

CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

MT. SIDNEY WATER STORAGE TANK

AUGUSTA COUNTY, VIRGINIA

MARCH 20, 2024

Prepared For:

**Augusta Water
P.O. Box 859
Verona, Virginia 24482**



Prepared By:

**Peed & Bortz, LLC
20 Midway Plaza Drive, Suite 100
Christiansburg, Virginia 24073
22-07**

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SECTION 00130 ADVERTISEMENT FOR BIDS

Owner:

Augusta Water
18 Government Center Lane
P.O. Box 859
Verona, Virginia 24482

Separate sealed Bids will be received for construction of the 0.5 million gallon (nominal) Mt. Sidney ground mounted water storage tank, located off Seawright Springs Rd. near Mt. Sidney, VA, approximate coordinates 38.2604, - 78.9666.

Bids will be received at the office of:

William Monroe, PE
Augusta County Service Authority, d/b/a/Augusta Water
P.O. Box 859
18 Government Center Lane
Verona, Virginia 24482

until **2:00 PM** local prevailing time **April 19, 2024** and then publicly opened and read aloud at said office.

The Contract Documents may be examined at the following locations:

Peed & Bortz, LLC, Civil & Environmental Engineers, 20 Midway Plaza Drive, Ste. 100 Christiansburg, VA 24073
Augusta Water, 18 Government Center Lane, Verona, Virginia 24482 (Issuing Office)

Online registration and examination of the Contract Documents is available at <https://www.augustawater.com/bids>
Documents obtained on line may be used for bidding. Please contact Augusta Water at (540-245-5670) with questions concerning online access.

A **Non-Mandatory** Pre-Bid Conference shall be held at **10:00 AM, April 4, 2024** at the project site.

Withdrawal of Bids due to error shall be in accordance with Virginia Code Section 2.2-4330.B(1).

Owner reserves the right to reject all Bids.

Should the apparent low Bid exceed available funds, the Owner reserves the right to negotiate with the apparent low Bidder to obtain a contract price within available funds.

Bidders shall comply with Virginia Code Section 54.1-1112 regarding information required with Bid. Envelopes containing Bids shall be clearly marked with the Bidder's Virginia contractor license number.

Augusta Water encourages participation and bid submission from any Disadvantage Business Enterprises (DBE), Minority or Women Business Enterprise (MBE or WBE) capable and otherwise qualified to perform work defined by this construction contract.

William Monroe, PE
Augusta Water Director of Engineering
Date: **March 20, 2024**

Instructions to Bidders

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ARTICLE 1 - DEFINED TERMS

1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

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

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement for Bids may be obtained from the Issuing Office. One-half the deposit will be refunded to each document holder of record who returns a complete set of Bidding Documents in good condition within 10 days after opening of Bids.

2.02 Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, within five days of Owner's request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.

ARTICLE 4 - EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE**4.01 Subsurface and Physical Conditions****A. 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 Bidding Documents.
2. Those drawings of physical conditions in or relating to existing surface and subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Bidding Documents.

B. Copies of reports and drawings referenced in paragraph 4.01.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in paragraph 4.02 of the General Conditions has been identified and established in paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.02 Underground Facilities

A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 Hazardous Environmental Condition

A. The Supplementary Conditions identify those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that ENGINEER has used in preparing the Bidding Documents.

B. Copies of reports and drawings referenced in paragraph 4.03.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in paragraph 4.06 of the General Conditions has been identified and established in paragraph 4.06 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

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

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all

holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

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

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

A. Examine and carefully study the Bidding Documents, the other related data identified in the Bidding Documents, and any Addenda;

B. Visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. Become familiar with and satisfy Bidder as to all Federal, State, and local Laws and Regulations that may affect cost, progress, or performance of the Work;

D. Carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions, and (2) reports and drawings of Hazardous Environmental Conditions at the Site which have been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions;

E. Obtain and carefully study (or accept consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;

F. Agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;

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

H. Correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

I. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

J. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 - PRE-BID CONFERENCE

5.01 Pre-Bid Conference may be held as indicated in Advertisement for Bids.

ARTICLE 6 - SITE AND OTHER AREAS

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

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than five days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 8 - BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 % of Bidder's maximum Bid price and in the form of a certified check or a Bid bond (EJCDC No. C-430, 2002 Edition) issued by a surety meeting the requirements of paragraphs 5.01 and 5.02 of the General Conditions.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

8.03 Bid security of other Bidders whom OWNER believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 - CONTRACT TIMES

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

ARTICLE 10 -LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages are set forth in the Agreement.

