all materials that will be considered as "earth" necessary to be removed for the construction and completion of all work under the Contract, and as shown on the Contract Drawings, specified, or directed. Regardless of materials encountered, all material is unclassified, and will follow definitions in Part 1.3. Regardless of materials encountered, no additional payment shall be made for excavation of materials within the specified limits of the project.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 31 23 23.13, "Select Fill"
- B. Section 31 23 33, "Trenching and Backfilling"

1.3 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards, and specifications, except where more stringent requirements have been specified herein:
 - 1. American Society for Testing and Materials (ASTM)
 - a. A328 Specification for Steel Sheet Piling
 - b. D698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³)
 - c. D1556 Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - d. D1760 Specification for Pressure Treatment of Timber Products
 - e. D2922 Test Methods for Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)

1.4 DEFINITIONS

- A. Excavation (or Trenching)
 - 1. Grubbing, stripping, removing, storing and rehandling of all materials of every name and nature necessary to be removed for all purposes incidental to the construction and completion of all the work under construction.
 - 2. All sheeting, sheetpiling, bracing and shoring, and the placing, driving, cutting off and removing of the same.
 - 3. All diking, ditching, fluming, cofferdamming, pumping, bailing, draining, well pointing, or otherwise disposing of water.
 - 4. The removing and disposing of all surplus materials from the excavations in the manner specified.
 - 5. The maintenance, accommodation and protection of travel and the temporary paving of highways, roads and driveways.

6. The supporting, protecting, and/or removal of all tracks, rails, buildings, curbs, sidewalks, pavements, overhead wires, poles, trees, vines, shrubbery, pipes, sewers, conduits or other structures or property in the vicinity of the work, whether over- or underground or which appear within or adjacent to the excavations, and the restoration of the same in case of settlement or other injury.
 7. All temporary bridging and fencing and the removing of same.
- B. Earth
1. All materials such as sand, gravel, clay, loam, ashes, cinders, muck, roots or pieces of timber, all rock to include soft or disintegrated rock and all ledge or bedrock and individual boulders, pavement or masonry larger than one-half cubic yard in volume.
- C. Backfill
1. The refilling of excavation and trenches to the line of filling indicated on the Contract Drawings or as directed. Using materials, as depicted by the Contract Drawings, that are suitable for refilling of excavations and trenches; and the compacting of all materials used in filling or refilling by rolling, ramming, watering, puddling, etc., as may be required. Where the below terminology is used in this contract, they shall be defined as follows:
 - a. Select backfill shall be VDOT No. 68 stone and will be in accordance with the details within the Contract Drawings and Specification 02230.
 - b. Select Aggregate backfill shall be VDOT No. 21B stone and will be in accordance with the details within the Contract Drawings and Specification 02230.
 - c. Suitable material shall be native soils that are suitable for use as backfill in accordance to the details within the Contract Drawings and as defined herein.
- D. Spoil
1. Surplus excavated materials not required or not suitable for backfills or embankments.
- E. Embankments
1. Fills constructed above the original surface of the ground or such other elevation as specified or directed.
- F. Limiting Subgrade
1. As shown in the trench details on the Contract Drawings for pipelines.
 2. The underside of footing lines for structures.
- G. Excavation Below Subgrade
1. Excavation below the limiting subgrades of structures or pipelines.
 2. Where materials encountered at the limiting subgrades are not suitable for proper support of structures or pipelines, the Contractor shall excavate to such new lines and grades as required.

PART 2 - PRODUCTS

2.1 MATERIALS AND CONSTRUCTION

- A. Wood Sheeting and Bracing
1. Shall be sound and straight; free from cracks, shakes and large or loose knots; and shall have dressed edges where directed.

2. Shall conform to National Design Specifications for Stress Grade Lumber having a minimum fiber stress of 1200 pounds per square inch.
 3. Sheeting and bracing to be left-in-place shall be pressure treated in accordance with ASTM D1760 for the type of lumber used and with a preservative approved by the Engineer.
- B. Steel Sheeting and Bracing
1. Shall be sound
 2. Shall conform to ASTM A328 with a minimum thickness of 3/8 inch.
- C. Trench Box and Shoring
1. Fabricated metal trench boxes and shoring systems shall be rated for the depth of trench required.

PART 3 - EXECUTION

3.1 UNAUTHORIZED EXCAVATION

- A. Whenever excavations are carried beyond or below the lines and grades shown on the Contract Drawings, or as given or directed by the Engineer, all such excavated space shall be refilled with special granular materials, concrete or other materials as the Engineer may direct. All refilling of unauthorized excavations shall be at the Contractor's expense.
- B. All material which slides, falls or caves into the established limits of excavations due to any cause whatsoever, shall be removed and disposed of at the Contractor's expense and no extra compensation will be paid to the Contractor for any materials ordered for refilling the void areas left by the slide, fall or cave-in.

3.2 REMOVAL OF WATER

- A. General
1. The Contractor shall at all times provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of pipes, structures, or other work.
 2. Unless otherwise specified, all excavations which extend down to or below the static groundwater elevations shall be dewatered by lowering and maintaining the groundwater beneath such excavations at all times when work thereon is in progress, during subgrade preparation and the placing of the structure or pipe thereon.
 3. Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least 24 hours after placement, and no stream of water shall be allowed to flow over such work until such time as the Engineer may permit.
 4. Where the presence of fine-grained subsurface materials and a high groundwater table may cause the upward flow of water into the excavation with a resulting quick or unstable condition, the Contractor shall install and operate a well point system to prevent the upward flow of water during construction.

5. Water pumped or drained from excavations, or any sewers, drains or water courses encountered in the work, shall be disposed of in a suitable manner without injury to adjacent property, the work under construction, or to pavements, roads, drives, and water courses. No water shall be discharged to sanitary sewers. Sanitary sewage shall be pumped to sanitary sewers or shall be disposed of by an approved method.
6. Any damage caused by or resulting from dewatering operations shall be the sole responsibility of the Contractor.

B. Work Included

1. The construction and removal of cofferdams, sheeting and bracing, and the furnishing of materials and labor necessary therefor.
2. The excavation and maintenance of ditches and sluiceways.
3. The furnishing and operation of pumps, well points, and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

3.3 STORAGE OF MATERIALS

A. Sod

1. Any sod cut during excavation shall be removed and stored during construction so as to preserve the grass growth. Sod damaged while in storage shall be replaced in like kind at the sole expense of the Contractor.

B. Topsoil

1. Topsoil suitable for final grading shall be removed and stored separately from other excavated material.

C. Excavated Materials

1. All excavated materials shall be stored in locations so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation. Stored materials shall be kept neatly piled and trimmed, so as to cause as little inconvenience as possible to public travel or to adjoining property holders.
2. Special precautions must be taken to permit access at all times to fire hydrants, fire alarm boxes, police and fire department driveways, and other points where access may involve the safety and welfare of the general public.

3.4 DISPOSAL OF MATERIALS

A. Spoil Material

1. All spoil materials shall be disposed of as required by the local, state or federal regulations pertaining to the area or as described in the Special Provisions or on the Contract Drawings.
2. The surface of all spoil areas shall be graded and dressed and no unsightly mounds or heaps shall be left on completion of the work.

3.5 SHEETING AND BRACING

A. Installation

1. The Contractor shall furnish, place and maintain such sheeting, bracing and shoring as may be required to support the sides and ends of excavations in such manner as to prevent any movement which could, in any way, injure the pipe, structures, or other work; diminish the width necessary for

construction; otherwise damage or delay the work of the Contract; endanger existing structures, pipes or pavements; or cause the excavation limits to exceed the right-of-way limits.

2. In no case will bracing be permitted against pipes or structures in trenches or other excavations.
3. Sheeting shall be driven as the excavation progresses, and in such manner as to maintain pressure against the original ground at all times. The sheeting shall be driven vertically with the edges tight together, and all bracing shall be of such design and strength as to maintain the sheeting in its proper position. Seepage which carries fines through the sheeting shall be plugged to retain the fines.
4. Where breast boards are used between soldier pile, the boards shall be back packed with soil to maintain support.
5. The Contractor shall be solely responsible for the adequacy of all sheeting and bracing.

B. Removal

1. In general, all sheeting and bracing, whether of steel, wood, or other material, used to support the sides of trenches or other open excavations, shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a pipe or structural foundation shall not be withdrawn, unless otherwise directed, before more than 6 inches of earth is placed above the top of the pipe or structural foundation and before any bracing is removed. The voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose or otherwise as may be approved.
2. The Contractor shall not remove sheeting and bracing until the work has attained the necessary strength to permit placing of backfill.

C. Left in Place

1. If, to serve any purpose of his own, the Contractor files a written request for permission to leave sheeting or bracing in the trench or excavation, the Engineer may grant such permission, in writing, on condition that the cost of such sheeting and bracing be assumed and paid by the Contractor.
2. The Contractor shall leave in place all sheeting, shoring and bracing which are shown on the Contract Drawings or specified to be left in place or which the Engineer may order, in writing, to be left in place. All shoring, sheeting and bracing shown or ordered to be left in place will be paid for under the appropriate item of the Contract. No payment allowance will be made for wasted ends or for portions above the proposed cutoff level which are driven down instead of cut-off.
3. In case sheeting is left in place, it shall be cut off or driven down as directed so that no portion of the same shall remain within 12 inches of the street subgrade or finished ground surface.

3.6 BACKFILLING

A. General

1. All excavations shall be backfilled to the original surface of the ground or to such other grades as may be shown, specified or directed.
2. Backfilling shall be done with suitable excavated materials which can be satisfactorily compacted during refilling of the excavation. In the event the

excavated materials are not suitable, Special Backfill as specified or ordered by the Engineer shall be used for backfilling.

3. Any settlement occurring in the backfilled excavations shall be refilled and compacted.

B. Unsuitable Materials

1. Stones, pieces of rock or pieces of pavement greater than 1 cubic foot in volume or greater than 5 inches in any single dimension shall not be used in any portion of the backfill.
2. All stones, pieces of rock or pavement shall be distributed through the backfill and alternated with earth backfill in such a manner that all interstices between them shall be filled with earth. In no case shall rock or pieces of pavement be placed closer than two (2) feet vertically to the crown of the installed pipe.
3. Frozen earth shall not be used for backfilling.

C. Compaction and Density Control

1. The compaction shall be as specified for the type of earthwork, i.e., structural, trenching or embankment.
 - a. The compaction specified shall be the percent of maximum dry density.
 - b. The compaction equipment shall be suitable for the material encountered.
 - c. The compaction shall be 95% of the maximum dry density unless otherwise specified for the type of earthwork.
2. Where required, to assure adequate compaction, in-place density test shall at the expense of the Contractor be made by an approved testing laboratory.
 - a. The moisture-density relationship of the backfill material shall be determined by ASTM D698, Method D.
 - 1) Compaction curves for the full range of materials used shall be developed.
 - b. In-place density shall be determined by the methods of ASTM D1556 or ASTM D2922 and shall be expressed as a percentage of maximum dry density.
3. Where required, to obtain the optimum moisture content, the Contractor shall add, at his expense, sufficient water during compaction to assure the specified maximum density of the backfill. If, due to rain or other causes, the material exceeds the optimum moisture content, it shall be allowed to dry, assisted, if necessary, before resuming compaction or filling efforts.
4. The Contractor shall be responsible for all damage or injury done to pipes, structures, property, or persons due to improper placing or compacting of backfill.

3.7 OTHER REQUIREMENTS

A. Drainage

1. All material deposited in roadway ditches or other water courses shall be removed immediately after backfilling is completed and the section, grades and contours of such ditches or water courses restored to their original condition, in order that surface drainage will be obstructed no longer than necessary.

B. Unfinished Work

1. When, for any reason, the work is to be left unfinished, all trenches and excavations shall be filled and all roadways, sidewalks and watercourses left unobstructed with their surfaces in a safe and satisfactory condition. The surface of all roadways and sidewalks shall have a temporary pavement surface as detailed on the Contract drawings.
- C. Hauling Material on Streets
1. When it is necessary to haul material over the streets or pavements, the Contractor shall provide suitable tight vehicles so as to prevent deposits on the streets or pavements. In all cases where any materials are dropped from the vehicles, the Contractor shall clean up the same as often as required to keep the crosswalks, streets and pavements clean and free from dirt, mud, stone and other hauled material.
- D. Dust Control
1. It shall be the sole responsibility of the Contractor to control the dust created by any and all of his operations to such a degree that it will not endanger the safety and welfare of the general public.
 2. Calcium chloride and petroleum products shall not to be used for dust control.
- E. Test Pits
1. At the contractor's expense, for the purpose of obtaining detail locations of underground obstructions, the Contractor shall make excavations as required in advance of the work.

END OF SECTION

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SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes requirements for clearing and grubbing as required by the work shown on the Contract Drawings or as directed by the Engineer for site grading and earthwork, site access, and for pipeline construction. The work shall consist of clearing, grubbing, removing and disposing of trees, stumps, vegetation, debris, and other objects, as required by work on the Contract Drawings.

1.2 REFERENCES

- A. The Work shall be in accordance with the latest revisions of the following codes, standards, and specifications except where more stringent requirements have been specified herein.
 - 1. American Society for Testing and Materials (ASTM)
 - a. ASTM D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³)

1.3 REGULATORY REQUIREMENTS

- A. All work shall be in accordance with the State and local regulations and laws, including disposal of materials.
- B. Burning of materials is prohibited, both on-site and off-site.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

- A. Clearing shall consist of the removal and disposal of all trees, logs, brush, snags, bushes, vines, shrubs, decayed stumps, leaves, roots, grasses, weeds, fences, posts, rubbish, and other perishable and objectionable materials. Large bushes and trees smaller than 8 inches in diameter shall be cut 6 inches above ground line; trees 8 inches and larger in diameter shall be cut 12 inches above ground line. All other vegetation in areas to be cleared shall be cut within 2 inches of the ground.
- B. Grubbing shall consist of the removal of all stumps, roots and root clusters. For stumps having a maximum diameter of less than 8 inches, remove to a minimum depth of 12 inches below the finished ground surface; for stumps that are 8 inches in diameter or greater, remove to a minimum depth of 24 inches below the finished ground surface.
- C. No trees, shrubs or plantings located outside the public right of way or permanent utility easement shall be removed. Any damage to private property by the

Contractors' operations shall be restored or replaced to the satisfaction of the Owner at no cost to the County.

3.2 APPLICATION

A. Site Improvements and Pipeline Construction

1. All brush shall be cut, and either chipped and removed from the project site, or stacked, and burned, if permissible according to all applicable regulations in the State and/or local jurisdiction and only with prior approval by the Engineer. The Contractor shall be responsible for obtaining any and all required burning permits. Fees related to burning permits shall be borne by the Contractor.
2. All stumps shall be grubbed, removed from the area of the work and be legally disposed of in a suitable location offsite.
3. Topsoil shall be stripped and stockpiled for use in the reseeding work after completion of the site work.

3.3 BACKFILL AND COMPACTION OF GRUBBED AREAS

- A. Backfilling and compaction of grubbed areas shall be performed in accordance with the Section 31 23 33 "Trenching and Backfilling" for areas of proposed pipeline or utility installation.
- B. All other grubbed areas, such as proposed lawn areas, shall be backfilled with acceptable materials at 8-inch lifts (maximum) and compacted to obtain minimum of 90% Maximum Dry Density (ASTM 1557).

END OF SECTION

SECTION 31 23 23.13

SELECTED FILL

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes selected fill materials used in either embedment or special backfill, as specified or as directed by the Engineer.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards, and specifications, except where more stringent requirements have been specified herein:
 - 1. American Society for Testing and Materials (ASTM)
 - a. D422 - Method for Particle-Size Analysis of Soil

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
 - 1. The name and location of the source of the material.
 - 2. Samples and test reports of the material.

1.4 DEFINITIONS

- A. Embedment or Lining
 - 1. Any type granular material specified or directed placed below an imaginary line drawn one foot above the inside diameter of the pipe and within the trench limits.
- B. Special Backfill
 - 1. Pipelines
 - a. Any selected fill material specified or directed placed above an imaginary line drawn one foot above the inside diameter of the pipe and within the trench limits.
 - 2. Structures
 - a. Any selected fill material specified or directed placed within the excavation limits, either in, under or adjacent to the structure.
- C. Special Granular Material
 - 1. Special granular material shall mean any of the granular materials listed below or other materials ordered by the Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Crushed Gravel and Crushed Stone

1. Crushed Gravel or stone with clean, hard, tough, and durable pieces free from coatings and deleterious amounts of friable, thin, elongated, or laminated pieces, soluble salts, or organic materials.
2. Crushed gravel or stone shall have the following gradation by weight as required in the Contract Documents.
 - a. VDOT Size No. 21A

% Passing	SIEVE
100	2inch
94-100	1-inch
63-72	3/8-inch
32-41	No. 10
14-24	No. 40
6-12	No. 200

- b. VDOT Size No. 68

% Passing	SIEVE
100	1-inch
90-100	3/4-inch
31-65	3/8-inch
0-20	No. 4
0-8	No. 8
0-5	No. 16

B. Structural Fill

1. Special backfill material for structural fill shall meet the requirements set forth in VDOT Road and Bridge Specification for Select Material, Type III. The type of special backfill material shall be approved by the Engineer.

C. Sand

1. Course sand having the following gradation by weight:

% Passing	SIEVE
100	3/8-inch
95-100	No. 4
80-100	No. 8
50-85	No. 16
25-60	No. 30
10-30	No. 50

2-10	No. 100
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- D. Subbase and Aggregate Base Courses
 - 1. Granular materials to be used as subbase and aggregate base courses for pavements shall conform to the requirements of Section 208 of the VDOT Road and Bridge Specifications.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Special granular material as specified, shown, or directed for pipeline embedment shall be placed in accordance with the Section 31 23 33, "Trenching and Backfilling".
- B. Special backfill where specified or directed shall be placed in accordance with the backfilling provisions of the Section 31 00 00, "Earthwork" and Section 31 23 33, "Trenching and Backfilling".

3.2 DISPOSAL OF DISPLACED MATERIALS

- A. Materials displaced through the use of selected fill shall be wasted or disposed of by the Contractor at his own expense.

3.3 SETTLEMENTS

- A. Any settlements in the finished work shall be made good by the Contractor.

END OF SECTION

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SECTION 31 23 23.33

FLOWABLE FILL

PART 1- GENERAL

1.1 SUMMARY

- A. Flowable fill refers to a cementitious slurry consisting of a mixture of fine aggregate or filler, water, and cementitious material(s), which is used as a fill or backfill. This mixture is capable of filling all voids in irregular excavations and hard to reach places (such as under undercuts of existing slabs), is self-leveling, and hardens in a matter of a few hours without the need for compaction in layers. Flowable fill is sometimes referred to as controlled density fill (CDF), controlled low strength material (CLSM), lean concrete slurry, and unshrinkable fill.

1.2 REFERENCES

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
1. D4832-95 - Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
 2. C618-99 - Standard Specifications for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as Mineral Admixture in Concrete. (Use Fly Ash conforming to the chemical and physical requirements for mineral admixture, Class F listed, including Table 2 (except for Footnote A). Waive the loss on ignition requirement.)
 3. C403 -99 - Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
 4. C150-99a - Standard Specification for Portland Cement
 5. C33-99ae1 - Standard Specification for Concrete Aggregates
 6. C494 -99a - Standard Specification for Chemical Admixtures for Concrete
 7. C940-98a - Standard Specification for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced - Aggregate Concrete in the Laboratory
- C. American Concrete Institute (ACI):
1. SP-150 Controlled Low-Strength Materials

1.3 DESCRIPTION

- A. Furnish and place flowable fill in a fluid condition, that sets within the required time and, after curing, obtains the desired strength properties as evidenced by the laboratory testing of the specific mix design, at locations shown on the figures or as directed by the Engineer.

1.4 RELATED WORK

- A. Materials testing and inspection during construction.

1.5 DEFINITIONS

- A. Flowable Fill - Ready-mix Controlled Low Strength Material is also known as controlled density fill, and several other names, some of which are trademark

names of material suppliers. Flowable fill (Controlled Low Strength Material) differs from Portland cement concrete as it contains a low cementitious content to reduce strength development for possible future removal. Unless specifically approved otherwise, by the Engineer, flowable fill shall be designed as a permanent material, not designed for future removal. Design strength for this permanent type flowable fill shall be a compressive strength of 300 psi minimum at 28 days. Chemical admixtures may also be used in flowable fill to modify performance properties of strength, flow, set and permeability.

1.6 SUBMITTALS

- A. Flowable Fill Mix Design: Provide flowable fill mix design containing cement and water. At the contractor's option, it may also contain fly ash, aggregate, or chemical admixtures in any proportions such that the final product meets the strength and flow consistency, and shrinkage requirements included in this specification.
 - 1. Test and Performance - Submit the following data:
 - a. Flowable fill shall have a minimum compressive strength of 300 psi according to ASTM C 39 at 28 days after placement.
 - b. Flowable fill shall have minimal subsidence and bleed water shrinkage. Evaporation of bleed water shall not result in shrinkage of more than 1/8 inch per ft. of flowable fill depth (for mixes containing high fly ash content). Measurement of a Final Bleeding shall be as measured in Section 10 of ASTM C 940 "Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.
 - c. Flowable fill shall have a unit weight of 115 – 145 lb/ft³ measured at the point of placement after a 60-minute ready-mix truck ride.
- B. Provide documentation that the admixture supplier has experience of at least one year, with the products being provided and any equipment required to obtain desired performance of the product.
- C. Manufacturer's Certificates: Provide Engineer with a certification that the materials incorporated in the flowable fill, following achievement of the required strength, do not represent a threat to groundwater quality.

1.7 QUALITY ASSURANCE

- A. Manufacturer: Flowable fill shall be manufactured by a ready-mix concrete producer with a minimum of 1 year of experience in the production of similar products.
- B. Materials: For each type of material required for the work of this Section, provide primary materials that are the products of one manufacturer. If not otherwise specified here, materials shall comply with recommendations of ACI 229, "Controlled Low Strength Materials."

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and handle all products and equipment required, in strict compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations.

1.9 PROJECT CONDITIONS

- A. Perform installation of flowable fill only when approved by the Engineer, and when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide flowable fill containing, at a minimum, cementitious materials and water. Cementitious materials shall be Portland cement, pozzolanic materials, or other self-cementing materials, or combinations thereof, at the contractor's option. The flowable fill mix design may also contain, fine aggregate or filler, and/or chemical admixtures in any proportions such that the final product meets the strength, flow consistency and shrinkage requirements included in this specification, as approved by the Engineer.
- B. Portland Cement: ASTM C150, Type 1 or Type 2. Meeting VDOT standards.
- C. Mixing Water: Fresh, clean, and potable. Meeting VDOT standards for use as mix-water for cast-in-place concrete.
- D. Air-Entraining Admixture: ASTM C260.
- E. Chemical Admixtures: ASTM C494.
- F. Aggregate: ASTM C33.

2.2 FLOWABLE FILL MIXTURE

- A. Mix design shall produce a consistency that will result in a flowable product at the time of placement, which does not require manual means to move it into place.
- B. Flowable fill shall have a minimum strength of 300 psi according to ASTM C39 at 28 days after placement.
- C. Flowable fill shall have minimal subsidence and bleed water shrinkage. Evaporation of bleed water shall not result in shrinkage of more than 1/8 inch per foot of flowable fill depth (for mixes containing high fly ash content). Measurement of a Final Bleeding shall be as measured in Section 10 of ASTM C 940 "Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.
- D. Flowable fill shall have a unit weight of 115 – 145 lbs/feet³ measured at the point of placement after a 60-minute ready-mix truck ride. In the absence of strength data, the cementitious content shall be a maximum of 150 lbs/cy.
- E. Flowable fill shall have an in-place yield of at least 98% of design yield for permanent type.
- F. Provide equipment as recommended by the Manufacturer and comply with manufacturer's recommendations for the addition of additives, whether at the production plant or prior to placement at the site.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions of substrates and other conditions under which work is to be performed, and notify the Engineer in writing, of circumstances detrimental to the proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PROTECTION AND CURING

- A. Protect exposed surfaces of flowable fill from premature drying, wash by rain or running water, wind, mechanical injury, and excessively hot or cold temperature. Curing method shall be subject to approval by Engineer.