ARTICLE 11 - SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or "or-equal" materials and equipment as defined in paragraph 6.05 of the General Conditions, or those substitute materials and equipment approved by the Engineer and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed substitute or "or-equal" item. Request for Engineer's clarification of materials and equipment considered "or-equal" prior to the Effective Date of the Agreement must be received by the Engineer at least 5 days prior to the date for receipt of Bids. No item of material or equipment will be considered by Engineer as a substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each request shall conform to the requirements of paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon the Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed substitute item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, without an increase in the Bid.

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

12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

12.04 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 6.06.

ARTICLE 13 - PREPARATION OF BID

13.01 The Bid form is included with the Bidding Documents. Additional copies may be obtained from Engineer.

13.02 All blanks on the Bid form shall be completed by printing in ink or by typewriter and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each Bid item, alternative, adjustment unit price item, and unit price item listed therein, or the words "No Bid," "No Change," or "Not Applicable" entered.

13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. If required by State where work is to be performed, the corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporation business address and state of incorporation shall be provided on the Bid Form.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The business address of the partnership shall be provided on the Bid Form.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the business address of the firm must be provided on the Bid Form.

13.06 A Bid by an individual shall show the Bidder's name and business address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid form. The business address of the joint venture must be provided on the Bid Form.

13.08 All names shall be typed or printed in ink below the signatures.

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers and dates of which shall be filled in on the Bid form.

13.10 The address and telephone number for communication regarding the Bid shall be shown.

13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the Contract. Bidder's state contractor license number for the state of the Project, if any, shall also be shown on the Bid Form.

ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

14.01 *Lump Sum*

- A. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form.

ARTICLE 15 - SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and the Bid bond form. The unbound copy of the Bid Form is to be completed and submitted with all the attachments outlined in Article 7 of the Bid Form.

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement for Bids and shall be enclosed in an opaque sealed envelope plainly marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "BID ENCLOSED." When using the mail or other delivery system, the Bidder is totally responsible for the mail or other delivery system delivering the Bid at the place and prior to the time indicated in the Advertisement for Bid. A mailed Bid shall be addressed to Owner at address in Article 1.01 of Bid Form.

ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be modified or withdrawn only in accordance with the Code of Virginia.

16.02 If, as a result of bid withdrawal, the Work is rebid or negotiated, Bidder or Bidders withdrawing a bid will be disqualified from further bidding or negotiating on the Work.

ARTICLE 17 - OPENING OF BIDS

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

ARTICLE 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form.

ARTICLE 19 - EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to be non-responsible. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the contract Documents.

19.06 If the Contract is to be awarded, Owner will award the Contract to the responsible Bidder whose Bid, conforming with all the material terms and conditions of the Instructions to Bidders, is lowest, price and other factors considered.

ARTICLE 20 - CONTRACT SECURITY AND INSURANCE

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

ARTICLE 21 - SIGNING OF AGREEMENT

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

SECTION 00401 – CONTRACTOR BID QUALIFICATION CERTIFICATION

(THIS COMPLETED DOCUMENT SHALL ACCOMPANY BID)

CONTRACTOR BID QUALIFICATION CERTIFICATION

This is to certify that this person/firm/corporation has not been barred from bidding on contracts by any agency of the Commonwealth of Virginia, nor is this person/firm/corporation a part of any firm/corporation that has been barred from bidding on contracts by any agency of the Commonwealth of Virginia. This is also to certify that no subcontractors or suppliers intended for use on this project by this person/firm/corporation have been barred from bidding on contracts by any agency of the Commonwealth of Virginia.