END OF SECTION

SECTION 31 23 33

TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes excavation and backfill as required for pipe installation or other construction in the trench, and removal and disposal of water, in accordance with the applicable provisions of the Section 31 00 00 "Earthwork" unless modified herein.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 EXCAVATION

- A. The trench excavation shall be located as shown on the Contract Drawings or as specified. Under ordinary conditions, excavation shall be by open cut from the ground surface. Where the depth of trench and soil conditions permit, tunneling may be required beneath cross walks, curbs, gutters, pavements, trees, driveways, railroad tracks and other surface structures. No additional compensation will be allowed for such tunneling over the price bid for open cut excavation of equivalent depths below the ground surface unless such tunnel excavation is specifically provided for in the Contract Documents.
- B. Trenches shall be excavated to maintain the depths as shown on the Contract Drawings or as specified for the type of pipe to be installed. Where the excavation has been carried too deep, Contractor shall refill the over-excavated trench with No. 68 or 21A VDOT at no additional cost to the Owner.
- C. The alignment and depth shall be determined and maintained by the use of a string line installed on batter boards above the trench, a double string line installed along side of the trench or a laser beam system.
- D. The minimum width of trench excavation shall be 8 inches on each side of the pipe as depicted on the drawings.
- E. Trenches shall not be opened for more than 300 feet in advance of pipe installation nor left unfilled for more than 100 feet in the rear of the installed pipe when work is in progress without the consent of the Engineer. Open trenches shall be protected and barricaded as required.
- F. Bridging across open trenches shall be constructed and maintained where required.

3.2 SUBGRADE PREPARATION FOR PIPE

- A. Where pipe is to be laid on undisturbed bottom of excavated trench, mechanical excavation shall not extend lower than the finished subgrade elevation at any point.

- B. Where pipe is to be laid on special granular material the excavation below subgrade shall be to the depth specified, shown, or directed. The excavation below subgrade shall be refilled with special granular material as specified or directed, shall be deposited in layers not to exceed 6 inches and shall be thoroughly compacted prior to the preparation of pipe subgrade.
- C. The subgrade shall be prepared by shaping with hand tools to the contour of the pipe barrel to allow for uniform and continuous bearing and support on solid undisturbed ground or embedment for the entire length of the pipe.
- D. Pipe subgrade preparation shall be performed immediately prior to installing the pipe in the trench. Where bell holes are required they shall be made after the subgrade preparation is complete and shall be only of sufficient length to prevent any part of the bell from becoming in contact with the trench bottom and allowing space for joint assembly.

3.3 STORAGE OF MATERIALS

- A. Traffic shall be maintained at all times in accordance with the applicable VDOT requirements. Where no Highway Permit is required at least one-half of the street must be kept open for traffic.
- B. Where conditions do not permit storage of materials adjacent to the trench, the material excavated from a length as may be required, shall be removed by the Contractor, at his cost and expense, as soon as excavated. The material subsequently excavated shall be used to refill the trench where the pipe had been built, provided it be of suitable character. The excess material shall be removed to locations selected and obtained by the Contractor.
- C. The Contractor shall, at his cost and expense, bring back adequate amounts of satisfactory excavated materials as may be required to properly refill the trenches.
- D. If directed by the Engineer, the Contractor shall refill trenches with select fill or other suitable materials and excess excavated materials shall be disposed of as spoil.

3.4 REMOVAL OF WATER AND DRAINAGE

- A. The Contractor shall at all times provide and maintain proper and satisfactory means and devices for the removal of all water entering the trench and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work.
- B. The removal of water shall be in accordance with the Section 31 00 00 "Earthwork".

3.5 PIPE EMBEDMENT

- A. All pipe shall be protected from lateral displacement and possible damage resulting from superimposed backfill loads, impact or unbalanced loading during backfilling operations by being adequately embedded in suitable pipe embedment material. To ensure adequate lateral and vertical stability of the installed pipe during pipe jointing and embedment operations, a sufficient amount of the pipe embedment material to hold the pipe in rigid alignment shall be uniformly deposited and thoroughly compacted on each side, and back of the bell, of each pipe as laid.

- B. Concrete cradle and encasement of the class specified shall be installed as shown on the Contract Drawings or as ordered by the Engineer. Before any concrete is placed, the pipe shall be securely blocked and braced to prevent movement or flotation. The concrete cradle or encasement shall extend the full width of the trench as excavated unless otherwise authorized by the Engineer. Where concrete is to be placed in a sheeted trench it shall be poured directly against sheeting to be left in place or against a bond-breaker if the sheeting is to be removed.
- C. Embedment materials placed above the centerline of the pipe or above the concrete cradle to a depth of 12 inches above the top of the pipe barrel shall be deposited in such manner as to not damage the pipe. Compaction shall be 95% maximum dry density unless otherwise shown or specified for the type of embedment being installed.

3.6 BACKFILL ABOVE EMBEDMENT

- A. The remaining portion of the pipe trench above the embedment shall be refilled with suitable materials compacted as specified.
 - 1. The trench shall be refilled in horizontal layers not more than 8 inches in thickness, and compacted to obtain 95% maximum density, and determined as set forth in the Section 31 00 00 "Earthwork".
 - 2. Hand tamping shall be required around buried utility lines or other subsurface features that could be damaged by mechanical compaction equipment.
- B. Backfilling of trenches beneath, across or adjacent to drainage ditches and water courses shall be done in such a manner that water will not accumulate in unfilled or partially filled trenches and the backfill shall be protected from surface erosion by adequate means.
 - 1. Where trenches cross waterways, the backfill surface exposed on the bottom and slopes thereof shall be protected by means of stone or concrete rip-rap or pavement.
- C. Backfilling trenches under roadways and open areas shall be as shown on the Contract Drawings and as specified in Section 31 23 23.13 "Select Fill".
- D. All settlement of the backfill shall be refilled and compacted as it occurs.
- E. Temporary pavement shall be placed as specified in the Section 32 01 00.91 "Restoration of Surfaces".

END OF SECTION

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SECTION 31 25 00

EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals necessary to perform all installation, maintenance, removal, and cleanup related to sedimentation control work as specified, shown on the Contract Drawings, and required by the Owner. The Work shall include, but not necessarily be limited to, installation of temporary access ways and staging areas, silt fences, block and gravel filters, sediment traps, diversion dikes, splash aprons, sediment removal and disposal, device maintenance, removal of temporary devices, temporary mulching, erosion control matting installation, and final cleanup.

1.2 RELATED WORK

- A. Section 31 00 00, "Earthwork".
- B. Section 31 23 33, "Trenching and Backfilling".
- C. Section 32 93 13, "Topsoil and Seeding".

1.3 SUBMITTALS

- A. Contractor shall submit to the Owner an Erosion and Sediment Control Plan showing details of erosion and sediment control devices and locations, and technical product literature for all commercial products to be used for sedimentation and erosion control.
- B. Contractor shall submit copies of approved Erosion and Sediment Control Permits from appropriate governing agencies.
- C. Contractor shall submit the name of the responsible land disturber.

1.4 REFERENCE SPECIFICATIONS

- A. The materials and method of construction shall be in accordance with the latest edition of the Virginia Erosion and Sediment Control Handbook and VSMP Permit Requirements.

1.5 PERFORMANCE REQUIREMENTS

- A. Contractor shall be responsible for obtaining all erosion and sediment control permits required prior to any land-disturbing operations.
- B. Contractor shall be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site to off-site areas or into the stream system via surface runoff or underground drainage systems. Measures in addition to those shown on the Erosion and Sediment Plan necessary to prevent the movement of sediment off-site shall be installed, maintained, removed, and cleaned up at no additional cost to the Owner. Should the Contractor fail to control the movement of sediment from the construction area into the storm sewer system, the Owner may at its discretion require the Contractor to clean the sediment from the affected reaches of the storm sewer system at the Contractor's expense.

- C. Sedimentation and erosion control measures shall conform to the requirements of the Virginia Sediment and Erosion Control Regulations.
- D. Where Contractors' efforts to control erosion have been demonstrated to be ineffective or potentially ineffective in the opinion of the Owner, the Owner may order that the Erosion Control Plan be amended and that additional erosion control measures be constructed at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Erosion and sediment control products shall be in accordance with Virginia Erosion and Sediment Control Handbook, Latest Edition and Virginia Regulations VR 625-02-00 Erosion and Sediment Control Regulations.
- B. Silt fence.
 - 1. Wooden stakes shall be a minimum of 5' long, 2-inch diameter for oak, and 4-inch diameter for pine.
 - 2. Welded wire fabric shall be 6-inch by 6-inch mesh of 14.5 gauge by 14.5 gauge steel wire.
 - 3. Silt fence fabric shall be extra strength filter cloth fabric.
 - 4. Tie wires for securing silt fence fabric to wire mesh shall be light gauge metal clips (hog rings), or 1/32-inch diameter soft aluminum wire.
 - 5. Commercially available silt fence assemblies (2-inch by 2-inch wooden posts with attached filter fabric) may be substituted in lieu of separate steel posts and filter fabric.
- C. One quarter (1/4) inch woven wire mesh shall be galvanized steel or hardware cloth.
- D. Straw mulch shall be utilized on all newly graded areas to protect against washouts and erosion. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, or rye that is free from noxious weeds, mold, or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10 inches or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment.
- E. Latex acrylic copolymer, such as Soil Sealant with coalescing agent as manufactured by Soil Stabilization Co., Merced, CA, or approved equal shall be used as straw mulch tackifier.
- F. An asphalt tackifier shall only be used when temperatures are too low to allow the use of a latex acrylic copolymer, and only with prior written approval from the VDOT.
- G. Erosion control matting shall be installed in all seeded drainage swales and ditches as directed by the Owner. Erosion control matting shall be from the Virginia Department of Transportation's approved products list for the use specified, or equal.
- H. CMU units for block and gravel curb inlet sediment filter shall conform to ASTM DC90, lightweight Grade N, Type 1, hollow units of 8 inch by 16-inch nominal face size. I.
Pipe for slope drains shall be flexible, corrugated polyethylene pipe, non-perforated, as manufactured by Advanced Drainage Systems, Inc., Columbus, OH, or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Maintenance of all Erosion and Sediment Control devices shall be in accordance with the Virginia Erosion and Sediment Control Handbook, Latest Edition and Virginia Regulations VR 625-02-00 Erosion and Sediment Control Regulations.
- B. Silt fence installation.
 - 1. Silt fences shall be positioned as necessary to prevent off-site movement of sediment produced by construction activities.
 - 2. Silt fences shall be installed in accordance with in accordance with Chapter 3 – 3.05 of the Virginia Erosion and Sediment Control Handbook, Latest Edition.
- C. Construct block and gravel curb inlet sediment filters from 1/4-inch woven wire mesh, CMU, and crushed gravel. Lower course of CMU shall be laid with openings facing to the side. Top course shall be placed with openings facing up. Cover lower course of CMU openings with woven wire mesh and crushed stone.
- D. Staging areas and access ways shall be surfaced with a minimum depth of 4 inches of crusher run aggregate.

3.2 INSPECTIONS AND MAINTENANCE

- A. Inspections.
 - 1. Contractor shall make a visual inspection of all sedimentation control devices once per week and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to off-site areas, Contractor shall promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.
- B. Device maintenance.
 - 1. Maintenance of all Erosion and Sediment Control devices shall be in accordance with the Virginia Erosion and Sediment Control Handbook, Latest Edition and Virginia Regulations VR 625-02-00 Erosion and Sediment Control Regulations.
 - 2. Silt fences.
 - a. Remove accumulated sediment once it builds up to 1/2 of the height of the fabric.
 - b. Replace damaged fabric, or patch with a 2-foot minimum overlap.
 - c. Make other repairs as necessary to ensure that the fence is filtering all runoff directed to the fence.
 - 3. Block and gravel curb inlet sediment filters: Replace crushed stone when it becomes saturated with silt.
 - 4. Rock check dams.
 - a. Sediment must be removed when the level of deposition reaches approximately 1/2 the height of the barrier.
 - b. Erosion caused by high flows around the edges of the dam should be corrected immediately.
 - 5. Add crushed stone to access ways and staging areas as necessary to maintain a firm surface free of ruts and mud holes.

3.3 TEMPORARY MULCHING

- A. Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 30 days of the completion of rough grading.

- B. Straw mulch shall be applied at rate of 100 lbs./1000 ft.² and tackified with latex acrylic copolymer at a rate of 1 gal./1000 ft.² diluted in a ratio of 30 parts water to 1 part latex acrylic copolymer mix.