Name

Title

Signature

Date

Firm or Corporation

Bid Form

Project Identification: Mt. Sidney Water Storage Tank
Engineer's Project #: 22-07

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ARTICLE 1 - BID RECIPIENT

1.01 This Bid Is Submitted To:
Augusta County Service Authority DBA Augusta Water
Attn: William Monroe, PE
18 Government Center Lane
Verona, Virginia 24482

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in the Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGMENTS

2.01 Bidder accepts all of the terms and conditions of the Advertisement and Instructions to Bidders, including without limitations those dealing with the dispositions of Bid security. The Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

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

Addendum No. Addendum Date

_____	_____
_____	_____
_____	_____
_____	_____

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

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

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in SC-4.02, and (2) reports and drawings of a Hazard Environmental Condition, if any, which has been identified in SC-4.06.

E. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by the Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

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

H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.

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

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

K. Bidder will submit written evidence of its authority to do business in the State where the Project is located not later than the date of its execution of the Agreement.

ARTICLE 4 - FURTHER REPRESENTATIONS

4.01 Bidder further represents that:

A. This Bid is genuine and not made in the interest of or on the behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or Owner.

ARTICLE 5 - BASIS OF BID

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

Total Lump Sum Base Bid Price _____
 (use words)
 _____ (\$ _____)
 (use numbers)

5.02 Additive Bid for Bolt Caps (Only if bidding Bolted Tank (AWWA D 103))

Total Lump Sum Additive Bid Price _____
 (use words)
 _____ (\$ _____)
 (use numbers)

5.03 **Additive Bid Price** will be **not** be used in determination of Apparent Low Bidder.

5.04 Tank construction Bidder is proposing (choose one):

- _____ ANSI/AWWA D 103 (Factory-Coated Bolted Carbon Steel Tanks for Water Storage)
- _____ ANSI/AWWA D 110 (Wire- and Strand-Wound, Circular, Prestressed Concrete Water Tanks)

ARTICLE 6 - TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with paragraph 14.07.B of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the work within the Contract Times.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of the Bid:

- A. Required Bid security in the form of a Bid Bond (EJCDC No. C-430) or Certified Check (circle type of security provided);
- B. Contractor's Bid Qualification Certification (Section 00401)

ARTICLE 8 - DEFINED TERMS

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

ARTICLE 9 - BID SUBMITTAL

9.01 This Bid submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____ (SEAL)

By: _____

(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____ (SEAL)

By: _____

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

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

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

By: _____

(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Attest _____

(Signature of Corporate Secretary)

Date of Qualification to do business in Virginia is ___/___/_____

A Joint Venture

Name of Joint Venture: _____

First Joint Venture Name: _____ (SEAL)

By: _____

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

Name (typed or printed): _____

Title: _____

Second Joint Venture Name: _____ (SEAL)

By: _____

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

Name (typed or printed): _____

Title: _____

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

Bidder's Business address:

Business Phone No. (_____) _____

Business FAX No. (_____) _____

Business E-Mail Address _____

State Contractor License No. _____ (If applicable)

Employer's Tax ID No. _____

Phone and FAX Numbers, and Address for receipt of official communications, if different from Business contact information:

9.02 Bid submitted on _____, 20__.

BID BOND

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

BIDDER (Name and Address):

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

OWNER (Name and Address):

**Augusta Water
18 Government Center Lane
Verona, Virginia 24482**

BID

Bid Due Date:

Project (Brief Description Including Location):

Mt. Sidney Water Storage Tank, 0.5 MG

BOND

Bond Number:

Date (Not later than Bid due date):

Penal sum

_____ (Words)

_____ (Figures)

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

BIDDER

SURETY

Bidder's Name and Corporate Seal (seal)

Surety's Name and Corporate Seal (seal)

By: _____
Signature and Title

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

Attest: _____
Signature and Title

Attest: _____
Signature and Title

Note: Above addresses are to be used for giving required notice.

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

STATEMENT OF QUALIFICATIONS

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business’s organizational structure:

Form of Business:	<input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation		
<input type="checkbox"/> Limited Liability Company <input type="checkbox"/> Joint Venture comprised of the following companies:			
1.			
2.			
3.			
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Pending	

1.03 Identify all businesses that own Business in whole or in part (25% or greater), or that are wholly or partly (25% or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

1.04 Provide information regarding the Business’s officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	

ARTICLE 2—LICENSING

2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS

3.01 Provide information regarding Business’s Diverse Business Certification, if any. Provide evidence of current certification.

Certification	Certifying Agency	Certification Date
<input type="checkbox"/> Disadvantaged Business Enterprise		
<input type="checkbox"/> Minority Business Enterprise		
<input type="checkbox"/> Woman-Owned Business Enterprise		
<input type="checkbox"/> Small Business Enterprise		
<input type="checkbox"/> Disabled Business Enterprise		
<input type="checkbox"/> Veteran-Owned Business Enterprise		
<input type="checkbox"/> Service-Disabled Veteran-Owned Business		
<input type="checkbox"/> HUBZone Business (Historically Underutilized) Business		
<input type="checkbox"/> Other		
<input type="checkbox"/> None		

ARTICLE 4—SAFETY

4.01 Provide information regarding Business’s safety organization and safety performance.

Name of Business’s Safety Officer:		
Safety Certifications		
Certification Name	Issuing Agency	Expiration

4.02 Provide Worker’s Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—FINANCIAL

5.01 Provide information regarding the Business’s financial stability. Provide the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.

Financial Institution:			
Business address:			
Date of Business’s most recent financial statement:		<input type="checkbox"/> Attached	
Date of Business’s most recent audited financial statement:		<input type="checkbox"/> Attached	
Financial indicators from the most recent financial statement			
Contractor’s Current Ratio (Current Assets ÷ Current Liabilities)			
Contractor’s Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)			

ARTICLE 6—SURETY INFORMATION

6.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:	
--------------	--

Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is surety listed in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7—INSURANCE

7.01 Provide information regarding Business’s insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Does provider have an A.M. Best Rating of A-VII or better?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 8—CONSTRUCTION EXPERIENCE

8.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	

Estimate of revenue for the previous year:	
--	--

8.02 Provide information regarding the Business’s previous contracting experience.

Years of experience with projects like the proposed project:		
As a general contractor:		As a joint venturer:
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:		
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Been barred from contracting by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Been released from a bid in the past 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Defaulted on a project or failed to complete any contract awarded to it? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Refused to construct or refused to provide materials defined in the contract documents or in a change order? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Been a party to any currently pending litigation or arbitration? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Provide full details in a separate attachment if the response to any of these questions is Yes.		

8.03 List all projects currently under contract in Schedule A and provide indicated information.

8.04 List a minimum of three and a maximum of six projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business’s experience with projects similar in type and cost of construction.

8.05 In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business’s key leaders as well.

ARTICLE 9—REQUIRED ATTACHMENTS

9.01 Provide the following information with the Statement of Qualifications:

- A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.
- B. Diverse Business Certifications if required by Paragraph 3.01.
- C. Certification of Business’s safety performance if required by Paragraph 4.02.
- D. Financial statements as required by Paragraph 5.01.
- E. Attachments providing additional information as required by Paragraph 8.02.
- F. Schedule A (Current Projects) as required by Paragraph 8.03.
- G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.04.
- H. Schedule C (Key Individuals) and resumes for the key individuals listed, per Paragraph 8.05.
- I. Describe recommended maintenance for an assumed 30-year life cycle for the tank construction proposed in the Bid.