3.4 EROSION CONTROL MATTING

- A. Erosion control matting shall be installed in all seeded drainage swales, ditches, and slopes greater than 2 to 1 as directed by the Owner in accordance with manufacturer's instructions. The area to be covered shall be properly prepared, fertilized, and seeded with permanent vegetation before the blanket is applied. When the blanket is unrolled, the netting shall be on top and the fibers in contact with the soil over the entire area. The blankets shall be applied in the direction of water flow, and stapled. Blankets shall be placed a minimum of 3 rows (of 4- foot) wide (total approximately 12-foot width) within the drainage swale/ditch and stapled together in accordance with manufacturer's instructions. Side overlaps shall be a minimum of 4 inches. The staples shall be made of wire, .091 inch in diameter or greater, U-shaped with legs 10 inches in length and a 1-1/2-inch crown.
- B. Upper and lower ends of the matting shall be buried to a depth of 4 inches in a trench. Erosion stops shall be created every 25 feet by making a fold in the fabric and carrying the fold into a silt trench across the full width of the blanket. The bottom of the fold shall be 4 inches below the ground surface. Staple on both sides of fold. Where the matting must be cut or more than 1 roll length is required in the swale, turn down upper end of downstream roll into a slit trench to a depth of 4 inches. Overlap lower end of upstream roll 4 inches past edge of downstream roll, and staple.
- C. To ensure full contact with soil surface, roll matting with a roller weighing 100 pounds per foot of width perpendicular to flow direction after seeding, placing matting, and stapling. Thoroughly inspect channel after completion. Correct any areas where matting does not present a smooth surface in full contact with the soil below.

3.5 REMOVAL AND FINAL CLEANUP

- A. Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner. Re-grade all areas disturbed during this process and stabilize against erosion with surfacing materials as specified herein.

END OF SECTION

SECTION 32 01 00.91

RESTORATION OF SURFACES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes restoration and maintenance of all types of surfaces, sidewalks, curbs, gutters, culverts and other features disturbed, damaged or destroyed during the performance of the work under or as a result of the operations of the Contract.
- B. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to the condition of each before the work began.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
 - 1. American Society for Testing and Materials (ASTM)
 - a. D698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³)
 - 2. Virginia Department of Transportation
 - a. Roads and Bridge Specifications (Current Edition)

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
 - 1. A schedule of restoration operations shall be submitted for approval. After an accepted schedule has been agreed upon it shall be adhered to unless otherwise revised with the approval of the Engineer.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 GENERAL

- A. In general, permanent restoration of paved surfaces will not be permitted until one months' time has elapsed after excavations have been completely backfilled as specified. A greater length of time may be allowed to elapse before permanent restoration of street surfaces is undertaken, if additional time is required for shrinkage and settlement of the backfill.

- B. The replacement of surfaces at any time, whether as scheduled or as directed by the owner or his project representative, shall not relieve the Contractor of responsibility to repair damages by settlement or other failures.
- C. Work performed on private property shall be confined to the easements obtained.

3.2 TEMPORARY PAVEMENT

- A. Immediately upon completion of backfilling of the trench or excavation, the Contractor shall place a temporary pavement over all disturbed areas of streets, driveways, sidewalks, and other traveled places where the original surface has been disturbed as a result of his operations.
- B. Unless otherwise specified or directed the temporary pavement shall consist of compacted crusher run aggregate (limestone) to such a depth as required to withstand the traffic to which it will be subjected.
- C. Where asphalt concrete pavements are removed, the temporary pavement shall be surfaced with "cold patch". The surface of the temporary pavement shall conform to the slope and grade of the area being restored.
- D. The Contractor shall treat all surfaces, not covered with cold patch, for dust prevention, and as frequently as may be required.
- E. The temporary pavement shall be maintained by the Contractor in a safe and satisfactory condition until such time as the permanent paving is completed. The Contractor shall immediately remove and restore all pavements that have become unsatisfactory.

3.3 PERMANENT PAVEMENT REPLACEMENT

- A. The permanent and final repaving of all streets, driveways and similar surfaces where pavement has been removed, disturbed, settled or damaged by or as a result of performance of the Contract shall be repaired and replaced by the Contractor, with a new and similar pavement.
 - 1. The top surface shall conform to the grade of the existing adjacent pavement. The entire replacement shall meet the current specifications of the VDOT or the local community which ever has jurisdiction for the particular types of pavements being replaced.
 - 2. Where the local community has no specification for the type of pavement being replaced, the work shall be done in conformity with the VDOT's Road and Bridges Specifications, most current addition. The Engineer shall determine which portion of the specifications most closely conforms to the type of surface being replaced.

3.4 PREPARATION FOR PERMANENT PAVEMENT

- A. When scheduled and within the time specified, the temporary pavement shall be removed and a base prepared for the permanent pavement. The depth of the base course shall conform to the requirements of the local community or the VDOT Permit. To receive the permanent pavement:

1. The base shall be brought to the required grade and cross-section and thoroughly compacted before placing the permanent pavement.
 2. Any base material that has become unstable for any reason shall be removed and replaced with compacted base materials.
- B. Prior to placing the permanent pavement all service boxes, manhole frames and covers and similar structures within the area shall be adjusted to the established grade and cross-section.
- C. Edges of the existing asphalt pavement shall be saw cut a minimum of 1 foot beyond the excavation or disturbed base whichever is greater.
1. All saw cuts shall be parallel or perpendicular to the centerline of the street.

3.5 ASPHALT PAVEMENT

- A. The permanent asphalt pavement for streets, driveways and parking area surfaces shall be of bituminous materials of the same depth and kind as the existing pavement unless otherwise specified.
- B. Prior to placing of any bituminous pavement, a sealer shall be applied to the edges of the existing pavement and other features.
- C. Furnishing, handling and compaction of all bituminous materials shall be in accordance with the VDOT's Road and Bridge Specifications most current edition.

3.6 CONCRETE PAVEMENT AND PAVEMENT BASE

- A. Concrete pavements and concrete bases for asphalt, brick or other pavement surfaces shall be replaced with VDOT Class "A3" Concrete, air-entrained.
- B. Paving slabs or concrete bases shall be constructed to extend 1 foot beyond each side of the trench and be supported on undisturbed soil. Where such extension of the pavement will leave less than 2 feet of original pavement slab or base, the repair of the pavement slab or base shall be extended to replace the slab to the edge of the original pavement or base unless otherwise indicated on the Contract Drawings.
- C. Where the edge of the pavement slab or concrete base slab falls within the excavation, the excavation shall be backfilled up to the base of the concrete with Special Backfill. The Special Backfill shall be compacted to 95% maximum dry density as determined by ASTM D 698.
- D. The new concrete shall be of the same thickness as the slab being replaced and shall contain reinforcement equal to the old pavement.
1. New concrete shall be placed and cured in accordance with the applicable provisions of the VDOT's Road and Bridge Specification most current edition.

3.7 STONE OR GRAVEL PAVEMENT

- A. All pavement and other areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.
 - 1. The depth of the stone or gravel shall be at least equal to the existing.
 - 2. After compaction the surface shall conform to the slope and grade of the area being replaced.

3.8 CONCRETE WALKS, CURBS AND GUTTER REPLACEMENT

- A. Concrete walks, curbs and gutters removed or damaged in connection with or as a result of the construction operations shall be replaced with new construction.
 - 1. The minimum replacement will be a flag or block of sidewalk; 5 feet of curb or gutter; and 5 feet of ditch.
- B. Walks shall be constructed of VDOT Class "B2" concrete, air-entrained and on a 4-inch base of compacted gravel or stone.
 - 1. The walk shall be not less than 4 inches in thickness or the thickness of the replaced walk where greater than 4 inches. The walk shall have construction joints spaced not more than 25 feet apart, shall have expansion joints spaced not more than 50 feet apart and shall be sloped at right angles to the longitudinal centerline at approximately 1/4 inch per foot of width.
- C. 1/2-inch expansion joint material shall be placed around all objects within the sidewalk area as well as objects to which the new concrete will abut, such as valve boxes, manhole frames, curbs, and buildings.
- D. Walks shall be hand-floated, broom-finished, edged, grooved at the construction joints and at intermediate intervals matching those intervals of the walk being replaced.
 - 1. The intermediate grooves shall be scored a minimum of 1/4 of the depth of the walk.
 - 2. The lengths of blocks formed by the grooving tool, and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location.
- E. The minimum length of curb or gutter to be left in place or replaced shall be 5 feet. Where a full section is not being replaced, the existing curb or gutter shall be saw cut to provide a true edge.
 - 1. The restored curb or gutter shall have the same shape, thickness and finish as the curb or gutter being replaced. The curb and gutter shall be built of the same material (concrete) with construction and expansion joints as stated above for sidewalks.
 - 2. New concrete shall be placed and cured in accordance with the applicable provisions of the VDOT's Road and Bridge Specification most current edition.

3.9 LAWNS AND IMPROVED AREAS

- A. The area to receive topsoil shall be graded to a depth as specified but not less than 4 inches below the proposed finished surface.
 - 1. If the depth of existing topsoil prior to construction was greater than 4 inches, topsoil shall be replaced to that depth.

- B. The furnishing and placing of topsoil, seed and mulch shall be in accordance with the Section 32 93 13, "Topsoil and Seeding".
- C. If required to obtain germination, the seeded areas shall be watered. Watering shall be accomplished in such a manner as to prevent washing out of the seed.
- D. Any washout or damage that occurs shall be regraded and reseeded until a good sod is established.
- E. The Contractor shall maintain the newly seeded areas in good condition. Maintenance shall include as needed regrading, reseeding and watering.

3.10 CULTIVATED AREA REPLACEMENT

- A. Areas of cultivated lands shall be graded to receive topsoil to a depth of not less than the depth of the topsoil before being disturbed. All debris and inorganic material shall be removed prior to the placing of the topsoil.
- B. The furnishing and placing of topsoil shall be in accordance with the Section 32 93 13, "Topsoil and Seeding".
- C. After the topsoil has been placed and graded, the entire area disturbed during construction shall be cultivated to a minimum depth of 12 inches with normal farm equipment.
 - 1. Any debris or inorganic materials appearing shall be removed.
 - 2. The adjacent undisturbed cultivated area shall govern the removal of stones.
- D. Grass areas shall be reseeded using a mixture equal to that of the area before being disturbed, unless otherwise specified.

3.11 OTHER TYPES OF RESTORATION

- A. Trees, shrubs and landscape items damaged or destroyed as a result of the construction operations shall be replaced in like species and size.
 - 1. All planting and care thereof shall meet the standards of the American Association of Nurserymen.
- B. Water courses shall be reshaped to the original grade, cross-section and have all debris removed. Where required to prevent erosion, the bottom and sides of the watercourse shall be protected.
- C. Culverts destroyed or removed as a result of the construction operations shall be replaced in like size, material, and shall be replaced at the original location with the proper grade. When there is minor damage to a culvert, with the consent of the Engineer, a repair may be undertaken. Satisfactory results of the repair must be obtained.
- D. Should brick pavements be encountered in the work, the restoration shall be as directed.

3.12 MAINTENANCE

- A. The finished products of restoration shall be maintained in an acceptable condition for and during a period of one-year following the date of Final Completion or other such date as set forth elsewhere in the Contract Documents.

END OF SECTION

SECTION 32 13 13.16

BITUMINOUS CONCRETE PAVEMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes construction of two course bituminous concrete pavement on a prepared base laid to the required grade, thickness and cross-section as shown on the Contract Drawings.
- B. The quality of materials and performance of the work shall be in accordance with the Standards of the Virginia Department of Transportation unless otherwise specified in this Section.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
 - 1. VDOT Road and Bridge Standards
 - 2. VDOT Land Use Permit

PART 2 - PRODUCTS

2.1 MATERIALS AND CONSTRUCTION

- A. Soil Stabilization Material
 - 1. Mirafi 140
 - 2. Poly-filter X
 - 3. Tensar geogrid BX1100
 - 4. Or equal
- B. Bituminous Concrete Products
 - 1. The base course shall be as depicted in the plans.
 - 2. The surface course shall be as depicted in the plans.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install finished pavement to the grades and cross-sections as shown on the Contract Drawings.
- B. Subgrade
 - 1. The subgrade shall be shaped to line and grade and compacted with self-propelled rollers.
 - 2. All depressions which develop under rolling shall be filled with acceptable material and the area re-rolled.
 - 3. Soft areas shall be removed and filled with acceptable materials and the area re-rolled.