This Statement of Qualifications is offered by:

Business:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(date signed)

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

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Address for giving notices:

Designated Representative:

Name:

(typed or printed)

Title:

(typed or printed)

Address:

Phone:

Email:

Schedule A—Current Projects

Name of Organization					
Project Owner		Project Name			
General Description of Project					
Project Cost		Date Project			
Key Project Personnel		Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					
Project Owner		Project Name			
General Description of Project					
Project Cost		Date Project			
Key Project Personnel		Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					
Project Owner		Project Name			
General Description of Project					
Project Cost		Date Project			
Key Project Personnel		Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Augusta Water - Mt. Sidney Water Storage Tank
Schedule B—Previous Experience with Similar Projects

03/24

Name of Organization					
Project Owner		Project Name			
General Description of Project					
Project Cost		Date Project			
Key Project Personnel		Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
		Name	Title/Position	Organization	Telephone
Owner					
Designer					
Construction Manager					
Project Owner		Project Name			
General Description of Project					
Project Cost		Date Project			
Key Project Personnel		Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
		Name	Title/Position	Organization	Telephone
Owner					
Designer					
Construction Manager					
Project Owner		Project Name			
General Description of Project					
Project Cost		Date Project			
Key Project Personnel		Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
		Name	Title/Position	Organization	Telephone
Owner					
Designer					
Construction Manager					

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Notice of Award

Dated: _____

Project: Mt. Sidney Water Storage Tank	Owner: Augusta Water	Owner's Contract No.: 1303048
Contract: N/A		Engineer's Project No.: 22-07

Bidder: _____

Bidder's Address: _____

You are notified that your Bid dated _____ for the above Contract has been considered. You are the Successful Bidder and are awarded the Contract.

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

One copy of the proposed Contract accompanies this Notice of Award.

Three sets of the Drawings and Contract Documents will be delivered separately or otherwise made available to you.

You must comply with the following conditions precedent within 15 days of the date you receive this Notice of Award.

1. Deliver to the Owner Three (3) fully executed counterparts of the Contract.
2. Deliver with the executed Contracts the Contract security as specified in the Instructions to Bidders (Article 20), and General Conditions (Paragraph 5.01).
3. Other conditions precedent:

Provide Required Certificates of Insurance

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

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

Augusta Water
Owner

By: _____
Authorized Signature

Title

Copy to Engineer

**AGREEMENT
BETWEEN OWNER AND CONTRACTOR FOR
CONSTRUCTION CONTRACT (STIPULATED PRICE)
FUNDING AGENCY EDITION**

THIS AGREEMENT is by and between Augusta Water (Owner)

and _____ (Contractor).

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

ARTICLE 1 - WORK

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

Construction of a new 0.5 MG (nominal) ground water storage tank and all accessories and interior components.

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:

Mt. Sidney Water Storage Tank

ARTICLE 3 - ENGINEER

3.01 The Project has been designed by the Engineer:

Peed & Bortz, LLC
20 Midway Plaza #100
Christiansburg, VA 24073

who is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT 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 **150** days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within **180** 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 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 \$600 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 \$300 for each day that expires after the time specified in Paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 - CONTRACT PRICE

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

A. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in this Paragraph 5.01.A:

BASE BID

Total Bid Price _____
(use words)
 _____ (\$ _____)
(use numbers)

ARTICLE 6 - PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 Progress Payments; Retainage

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor’s Applications for Payment on or about the 20th day of each month during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:
 - a. 95 percent of Work completed (with the balance being retainage); and
 - b. 95 percent 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 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions.

6.03 Final Payment

A. Upon receipt of the final Application for Payment accompanied by Engineer's recommendation of payment in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay Contractor as provided in Paragraph 14.07 of the General Conditions the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages.

ARTICLE 7 - INTEREST

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at 4% annual rate.

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 doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.

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 consist of the following:

1. This Agreement (pages 1 to _____, inclusive).
2. Performance bond (pages _____ to _____, inclusive).

3. Payment bond (pages _____ to _____, inclusive).
 4. General Conditions (pages _____ to _____, inclusive).
 5. Supplementary Conditions (pages _____ to _____, inclusive).
 6. Specifications as listed in the table of contents of the Project Manual.
 7. Drawings consisting of _____ sheets with each sheet bearing the following general title: _____.
 8. Addenda (numbers _____ to _____, inclusive).
 9. Exhibits to this Agreement (enumerated as follows):
 - a. Notice to Proceed (pages _____ to _____, inclusive).
 - b. Contractor's Bid (pages _____ to _____, inclusive).
 - c. Documentation submitted by Contractor prior to Notice of Award (pages _____ to _____, inclusive).
 10. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed (pages _____ to _____, inclusive).
 - b. Work Change Directives.
 - c. Change Order(s).
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 - MISCELLANEOUS

10.01 Terms

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

10.02 Assignment of Contract

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

10.03 Successors and Assigns

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

10.04 Severability

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

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in four copies. One counterpart each has been delivered to Owner, Contractor, Engineer, and Agency. All portions of the Contract Documents have been signed, initialed, or identified by Owner and Contractor or identified by Engineer on their behalf.