4. Should the subgrade become rutted or displaced prior to the placing of the subbase it shall be reworked to bring to line and grade.
- C. Soil Stabilization Material
1. The soil stabilization fabric shall be placed on the subgrade prior to the depositing of the subbase.
 - a. The soil stabilization fabric shall be the full width of the subgrade and shall extend up the sides the depth of the subbase.
 - b. The fabric shall be lapped in accordance with manufacturer's recommendations.
- D. Subbase
1. The subbase shall be as depicted in the plans. Each layer shall be compacted by rolling with self-propelled rollers.
(Note: The loose lift thickness shall be a minimum of 1.5 times the maximum particle size with a minimum of 6 inches.)
 2. Rolling shall begin at the sides and continue toward the center and shall continue until there is no movement ahead of the roller.
 3. After completion of the subbase rolling there shall be no hauling over the subbase other than the delivery of material for the top course.
- E. Bituminous Material
1. The bituminous base course shall be as specified in the VDOT permit conditions.
 2. The bituminous surface course shall be as specified in the VDOT permit conditions.
 3. Prior to placing of any bituminous pavement, a sealer shall be applied to the edges of existing pavement, curbing, gutters, manholes and other structures.

3.2 FIELD TESTING

- A The surface tolerance shall not exceed 3 inches in 10 feet.
- B. There shall be no depressions which will retain standing water.
- C. Variations exceeding 3 inches or depressions shall be satisfactorily corrected.

END OF SECTION

SECTION 32 93 13
TOPSOIL AND SEEDING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes topsoil, fertilizer, seed, mulch anchorage, and associated work.

1.2 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
 - 1. The location of source and data for off-site topsoil.
 - 2. Analysis of the seed.
 - 3. Should hydro seeding be used, the Contractor shall submit all data including material and application rates.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil shall be unfrozen friable clayey loam free from clay lumps, stones, roots, sticks, stumps, brush or foreign objects.
- B. Fertilizer shall be a standard quality commercial carrier of available plant food elements. A complete prepared and packaged material containing a minimum of 10 percent nitrogen, 20 percent phosphoric acid and 10 percent potash.
 - 1. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.
- C. Seed mixtures shall be of commercial stock of the current season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix.
 - 1. All seed shall meet the State standards of germination and purity.
- D. Seed Mixtures (Permanent Stabilization):

SPECIAL

LAWN AREAS*

Kentucky 31 or Tall Fescue	95%
Perennial Ryegrass or Kentucky Bluegrass	0-05%

- E. Mulch shall be stalks of oats, wheat, rye or other approved crops which are free from noxious weeds.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The area to receive topsoil shall be graded to a depth of not less than 4 inches or as specified, below the proposed finished surface. If the depth of topsoil existing prior to construction was greater than 4 inches, the topsoil shall be replaced not less than the greater depth.
1. All debris and inorganic material shall be removed and the surface loosened for a depth of 2 inches prior to the placing of the topsoil.
 2. The topsoil shall not be placed until the subgrade is in suitable condition and shall be free of excessive moisture and frost.
- B. Satisfactory topsoil removed from the excavations shall be placed on the prepared subgrade to the depth required.
1. In the event the topsoil removed during excavation is unsatisfactory or inadequate to obtain the required finish grades, the Contractor shall furnish the required quantity of satisfactory topsoil from approved sources off site.
 2. All topsoil shall be free from stones, roots, sticks and other foreign substances and shall not be placed in a frozen or muddy condition.
 3. The finished surface shall conform to the lines and grades of the area before disturbed or as shown on the Contract Drawings. Any irregularities shall be corrected before the placement of fertilizer and seed.
- C. Agricultural grade limestone shall be applied at the rate of 90 pounds per 1,000 square feet, incorporated into the top 4 -6 inches. The fertilizer shall be applied uniformly at the rate of 1000 pounds per acre.
1. Following the application of the fertilizer and prior to application of the seed, the topsoil shall be scarified to a depth of at least 2 inches with a disc or other suitable method traveling across the slope if possible.
- D. When the topsoil surface has been fine graded, the seed mixture shall be uniformly applied upon the prepared surface with a mechanical spreader at a rate of not less than 180 pounds per 1000 acre.
1. The seed shall be raked lightly into the surface and rolled with a light hand lawn roller.
 2. Seeding and mulching shall not be done during windy weather.
- E. The mulch shall be hand or machine spread to form a continuous blanket over the seed bed, approximately 2 inches uniform thickness at loose measurement. Excessive amounts or bunching of mulch will not be permitted.
1. Mulch shall be anchored by an acceptable method.
 2. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.
 3. Any anchorage or mulch that has not disintegrated at time of first mowing, shall be removed. Anchors may be removed or driven flush with ground surface.
- F. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed.

- G. Hydro seeding may be accepted as an alternative method of applying fertilizer, seed and mulch. The Contractor shall submit all data regarding materials and application rates to the Engineer for review.

3.2 MAINTENANCE

- A. Water and Sewer Line Projects
 - 1. Following the establishment of a good stand of grass, acceptable to the private property owner, the Service Authority, and the field inspector, the Contractor's obligation shall end except for the repair of settlement or damage. Contractor shall protect and maintain seeded area until acceptance by Albemarle County Service Authority, including all watering and maintenance required. All washouts shall be repaired to the satisfaction of the inspector.

END OF SECTION

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SECTION 33 01 30.81

SANITARY SEWER MANHOLE REHABILITATION

PART 1 GENERAL

1.1 WORK INCLUDED

The work includes furnishing all labor, equipment, materials, plant, and supervision and performing all work necessary to rehabilitate or abandon the designated sanitary sewer manholes. The work shall consist of, but not necessarily be limited to manhole abandonment, manhole sealing and manhole rehabilitation. The area of work and the type of repair/rehabilitation to be performed shall be at those locations identified in the Work Order.

1.2 WORK SPECIFIED ELSEWHERE

A. Section 03 30 00 – Concrete

1.3 SUBMITTALS

The following items shall be submitted:

- A. Drawings and manufacturer's data showing compliance with this specification.
- B. Manufacturer's certification that all materials are in compliance with the applicable requirements of the referenced standards and this specification.

PART 2 PRODUCTS

2.1 EQUIPMENT

- A. The Contractor shall certify that back-up equipment is available and can be delivered to the site within 48 hours and shall submit an equipment list to the Owner for approval before commencement of work.
- B. Before commencement of work, the Contractor shall allow the Owner 48 hours to inspect the equipment to be used and allow the Owner to measure the internal dimensions of the tanks from which the sealing materials will be pumped. The Contractor shall demonstrate an acceptable technique for measuring the volume of the sealing materials in the tanks.
- C. No work shall be performed or accepted if the Contractor's measurement equipment and/or measuring techniques are unacceptable to the Owner.

2.2 MATERIALS

A. Mortar

1. Mortar shall be Type M and shall meet the requirements of ASTM C-270.

PART 3 EXECUTION

3.1 RESET/REPLACE/RAISE MANHOLE FRAME AND COVER

- A. Remove the existing pavement or other surface area adjacent to the manhole. Excavate a maximum 6' x 6' area. Excavate to expose the entire frame and a minimum of 16-inches of the existing manhole wall.
- B. Unless otherwise directed, remove the adjustment to the top of cone.
- C. Clean all joint surfaces between the frame, adjustments, and existing manhole wall to insure a watertight seal.
- D. Unless otherwise directed, obtain proper grade by using not more than 12" of:
 1. 2" or 3" solid reinforced precast concrete adjustment rings. No more than three rings shall be used to achieve the proper grade. The precast concrete adjustment rings shall be set in full beds of Type M mortar not less than 1/4-inch thick, not more than 1 1/4-inch thick. Frame elevation shall be set at existing grade. All horizontal, circumferential, and vertical mortar joints inside and outside of the structure shall be pointed for their full width. Depth of pointing shall not exceed 3/8-inch.
- E. Newly installed grade ring transition section shall be completely coated on the inside, top and outside with curing compound, overlapping a minimum of 6-inches down on the existing manhole structure. The curing compound shall be applied within three hours after the mortar placement. Transition by parging overhang joint between ring and existing manhole wall, inside and outside of manhole and apply curing compound. Cure entire adjustment ring transition section for a minimum of 24 hours prior to backfilling for all non-paved areas.
- F. The frame and cover shall be mortared to the outside of the concrete manhole section.
- G. Reuse the existing frame and cover unless a new frame and cover are specified in the Contract Drawings.

End of Section

SECTION 33 08 01

Leakage Tests

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes leakage tests of all hydraulic structures, pressure and/or non-pressure piping for leakage as shown on the Contract Drawings.
- B. The Contractor shall furnish all labor, equipment, test connections, vents, water and materials necessary for carrying out the pressure and leakage tests.
- C. All testing shall be witnessed by the Engineer.
- D. Certain features of leakage tests shall be as scheduled on the Contract Drawings.

1.2 REFERENCES

- A. Comply with the latest revision of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
 - 1. American National Standards Institute/American Water Works Association ANSI/AWWA C600-05

1.3 COORDINATION REQUIREMENTS

- A. Scheduling: Schedule leakage tests with the Engineer 48 hours in advance of the test.

Note: Re-inspection fees are charged for retesting when initial test fail. Contact the Albemarle County Service Authority for current rate schedules.

1.4 SUBMITTALS

- A. Submit the following in accordance with the General Provisions.
 - 1. Test and Evaluation Reports: Reports of test results.

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

3.1 TESTS ON PRESSURE PIPING FOR TRANSPORT OF WATER OR SEWAGE

- A. General
 - 1. Pipelines designed to transport water or sewage under pressure shall be tested hydrostatically and for leakage prior to being placed in service.
 - 2. The length of piping and sections included in the tests shall meet the approval of the Engineer.
 - 3. Equipment in or attached to the pipes being tested shall be protected. Any damage to such equipment during the test shall be repaired by the Contractor at his expense.
 - 4. When piping is to be insulated or concealed in a structure, tests shall be

made before the pipe is covered.

5. All fittings, valves, hydrants, and appurtenances must be properly braced and harnessed before the pressure is applied. Thrust restraining devices which will become a part of the system must also be tested at the test pressure. Concrete thrust blocks shall have reached their minimum compressive strength prior to testing.
6. When testing absorbent pipe materials such as concrete, the pipeline shall be filled with water at least 24 hours before the test is made.
7. If the line fails the test, the Contractor shall explore for the cause of the excessive leakage and after repairs have been made the line shall be retested. This procedure shall be repeated until the pipe satisfactorily maintains test pressure.

B. Pressure Test

1. Test pressure shall be as scheduled:

Pipe Diameter (inches)	Test Pressure (psi)
4 to 10	200
12 to 14	200
16	200

2. Test pressure shall be held on the piping for a period of at least 2 hours, unless a longer period is requested by the Engineer.

C. Leakage Test

1. The leakage test shall be conducted concurrently with the pressure test.
2. The rate of leakage shall be determined at 15-minute intervals by means of volumetric measurement of the makeup water added to maintain the test pressure. The test shall proceed until the rate of leakage has stabilized or is decreasing below an allowable value, for three consecutive 15-minute intervals. After this, the test pressure shall be maintained for at least another 15 minutes.
 - a. At the completion of the test, the pressure shall be released at the furthestmost point from the point of application.
3. All exposed piping shall be examined during the test and all leaks, defective material or joints shall be repaired or replaced before repeating the tests.
4. The allowable leakage for pressure pipelines shall be in accordance with ACSA standards, as follows:
 - a. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.
 - b. Allowable leakage. No pipe installation will be accepted if leakage is greater than that determined by the following formula:

$$L = \frac{SD\sqrt{P}}{148,000}$$

in which L is the allowable leakage, in gallons per hour; S is length of pipe tested in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge.

- c. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal./hr./in. of nominal valve size shall be allowed.
 - d. When hydrants are in the test section, the test shall be made against the closed hydrant valve.
 - e. Acceptance of installation. Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than the allowable amount, the contractor shall, at his own expense, locate and repair the defective material until the leakage is within the specified allowance.
5. Regardless of the above allowables, any visible leaks shall be permanently stopped by the Contractor.

END OF SECTION

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SECTION 33 11 13.13

DUCTILE IRON PIPE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes centrifugally cast ductile iron pipe and ductile iron fittings as shown and scheduled on the Contract Drawings, complete all and accessories.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
1. American National Standards Institute (ANSI)
 2. American Water Works Association (AWWA)
 3. American Society for Testing and Materials (ASTM)

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
1. Manufacturer's certification that all materials furnished are in compliance with the applicable requirements of the referenced standards and this specification.
 2. Pipe and joint details.
 3. Layout drawings for ductile iron pipe to be installed within structures, showing the location and details of the support system, sleeves and appurtenances.

PART 2 - PRODUCTS

2.1 MATERIALS AND CONSTRUCTION

- A. Ductile iron pipe and ductile iron fittings shall comply with the following standards:

	<u>ANSI/AWWA</u>
Ductile Iron Pipe	C151
Fittings	C110
Joints-Mechanical and Push-On	C111
Joints-Flanged	C115
Cement Lining	C104
Polyethylene Encasement	C105

Compact Fittings

C153

- B. All shipments of material shall be tested in accordance with the provisions for testing in the applicable standards.
- C. All flange material shall be Ductile Iron.
- D. Approved DIP manufacturers shall be U.S. Pipe & Foundry Co., American Cast Iron Pipe Co., Atlantic States Cast Iron Pipe Co. or approved equal.
 - 1. Wall thickness for water mains with pipe diameters 4-inches and less: Thickness Class 53.
 - 2. Wall thickness for water mains with pipe diameters larger than 4-inches: Thickness Class 52.
- E. Approved push-on joint restraint harness shall be Megalug® Series 1700 manufactured by EBBA Iron, Standard International , Tyler Union Foundry Co., and Star Pipe Products, or approved equal.
 - 1. T-bolts shall be made of either ductile iron or Cor-ten steel.
- F. Approved mechanical joint wedge-action restraints shall be:
 - 1. EBAA Iron, Series 1100
 - 2. Star Pipe Products, Series 3000
 - 3. Or approved equal.
- G. Pipe insulation shall be Nomaco Therma-cel® sheet insulation (1/2" thickness meeting ASTM C-1427. Pipe insulation shall be installed for frost protection of water mains if:
 - 1. Minimum of 12" vertical separation is not achieved where storm pipe is between drop inlets.
 - 2. Minimum of 3' vertical separation is not achieved where storm pipe is open ended culvert.
- H. Approved ductile iron pipe fittings shall be manufactured by Tyler Union Foundry Co., American Cast Iron Pipe Cp., U.S. Pipe and Foundry Co., or approved equal.

2.2 ACCESSORIES

- A. Joints
 - 1. The type of joints for ductile iron pipe and fittings shall be as scheduled in the pipe schedule and/or as shown on the Contract Drawings. Concrete thrust blocks will not be allowed for joint restraint unless shown on the Contract Drawings or approved by the Engineer at specific locations.
 - a. Mechanical joints shall be Megalug® assembled in accordance with the Notes on Method of Installation, AWWA C111, Appendix A. All bolts shall be high strength, low alloy steel and shall be tightened by means of torque wrenches such that the follower shall be brought up evenly. If effective sealing is not obtained at the specified torques, the joint shall be disassembled, cleaned and reassembled.
 - b. Restrained joints shall be installed via a mechanical joint restraint system where restrained joint pipe lengths are shown or specified in the Contract Documents. Allowable mechanical joint restraint systems include:

- 1) Manufacturer's proprietary restrained joint pipe
 - a. TR-Flex, U.S. Pipe and Foundry
 - b. Snap-Lok, Griffin Pipe Products
 - c. Flex-Ring, American Ductile Iron Pipe
 - d. Approved Equal
 - 2) Mechanical wedge action harness restraint
 - a. Megalug Series 1100, EBAA Iron
 - b. Stargrip Series 3100P, Star Pipe Products
 - c. Approved Equal
 - 3) Restrained joint gaskets are not allowed.
- c. Push-on joints shall be assembled using lubricant furnished by the manufacturer. The joint shall be made by guiding the plain end into the bell until contact is made with the gasket and exerting sufficient force to drive the pipe home until penetration is made to the depth recommended by the manufacturer.
- d. Flanged joints shall be assembled with through bolts of the size required for the pipe being installed. Stud bolts shall be used only where shown or required. Connecting flanges shall be in proper alignment and no external force shall be required or used to bring them together.
- 1) Flanges for flanged joints shall be drilled for 125 psi pressure unless otherwise specified.
 - a. Flange bolts and nuts shall be steel, ASTM A307, Grade B, and shall be zinc or hot dipped galvanized except where other materials are called for in the pipe schedule.
 - b. Gaskets for water and sewage piping shall be 1/8 inch thick of the rubber type per AWWA C111 unless otherwise specified. Cloth inserted gaskets shall not be allowed.
 - c. Gaskets for other service shall be as specified.

B. Solid Sleeves

1. Solid sleeves shall be used to connect existing and new piping as shown on the Contract Drawings.
2. Solid sleeves shall conform to AWWA C153 for compact fittings and AWWA C110, unless otherwise specified.
3. Joints for solid sleeves shall be restrained joints.

2.3 COATING, PAINTING AND LINING

A. Coating, painting and lining shall be as follows unless otherwise specified in the pipe schedule:

1. Ductile iron pipe and fittings installed in the ground, encased in concrete, in exposed exterior locations, in contact with water or inside structures but not scheduled for painting:
 - Interior: Standard thickness cement lining with sealcoat unless otherwise specified.
 - Exterior: Arc-sprayed zinc coating, in accordance with ISO 8179. Application rate shall be a minimum of 200 grams per square meter of pipe surface area. A finishing layer topcoat shall be applied to the zinc.

2. Pipe installed inside structures or scheduled for painting:
 - Interior: Standard thickness cement lining with sealcoat unless otherwise specified.
 - Exterior: Arc-sprayed zinc coating, in accordance with ISO 8179. Application rate shall be a minimum of 200 grams per square meter of pipe surface area. A finishing layer topcoat shall be applied to the zinc.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Ductile iron pipe shall be installed in accordance with the configuration shown on the Contract Drawings, the pipe manufacturer's installation instructions, and applicable provisions of the Sections 31 23 33, "Trenching, Backfilling, and Compacting" and Section 33 31 01, "Pipeline Installation".
- B. All ductile iron pipe and ductile iron fittings shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.

The standard materials and installation procedures for polyethylene encasement to be applied to underground installations of ductile iron pipe for water or other liquids shall meet ASTM A674. For all ductile iron pipe and ductile iron fittings, polyethylene encasement/sleeve (polywrap) shall be placed on ductile iron pipe to prevent corrosion and shall be installed so that no dirt or bedding material comes in contact with the pipe. All lumps of clay, mud, cinders, etc., on the pipe surface should be removed before the pipe is covered with polyethylene.

If the polyethylene is damaged, it must be repaired before the trench is backfilled. Repairs shall be made in accordance with manufacturer's installation instructions.

Small holes or tears can be repaired with a piece of tape placed over the hole. Large holes or tears should be repaired by taping another piece of polyethylene over the hole.

Overlaps, ends, and repairs can be held in place with tape or plastic tie straps until the trench is backfilled.

- C. Pipe Insulation: Pipe insulation shall be installed per manufacturer's specifications. Poly-wrap shall be installed outside the pipe insulation as additional vapor barrier protection.

3.2 FIELD TESTING AND CHLORINATION

- A. Perform hydrostatic and leakage tests in accordance with the applicable provisions of the Section 33 13 00 "Leakage Tests", at the test pressure specified or scheduled.
- B. Disinfect piping and appurtenances in accordance with the Section 33 13 00, "Chlorination", where specified or scheduled.

END OF SECTION

SECTION 33 12 13.20
FLEXIBLE PIPE COUPLINGS

PART 1 - GENERAL

1.1 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Description

This section includes materials and installation of flexible gasketed sleeve-type pipe couplings for polyvinyl chloride (PVC) and ductile iron pipe.

B. Industry Standards

ANSI/AWWA C219 – Bolted, Sleeve-Type Couplings for Plain-End Pipe.

PART 2 - PRODUCTS

2.1 GENERAL

A. All pipe, fittings, and accessories shall be furnished in accordance with the requirements of the applicable sections, as shown on the drawings and as specified herein.

B. Sleeve type couplings shall be designed to fit the outside diameter of the pipes they connect.

2.2 BOLTED, SLEEVE-TYPE COUPLINGS (DEFLECTION COUPLINGS)

A. General

1. Bolted, sleeve-type couplings shall be provided where shown on the drawings and shall comply in all respects to ANSI/AWWA C219 unless otherwise specified.
2. The manufacturer shall furnish the gaskets, bolts, nuts, glands, end rings, and hardware for pipe couplings and shall design these components as an integral system.

B. Design, Manufacture and Performance Requirements

1. Materials of Construction
 - a. For water service, couplings shall have center sleeves and end rings made of ASTM A536 ductile iron or ASTM A36 or ASTM A53 steel conforming to AWWA C219.
2. Center Sleeves: Unless otherwise specified herein, the manufacturer shall determine the proper center sleeve thickness suitable for all operating pressures of up to 200 psi, and for use described by the purchaser. The center sleeve shall be of a diameter to properly fit the pipes to be joined. Minimum center sleeve length shall be 5 inches for pipe sizes $\frac{3}{4}$ inch through 4-1/2 inches, 7 inches for pipe sizes 5 inches through 24 inches, and 10 inches for pipe sizes larger than 24 inches.

3. Special Coatings: Center sleeves and end rings of sleeve-type couplings shall be furnished with the manufacturer's fusion epoxy coating and lining.
4. Nuts and Bolts: Nuts and bolts furnished with bolted, sleeve-type couplings shall conform to AWWA C219. Sleeve bolts in exposed service shall be high strength, low alloy carbon steel. Sleeve bolts in buried or submerged service shall be type 316 stainless steel. The coupling bolts shall be tightened to the manufacturer's recommended torque for bolted, sleeve-type couplings. All nuts and bolts shall be isolated from dissimilar similar metals using dielectric insulating sleeves and washers.
5. Gaskets: Unless otherwise specified, gaskets shall meet the requirements of AWWA C219. Gaskets shall be SBR rubber, Buna-N or equivalent suitable elastomer, conforming to ASTM D2000 and shall be suitable for long term service in a potable water environment. Gaskets shall be immune to attack by impurities normally found in potable water. Gaskets shall be compounded for water service and compatible with specified pipe coatings and fluids conveyed.
6. Pipe Movement: Flexible couplings shall not be used to prevent axial or pullout pipe movement. Appropriate restraint systems shall be installed by the Contractor in accordance with manufacturers recommendations.
7. Deflection of Joints: Restrained joint pipe and fittings shall be capable of being deflected at no more than 80% of the manufacturer's maximum allowable deflection.

8. Manufacturers:
 - a. Couplings (2" and larger)
 - i. Romac Industries, Inc. Style 501
 - ii. Dresser, Inc. Style 138
 - iii. Smith-Blair Co. No. 411 or 413
 - iv. PowerSeal Pipeline Products Corp. Model 3506
 - v. Ford Meter Box Co. Inc. Style FC2A
 - b. Straight and Quarter-Bend Couplings
 - i. Mueller: Catalog No. H-15069 (3/4", 1")
 - ii. Mueller: Catalog No. H-15068 (1-1/2", 2")
 - iii. Ford: Model No. L02-33 (3/4")
 - iv. Ford: Model No. L02-44 (1")
 - v. Ford: Model No. L02-66 (1-1/2")
 - vi. Ford: Model No. L02-77 (2")
 - vii. McDonald 4776S
 - c. Transition/Repair Couplings
 - i. Hymax: 2000 Series
 - ii. Romac: 501 Series
 - iii. Romac: XR 501 Series
 - iv. Tyler, Standard International, Union Foundry, and Star Pipe Products: MJ repair Sleeves
 - d. Restrained Couplings
 - i. EBAA Iron Series 3800 Mega-Coupling
 - ii. Romac: Alpha Restrained Coupling
 - iii. Or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Flexible pipe couplings shall be installed as shown on the Contract Drawings and in accordance with the manufacturer's recommendations.
 - 1. Bolts shall be checked for uniform torque.
- B. When couplings are required within the restrained joint limits shown on the Contract Drawings, restrained couplings shall be provided.
- C. Couplings shall not be used to support the weight of adjoining pipe or fittings.
- D. Harness rods shall be installed on flexible pipe couplings where scheduled or shown on the Contract Drawings.
 - 1. Steel lugs shall be of the type shown on the Contract Drawings.
 - a. Lugs and welds shall be designed and installed to develop the full strength of the harness rods.
 - b. Lugs on galvanized pipe shall be galvanized after welding.
 - 2. Socket clamps shall be used on ductile iron pipe.
 - 3. Harness ears shall be as shown on the Contract Drawings.
- D. When installed for underground or underwater service, coupling and harness rods shall be painted, after being installed, with two coats of tar pitch preservative coating unless otherwise shown or specified.