This Agreement will be effective _____, _____ (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR:

Augusta Water _____

By: Phillip A. Martin, PE _____

By: _____

Title: Executive Director _____

Title: _____

[CORPORATE SEAL]

[CORPORATE SEAL]

Attest: _____

Attest: _____

Title: _____

Title: _____

Designated Representatives:

Designated Representatives:

Name: Jerry Rader _____

Name: _____

Title: Engineering Technician II _____

Title: _____

Address for giving notices:

Address for giving notices:

18 Government Center Lane _____

Verona, VA 24482 _____

Phone: 540-490-0156 FAX: _____

Phone: _____ FAX: _____

(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.)

License No.: _____ (Where applicable)

Agent for service or process: _____

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

Notice to Proceed

Dated _____

Project: Mt. Sidney Water Storage Tank	Owner: Augusta Water	Owner's Contract No.: 1303048
Contract: N/A		Engineer's Project No.: 22-07

Contractor:

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

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

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

Also, before you may start any Work at the Site, you must:

Obtain All Required Permits

Call Miss Utility

 Owner
 Given by:

 Authorized Signature

 Title

 Date

Copy to Engineer

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):

Augusta Water
18 Government Center Lane
Verona, Virginia 24482

CONTRACT

Date:
Amount:
Description (Name and Location): Construction of a new 0.5 MG ground water storage tank and all accessories and interior components located near Mt. Sidney, Virginia.

BOND

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

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

CONTRACTOR AS PRINCIPAL

SURETY

Company:

Signature: _____ (Seal)
Name and Title:

Surety's Name and Corporate Seal (Seal)

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

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

Attest: _____
Signature and Title

CONTRACTOR AS PRINCIPAL

SURETY

Company:

Signature: _____ (Seal)
Name and Title:

Surety's Name and Corporate Seal (Seal)

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

Attest: _____
Signature and Title:

EJCDC No. C-610 (2002 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. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and

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

1. Surety in accordance with the terms of the Contract;
2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

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

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

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

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

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

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

12.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

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

FOR INFORMATION ONLY – Name, Address and Telephone
 Surety Agency or Broker
 Owner's Representative (engineer or other party)

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 Address of Principal Place of Business):

OWNER (Name and Address):

Augusta Water
18 Government Center Lane
Verona, Virginia 24482

CONTRACT

Date:

Amount:

Description (Name and Location): Construction of a new 0.5 MG ground water storage tank and all accessories and interior components located near Mt. Sidney, Virginia.

BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

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

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

SURETY

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title

(Attach Power of Attorney)

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

Attest: _____

Signature and Title

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

SURETY

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title

(Attach Power of Attorney)

Attest: _____

Signature and Title:

EJCDC No. C-615 (2002 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. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.
2. With respect to Owner, this obligation shall be null and void if Contractor:
 - 2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.
4. Surety shall have no obligation to Claimants under this Bond until:
 - 4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2. Claimants who do not have a direct contract with Contractor:
 1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.
5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.
6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:
 - 6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2. Pay or arrange for payment of any undisputed amounts.
7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.
9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.
11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.
14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
15. DEFINITIONS
 - 15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
 - 15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
 - 15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

**FOR INFORMATION ONLY – Name, Address and Telephone
 Surety Agency or Broker:
 Owner's Representative (engineer or other party):**

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 FUNDING AGENCY EDITION

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

AMERICAN COUNCIL OF ENGINEERING COMPANIES

AMERICAN SOCIETY OF CIVIL ENGINEERS

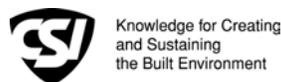
This document has been approved and endorsed by