END OF SECTION

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SECTION 33 12 19

WATER UTILITY DISTRIBUTION FIRE HYDRANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes fire hydrants as shown on the Contract Drawings, complete with accessories.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
1. American Water Works Association (AWWA)
 - a. AWWA C502 - Dry-Barrel Fire Hydrants
 2. Albemarle County Service Authority (ACSA) Construction Specifications

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
1. Manufacturer's certification that all materials furnished are in compliance with the applicable requirements of the referenced standards and this specification.
 2. Drawings showing dimensions, construction, materials and parts list.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. The following manufacturers are named to establish a standard of quality necessary for the Project:
1. M&H: Model 129 (Color – Safety Red)
 2. Kennedy: Guardian Model K-81A or K-81D (Color – Safety Red)
 3. Clow Medallion (Color – Safety Red)
 4. American Darling: B-84-B-5 (Color – Safety Red)
 5. Mueller: Super Centurion 250 (Color – Mueller Red)

2.2 MATERIALS AND CONSTRUCTION

- A. One 4-1/2-inch pumper and two 2-1/2-inch hose outlets.
1. The threads 4-1/2 inch pumper connection and on the operating nut shall conform to National Standard Threads. The threads on the hose connections shall be Albemarle County Service Authority standard thread (Charlottesville thread), 3-21/64" female, 3-9/32" male, eight threads per inch (Gauge 8-322).
- B. Main valve opening shall be not less than 5.25 inches.

- C. Barrel length shall provide for minimum of 3.5-ft bury.
 - 1. Barrel extensions to be provided as required by finish grade.
- D. Barrels shall be of the break-away type.
- E. Operating stem seal shall be "O" rings.
- F. Valves shall open counterclockwise with direction of opening cast on bonnet.
- G. Inlet shall be 6-inch mechanical joint unless otherwise specified.
- H. All hardware (nuts, bolts, and similar) shall be stainless steel.

2.3 PAINT

- A. Hydrant Barrell, Bonnet, & Operating Nut: Devoe DP 58106 (Safety Red BAR-OX Alkyd Industrial Gloss Enamel)
- B. Pumper Caps: Axon Products, Inc. Silver-White 1440 Alert

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install fire hydrants and accessories in accordance with the configuration shown on the Contract Drawings. If hydrant's exterior paint is damaged during installation, Contractor shall repair to manufacturer's specifications at no additional cost to the Owner.
- B. Alignment
 - 1. Hydrant shall be set plumb with pumper nozzle facing roadway.
 - 2. Center of hydrant to center of auxiliary valve shall be minimum of 30-inches.
 - 3. Center of pumper nozzle shall be a minimum 18-inches above finish grade.
 - a. Extension barrels shall be used to achieve clearance. Maximum number of extensions is two.
- C. Bracing
 - 1. Bracing shall be:
 - a. Thrust blocks of Class C concrete behind the branch tee and hydrant, or
 - b. Mechanical harnessing together of hydrant, auxiliary valve and branch tee.
- D. Drain
 - 1. Provide drain pocket of not less than 1 cubic yard, #57 granular material as specified in the Section 31 23 23.13, "Select Fill".
 - 2. Extend granular material above hydrant drain.
 - 3. Cover granular material with builders felt prior to backfilling.

3.2 FIELD TESTING

- A. Perform hydrostatic and leakage tests in accordance with the applicable provisions of the Section 33 08 01, "Leakage Tests", at the test pressure specified for the attached pipe.
- B. Hydrant assembly, branch piping and auxiliary valve shall be tested at the same time as the newly installed water main. When hydrants cannot be tested with the main, the entire hydrant assembly shall be tested upon completing installation.

END OF SECTION

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SECTION 33 13 00

CHLORINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the cleaning, chlorinating and flushing of all pipelines or structures which shall carry or hold potable water, as shown on the Contract Drawings, including all chemicals required.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
 - 1. American Water Works Association (AWWA)
 - 2. Albemarle County Service Authority (ACSA) Construction Specification

1.3 USE OF WATER

- A. Permission shall be obtained from the Owner of the water system before the use of water from any existing system. The Contractor shall:
 - 1. Conform to the requirements of the Owner.
 - 2. Contractor shall be given sufficient water, free of charge, to fill and test the main or line one time. For all additional tests, the Contractor shall pay all costs connected with the taking or use of water.
 - 3. Give notice at least 24 hours before the use of water for any reason.
- B. All work under this section shall be performed in the presence of the Albemarle County Service Authority (ACSA) inspector, as required.
- C. Chlorination shall be scheduled such that sampling and flushing will be performed during normal daylight working hours, excluding Fridays and holidays.

1.4 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
 - 1. Material Safety and Data Sheets for all chemicals to be used.

PART 2 - PRODUCTS

2.1 MATERIALS AND CONSTRUCTION

- A. Chlorination shall be completed in accordance with AWWA C651's Continuous Feed Method.
- B. Chlorination shall consist of the use of a solution of water and liquid chlorine, calcium hypochlorite or sodium hypochlorite and the solution shall be contained in the pipe or structure as specified.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Prior to chlorination all dirt and foreign matter shall be removed by a thorough cleaning and flushing of the pipeline or structure.
- B. The chlorine solution shall be admitted to pipelines through corporation stops placed in the horizontal axis of the pipe, to structures by means of tubing extending directly into the structure or other approved methods.
- C. The application of the chlorine solution shall be by means of a solution feed device. The rate of chlorine solution flow shall be in such proportion to the rate of water entering the pipe or structure that the resulting free chlorine residual shall not be less than 50 parts per million (PPM), milligrams per liter (mg/l).
- D. The slug method may be used for chlorination of pipelines with the prior approval of the Engineer and shall be in accordance with AWWA C651, Section 5.3.
- E. The tablet method may be used for chlorination of pipelines with the prior approval of the Engineer and shall be in accordance with Albemarle County Service Authority Standard Specifications, Part IV, Section L,2,b.
- F. The chlorine treated water shall be retained in the pipe or structure at least 24 hours, unless otherwise directed. During the retention period all valves and hydrants within the treated sections shall be operated.
- G. The chlorine residual shall be not less than 10 PPM (mg/l) at any point in the pipe or structure at the end of the retention period.
- H. When specified or when making repairs or connections to structures and portions of pipelines, the "spray" or "swabbing" method shall be utilized in accordance with AWWA C651.
 - 1. A concentrated chlorine solution containing not less than 200 PPM (mg/l) of free chlorine shall be applied with a brush or sprayed on the entire inner surface of the empty pipes or structures. The disinfected surfaces shall remain in contact with the strong chlorine solution for at least 30 minutes.
 - 2. Use of the "spray" or "swabbing" disinfection method shall be approved by Owner/Engineer prior to its application in lieu of other chlorination methods described herein.

3.2 FLUSHING

- A. After the required retention of chlorinated water in the pipe or structures they shall be thoroughly flushed until the replacement water shall, upon test, both chemically and bacteriologically, be proven equal to the water quality served to the public from the existing water supply system.
- B. Chlorinated water released from all pipes and structures shall be completely dechlorinated and disposed of in accordance with VA DEQ and local regulations as applicable.

- C. After final flushing and before the new main is connected to the distribution system, two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected from the new main. At least one set of samples shall be collected from every 2,000 ft (366 m) of the new water main, plus one set from the end of the line and at least one set from each branch. Certification forms must include the bacteriological results, the dates of sampling, and detailed information on sampling location.
- D. For a six-inch water main, the initial flushing flow is at minimum 220 gpm and the final flushing flow is at maximum 88 gpm. For an eight-inch water main, the initial flushing flow is at minimum 400 gpm and the final flushing flow is at maximum 160 gpm.

3.3 FIELD TESTING

- A. The Contractor shall make all arrangements for the testing of water quality by an approved independent laboratory. The results of all tests shall be forwarded to the Engineer and the Owner.
- B. The Contractor shall provide the labor and tools as may be required by the Engineer or the public health authority in the sampling for testing of water quality.
- C. All water quality requirements shall be fulfilled prior to the passage of any water through the new system to a public supply or the use of the new system.

END OF SECTION

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SECTION 33 31 01
PIPELINE INSTALLATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes all metallic and non-metallic pipelines as shown on the Contract Drawings, complete with fittings and specials.
- B. Certain features of pipes shall be as scheduled.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards, and specifications, except where more stringent requirements have been specified herein:
 - 1. American Society of Testing and Materials (ASTM)
 - 2. American Water Works Association (AWWA)
 - 3. Albemarle County Service Authority (ACSA) Construction Specifications

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
 - 1. Manufacturer's certification that all materials furnished are in compliance with the applicable requirements of the referenced standards and this specification.
 - 2. Layout drawings are required for pipelines to be installed within structures, showing the location including the support system, sleeves and appurtenances.

PART 2 - PRODUCTS

2.1 MATERIALS AND CONSTRUCTION

- A. Pipe
 - 1. Materials for the piping, joints and fittings shall be as specified in the Section for the type of pipe to be installed, shown in the pipe schedule or on the Contract Drawings.
 - a. Pipe and appurtenances shall comply with the applicable standards for its type of material.
- B. Joints
 - 1. Type of joints shall be as specified in Section 33 11 13.13, "Ductile Iron Pipe", or as shown or noted on the Contract Drawings.

- B. Pipe Insulation
 - 1. Pipe insulation shall be Nomaco Therma-cel® sheet insulation (1/2" thickness) meeting meeting ASTM C-1427.

- C. Inspection
 - 1. Pipe and appurtenances shall be inspected by the Contractor in the presence of the Project Inspector on delivery and prior to installation for conformance with the standards and specifications.
 - a. Materials not conforming to the standards and specifications shall not be stored on site but removed at once and replaced with material conforming to the specifications.

2.2 ACCESSORIES

- A. Pipe Sleeves
 - 1. Solid pipe sleeves shall be provided where shown or scheduled to make connections to existing mains and shall be in accordance with the Section 33 11 13.13, "Ductile Iron Pipe".

PART 3 - EXECUTION

3.1 INSTALLATION - UNDERGROUND

- A. General
 - 1. Install pipelines, fittings, specials, and accessories in accordance with the configuration shown on the Contract Drawings.
 - 2. Excavation and backfilling shall be in accordance with the applicable provisions of Section 31 23 33, "Trenching and Backfilling".
 - 3. Blocking will not be permitted under pipe, except where the pipe is to be laid with concrete cradle or encasement.
 - 4. No pipe shall be laid upon a foundation in which frost exists; nor at any time when there is danger of the formation of ice or the penetration of frost at the bottom of the excavation.
 - 5. Temporary bulkheads shall be placed in all open ends of pipe whenever pipe laying is not actively in process. The bulkheads shall be designed to prevent the entrance of dirt, debris or water.
 - 6. Precautions shall be taken to prevent the flotation of the pipe in the event of water entering the trench.
 - 7. Marking tape required for water and sewer shall be by Allen Systems and a minimum of 3-inches wide placed in the trench two (2) feet above the top of all water mains, service lines and appurtenant items. Marking tape disturbed during the course of construction on existing waterlines shall be restored to its original condition and to the satisfaction of the project inspector.
 - a. Blue stamped "Water"
 - b. Green stamped "Sewer".

- B. Location and Grade
 - 1. Pipelines and appurtenances shall be located as shown on the Contract Drawings.
 - 2. The alignment and grades shall be as shown on the Contract Documents.

- C. Subgrade
 - 1. The subgrade for pipelines shall be earth or special embedment as specified or directed and shall be prepared in accordance with the Section 31 23 33, "Trenching and Backfilling".

- D. Joints
 - 1. Joints shall be assembled using gaskets, lubricants and solvents as furnished by the pipe manufacturer and in accordance with the manufacturer's recommendations.

- E. Embedment
 - 1. Embedment shall be deposited and compacted in accordance with the Section 31 23 33, "Trenching, Backfilling and Compacting", and the Section for the type of pipe being installed.
 - 2. Embedment for ductile iron pipe shall be as shown on the Contract Drawings.
 - 3. Embedment material shall be deposited and hand-compacted in 6-inch maximum layers.

- F. Thrust Restraints
 - 1. Pressure pipelines shall have thrust restraints in the form of thrust blocks, tie rods, restrained joints, or cross anchors of the size and type specified or as required by the pressure and stability of the supporting surface. Unless otherwise shown or approved by Engineer/Owner in writing, all thrust restraints shall be made using mechanically restrained pipe joints.
 - a. Thrust restraints shall be installed at all changes in direction, changes in size, valves, dead ends or other locations as specified in the Contract Documents.
 - b. Prior to pressure testing the pipeline, thrust restraints shall be in place. Concrete (Class C) used for thrust blocking shall have achieved its required minimum compressive strength.
 - c. Tie rods and nuts for thrust restraints shall be of high tensile steel and shall have a minimum yield strength of 70,000 psi.
 - 1) Tie rods and nuts installed underground shall be coated with two coats of coal tar pitch preservative coating after installation.

- G. Service Connections
 - 1. Connections to in-service pressure pipelines shall be in accordance with the applicable provisions of the Section 40 05 76, "Tapped Connections".

- H. Pipe Insulation Installation
 - 1. Pipe insulation shall be installed per manufacturer's specifications. Poly-wrap shall be installed outside the pipe insulation as additional vapor barrier protection.

3.2 FIELD TESTING AND CHLORINATION

- A. Perform leakage tests in accordance with the applicable provisions of Section 33 08 01, "Leakage Tests", at the test pressure specified or scheduled.

- B. Disinfect pipelines and appurtenances designed to convey potable water in accordance with Section 33 13 00, "Chlorination".

3.3 CUTTING AND SPECIAL HANDLING

- A. Field cuts of pipes shall be in accordance with the manufacturer's field repair procedures. Field-cut pipe edges shall be coated with pipe manufacturer's two-part epoxy repair material.
- B. Where a pipe requires special handling or installation it shall be in accordance with the Section for that type of pipe.

END OF SECTION

SECTION 40 05 61

GATE VALVES 2 INCHES AND LARGER

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes gate valves 2 inches and larger for all services specified or shown on the Contract Drawings, exposed or in the ground, complete with accessories.
- B. Resilient seated wedge type gate valves shall be furnished and installed, unless otherwise specified or shown.
- C. Certain features of gate valves shall be as scheduled.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
 - 1. American Water Works Association (AWWA) C-509 – Resilient-Seated Gate Valves for Water Supply Service
 - 2. ASTM D429 – Standard Test Methods for Rubber Property-Adhesion to Rigid Substrates
 - 3. Albemarle County Service Authority (ACSA) Construction Specifications

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Conditions, the following items shall be submitted:
 - 1. Manufacturer's certification that all materials furnished are in compliance with the applicable requirements of the referenced standards and this specification.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Resilient seated gate valves shall be in accordance with the requirements of AWWA C509.
- B. Gate valves sized between 2" and 36" shall be suitable for a specified working pressure of up to 250 psi and shall conform to the requirements of AWWA Standards as applicable.
- C. Unless otherwise scheduled or shown on the Contract Drawings, gate valves shall be:
 - 1. Non-rising stem

2. Dual O-ring stem seal
 3. Counterclockwise direction of opening
- D. Gate valves larger than 12 inches installed horizontally in a horizontal pipeline shall be equipped with bronze rollers, non-corrodible tracks, and bronze scrapers.
- E. Bronze Grade B or C shall not be used in valve construction.
- F. Valve Joints
1. Where the joint type is not scheduled or shown, joints shall be mechanical joint type to allow use of restrained pipe installation.
- G. All hardware (nuts, bolts, and similar) shall be stainless steel.
- H. Interior and exterior of ductile iron body shall be coated nominal 10 mils with fusion bonded epoxy coating in conformance with ANSI/NSF 61 for potable water service.
- I. Valves Manufacturers:
1. Mueller A-2360 resilient wedge gate valve
 2. Kennedy Ken-Seal II resilient wedge gate valve (4" and larger)
 3. US Pipe Metroseal 250 resilient seated gate valve (4" and larger)
 4. American Flow Control Series 2500 resilient wedge gate valve (2" and larger)
 5. American AVK Series 45 resilient wedge gate valve
 6. Or Equal

2.2 ACCESSORIES

- A. Gearing
1. Gearing as scheduled shall be installed on all gate valves larger than 12 inches.
 2. Gear ratios shall conform to AWWA Standards.
 3. Gear cases on valves installed in the ground shall be of the extended type and stem seal shall be protected by a shield to prevent contact of these parts with soil.
 4. Exposed non-rising stem valves with gearing shall have position indicators, unless otherwise scheduled.
- B. Operators
1. Valves installed underground shall be fitted with standard wrench nuts. Operating nuts shall be 2" square.
 2. Valves installed exposed shall be fitted with handwheel, floor stand, motor operator, hydraulic or other operator as scheduled.
 3. Operators shall be supplied with a cast arrow showing the direction of valve opening.
- C. Extension Stems
1. Valves scheduled or shown and valves installed underground with the operating nut greater than 3 feet below the finished grade shall have extension stems.

2. Valves in the ground shall have the stems extended to within 3 feet of the finished grade.
 - a. A centering device shall be installed on the extension stem just below the extended operating nut.

D. Valve Boxes

1. Approved valve boxes shall be:
 - a. Bingham & Taylor: Fig. No. 4906 (genuine Buffalo style) with standard cover; extensions – Fig. No. 4905-X (need submittal)
 - b. Charlotte Pipe & Foundry Co.: Fig. No. 273 (for 10" valves and smaller)
 - c. Tyler Pipe: Fig. No. 562-S with standard cover (need submittal)
 - d. Acheson: valve box adjusting rings, AVAR-10 through AVAR-40 (need submittal)
 - e. Capital Foundry: cast iron screw type Pattern No. 3101-3107/3112/3151-52; standard cover with 1-1/2" lip
 - f. East Jordan Iron Works (EJ): 8550 Series, Two Piece Screw Type with 6800 Valve Box Drop Lids.
2. Valves installed underground shall be equipped with an adjustable type valve box.
3. The valve box shall have a barrel not less than 5.25 inches in diameter and with a flared base to fit the valve on which it is to be installed. A coat of bituminous paint shall be applied to both surfaces.
4. The valve box cover shall indicate by means of a cast arrow the direction of valve opening.
5. Where applicable, the word "Water" shall be cast in the valve box cover.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install valves in accordance with the configuration shown on the Contract Drawings.
- B. Support valves independently from equipment and pipelines, on supports acceptable to the Engineer.

3.2 FIELD TESTING

- A. Upon completion of installation, operate all valves to demonstrate that they operate without binding or strain.
- B. Correct any deficiencies in the valves or the installation.

END OF SECTION

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SECTION 40 05 76
TAPPED CONNECTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes tapping and installing of corporation stops, tapping sleeves and valves on existing or newly installed pipes without interruption of service, as shown on the Contract Drawings, complete with connections and accessories.
- B. Installing of service boxes where specified or directed.

1.2 REFERENCES

- A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
 - 1. American Water Works Association (AWWA)
 - 2. Albemarle County Service Authority (ACSA) Construction Specifications

1.3 SUBMITTALS

- A. In addition to those submittals identified in the General Provisions, the following items shall be submitted:
 - 1. Detail drawings for each size corporation stop, curb stop, tapping sleeve and valve, and service box.

PART 2 PRODUCTS

2.1 CORPORATION STOPS

- A. Corporation stops shall be threaded to conform to AWWA C800 with standard corporation stop thread at the inlet. The outlet shall be fitted with coupling nut for flared tube service unless otherwise specified.
 - 1. Corporation stops shall be manufactured by:
 - a. Mueller: Catalog No. B-25000
 - b. Ford: Model No. FB600-4
 - c. McDonald: Model 4701B

2.2 SERVICE CLAMPS

- A. Service clamps shall be designed for use on the type of pipe to which the connection is being made.
 - 1. Ductile iron service clamps shall be the double strap type with neoprene gaskets.
 - 2. Stainless steel straps required.

3. Service clamps shall be manufactured by:
 - a. Ford
 - b. Romac
 - c. Or approved equal

2.3 SERVICE BOXES

- A. Precast Concrete Box:
 1. Clear Flow by Amercast Model CFLD6060 (for 3" and 4" water meters and assemblies)
 2. Beasley Concrete, Inc. – Model MB1500 (for 3" and 4" water meters and assemblies)
 3. Hanover Precast Vaults (for 3" and larger water meters and assemblies)
- B. High Density Polyethylene (HDPE) Plastic Box (for water meters and assemblies only in areas not subject to vehicular traffic):
 1. Carson Meter Box (for 5/8" water meters) Model MSBC1015-24 with ductile iron or cast-iron cover and reader leader lid.
 2. Carson Meter Box (for 1" water meters) Model MSBC 1118-26 with ductile iron or cast-iron cover and reader lid.
 3. Carson Meter Box (for 1-1/2" or 2" water meters) Model 1730-24 Carson Spec Grade body with 2 mouse holes and heavy-duty plastic cover with cast iron reader lid.
- C. Cast Iron Box (for 5/8" water meters and assemblies only in areas subject to vehicular traffic):
 1. Capitol Foundry Design #MBX-10 and MBX-11.

2.4 TAPPING SLEEVES AND VALVES

- A. Tapping sleeves and valves shall be used for pipe connections larger than 2 inches.
 1. Tapping sleeves shall be designed and sized in accordance with the recommendations of the manufacturer.
 2. Working pressure shall be 150 psi unless higher pressures are scheduled.
 3. The seal of the tapping sleeve shall be mechanical joint or low lead 2.5% or less. Low lead as conforming to current regulations.
 4. Valves for tapping sleeves shall be designed for the intended service and shall conform to the requirements of Section 40 05 61 "Gate Valves 2 Inches and Larger".
 5. Tapping valves shall be manufactured by:
 - a. American Flow Control: Series 2500
 - b. Kennedy: Ken-Seal II resilient wedge gate valve (4" and larger)
 - c. Mueller: Series T-2360 resilient wedge gate valve
 - d. Clow: Model 2639/2640 resilient wedge gate valve
 6. Tapping sleeves shall be manufactured by:
 - a. Mueller: Catalog No. H-615

- b. American Flow Control: Series 2800
- c. Romac: Model SST, or SST III (stainless steel)
- d. Ford: Model FAST (stainless steel)
- e. PowerSeal Pipeline Products Corp.: Powersleeve Model 3490, or PowerMJ Model 3490MJ
- f. Smith-Blair, Inc.: Model 663 (all stainless steel; mechanical joint outlet option is also approved).

2.5 METER COPPERSETTERS

- A. Meter coppersettters shall be designed for use on the type of pipe and valve to which the connection is being made.
 - 1. Meter coppersettters shall be manufactured by:
 - a. Ford: Model No. VV 72 (5/8" x 3/4")
 - b. Ford: Model No. VV 74
 - c. McDonald: Model No. 20-209 WWDD33, 20-412 WWDD44
 - d. Ford: Model No. VBB77-12B-11-77, or Mueller: Model No. B-2434 (1-1/2", 2"). Laying length for meter varies with specific meter size – coordinate with ACSA prior to installation.
 - e. McDonald: Series 20, horizontal style (1", 5/8" x 3/4"), high bypass (1/1/2" & 2")
 - 2. Copper pipe must be soft type "K" copper with standard water works fittings only.

2.6 COMPRESSION/FLARED FITTING

- A. Copper pipe must be soft type "K" and with standard water works compression/flared fitting only. Flared fittings must be used with working pressures exceed 100 psi.
 - 1. Compression/flared fitting shall be manufactured by:
 - a. Ford: Grip Joint
 - b. Mueller: Model 110
 - c. McDonald: "T" Series

2.7 RESIDENTIAL WATER METERS

- A. Replacement water meters shall be provided by the Owner for installation by the Contractor.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install connections and accessories under the direction of personnel who have performed at least ten similar connections in accordance with the configuration shown on the Contract Drawings and the applicable provisions of the referenced Standards.
 - 1. Threaded taps shall be made using a machine designed for cutting, threading and inserting the corporation without interruption of service.
 - a. Teflon tape may be used on corporation threads.

- 2. Tapping sleeve connections shall be made using a machine to cut and remove the segment through the valve without interruption of service.
- B. Service boxes shall be set plumb and shall be independently supported on two bricks so no weight will be transmitted to the curb stop or carrier pipe.
- C. Maximum Size for Taps

<u>Pipe Material</u>	<u>Pipe Size (inches)</u>				
	<u>4</u>	<u>6</u>	<u>8</u>	<u>12</u>	<u>16 & Larger</u>
Ductile Iron					
w/ Service Clamp	2	2	2	2	2
w/o Service Clamp	-	¾	1	1-1/2	2

3.2 SERVICE CONNECTIONS

- A. The Contractor shall notify residents at least 3 days in advance of any planned water service interruption. Mailing addresses are provided on the site mapping in the Contract Drawings.

3.2 FIELD TESTING

- A. Perform hydrostatic and leakage tests in accordance with the applicable provisions of Section 33 08 01 "Leakage Tests", at the test pressure specified or scheduled.

END OF SECTION

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