The Associated General Contractors of America



and the

Construction Specification Institute



These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Funding Agency Edition No. C-521 (2002 Edition). 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. *Agency* – The Federal or state agency named as such in the Agreement.
 3. *Agreement* – The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 4. *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.
 5. *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.
 6. *Bid* – The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 7. *Bidder* – The individual or entity who submits a Bid directly to Owner.
 8. *Bidding Documents* – The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 9. *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.
 10. *Change Order* – A document recommended by Engineer which is signed by Contractor and Owner and Agency 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.
 11. *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.
 12. *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.
 13. *Contract Documents* – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

14. *Contract Price* – The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
15. *Contract Times* – The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
16. *Contractor* – The individual or entity with whom Owner has entered into the Agreement.
17. *Cost of the Work* – See Paragraph 11.01.A for definition.
18. *Drawings* – That part of the Contract Documents prepared or approved by 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.
19. *Effective Date of the Agreement* – The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
20. *Engineer* – The individual or entity named as such in the Agreement.
21. *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.
22. *General Requirements* – Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.
23. *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.
24. *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.
25. *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.
26. *Liens* – Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
27. *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.
28. *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.
29. *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.
30. *Owner* – The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
31. *PCBs* – Polychlorinated biphenyls.

32. *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.
33. *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.
34. *Project* – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
35. *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.
36. *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.
37. *Related Entity* – An officer, director, partner, employee, agent, consultant, or subcontractor.
38. *Resident Project Representative* – The authorized representative of Engineer who may be assigned to the Site or any part thereof.
39. *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.
40. *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.
41. *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.
42. *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.
43. *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.
44. *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.
45. *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.
46. *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.
47. *Successful Bidder* – The Bidder submitting a responsive Bid to whom Owner makes an award.

48. *Supplementary Conditions* – That part of the Contract Documents which amends or supplements these General Conditions.
49. *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.
50. *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.
51. *Unit Price Work* – Work to be paid for on the basis of unit prices.
52. *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.
53. *Work Change Directive* – A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and Agency upon recommendation of the 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.

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;
 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, Agency, 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 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 insureds (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, Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (Contractor shall be responsible for any deductible or self-insured retention.). 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 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, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than 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. Contractor 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.

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 Contractor 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 Contractor and made payable to Contractor 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. Contractor 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.
- B. Contractor 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 Contractor's exercise of this power. If such objection be made, Contractor 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, Contractor as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Contractor 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 procedure 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) will 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*
 - 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 Drawings 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 responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, subject to written approval by Agency 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, expressages, 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 Bid price of a particular item of Unit Price Work amounts to more than 5 percent of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
 2. there is no corresponding adjustment with respect to 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.B.
 - 1. delays caused by or within the control of Contractor; or
- 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 WORK13.01 *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. the Contractor's performance or furnishing of the Work is inconsistent with funding Agency requirements;
 - d. there are other items entitling Owner to a set-off against the amount recommended; or
 - e. 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, Agency, Contractor, and Engineer shall make a prefinal 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, Agency, 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. The remaining balance of any sum included in the final Application for Payment but held by OWNER for Work not fully completed and accepted will become due when the Work is fully completed and accepted.

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 TERMINATION15.01 *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 RESOLUTION16.01 *Methods and Procedures*

- A. Owner and Contractor may mutually 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. 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 – MISCELLANEOUS17.01 *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.

ARTICLE 18 – FEDERAL REQUIREMENTS (ARTICLE 18 NOT APPLICABLE)18.01 *Agency Not a Party*

- A. This Contract is expected to be funded in part with funds provided by Agency. Neither Agency, nor any of its departments, entities, or employees is a party to this Contract.

18.02 *Contract Approval*

- A. Owner and Contractor will furnish Owner's attorney such evidence as required so that Owner's attorney can complete and execute the following "Certificate of Owner's Attorney" (Exhibit GC-A) before Owner submits the executed Contract Documents to Agency for approval.
- B. Concurrence by Agency in the award of the Contract is required before the Contract is effective.

18.03 *Conflict of Interest*

- A. Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer.
- B. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

18.04 *Gratuities*

- A. If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.
- B. In the event this Contract is terminated as provided in paragraph 18.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an

amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

18.05 *Audit and Access to Records*

- A. For all negotiated contracts and negotiated modifications (except those of \$10,000 or less), Owner, Agency, the Comptroller General, or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the Contractor, which are pertinent to the Contract, for the purpose of making audits, examinations, excerpts and transcriptions. Contractor shall maintain all required records for three years after final payment is made and all other pending matters are closed.

18.06 *Small, Minority and Women's Businesses*

- A. If Contractor intends to let any subcontracts for a portion of the work, Contractor shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services. Affirmative steps shall consist of: (1) including qualified small, minority and women's businesses on solicitation lists; (2) assuring that small, minority and women's businesses are solicited whenever they are potential sources; (3) dividing total requirements when economically feasible, into small tasks or quantities to permit maximum participation of small, minority, and women's businesses; (4) establishing delivery schedules, where the requirements of the work permit, which will encourage participation by small, minority and women's businesses; (5) using the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce; (6) requiring each party to a subcontract to take the affirmative steps of this section; and (7) Contractor is encouraged to procure goods and services from labor surplus area firms.

18.07 *Anti-Kickback*

- A. Contractor shall comply with the Copeland Anti-Kickback Act (18 USC 874 and 40 USC 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

18.08 *Clean Air and Pollution Control Acts*

- A. If this Contract exceeds \$100,000, Contractor shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 USC 7401 *et seq.*) and the Federal Water Pollution Control Act as amended (33 USC 1251 *et seq.*). Contractor will report violations to the Agency and the Regional Office of the EPA.

18.09 *State Energy Policy*

- A. Contractor shall comply with the Energy Policy and Conservation Act (P.L. 94-163). Mandatory standards and policies relating to energy efficiency, contained in any applicable State Energy Conservation Plan, shall be utilized.

18.10 *Equal Opportunity Requirements*

- A. If this Contract exceeds \$10,000, Contractor shall comply with Executive Order 11246, "Equal Employment Opportunity," as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."
- B. Contractor's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active obligations required by the Standard Federal Equal Employment

Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical area where the Contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting Contractor's goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

- C. Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the Contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the Contract is to be performed.

18.11 *Restrictions on Lobbying*

- A. Contractor and each subcontractor shall comply with Restrictions on Lobbying (Public Law 101-121, Section 319) as supplemented by applicable Agency regulations. This Law applies to the recipients of contracts and subcontracts that exceed \$100,000 at any tier under a Federal loan that exceeds \$150,000 or a Federal grant that exceeds \$100,000. If applicable, Contractor must complete a certification form on lobbying activities related to a specific Federal loan or grant that is a funding source for this Contract. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 USC 1352. Each tier shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Certifications and disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

18.12 *Environmental Requirements*

- A. When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:
 - 1. Wetlands – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.
 - 2. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.
 - 3. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the State Historic Preservation Officer (SHPO).
 - 4. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.

SECTION 00800 – SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract Funding Agency Edition (No. C-521, 2002 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

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

PART I – REVISIONS TO SECTION 00710 “GENERAL CONDITIONS”

SC-1.01.A.4. Add the following language to the end of paragraph 1.01.A.4:

The Application for Payment form to be used on this Project is found at Document 00850.

SC-1.01.A.10. Add the following language to the end of paragraph 1.01.A.10:

The Change Order form to be used on this Project is EJCDC No. C-940.

SC-1.01.A.20. Add the following language to the end of paragraph 1.01.A.20:

The Engineers on this project are as follows:

Design Engineer: Peed & Bortz, LLC

SC-2.03.A. Delete Paragraph 2.03.A in its entirety and insert the following in its place:

- A. The Contract Times will commence to run 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 Agreement.

SC-4.02. Add the following new paragraph(s) immediately after Paragraph 4.02.B:

- C. In the preparation of Drawings and Specifications, the Engineer or Engineer’s Consultants relied upon the following reports of exploration and tests of subsurface conditions at the Site:
 “Subsurface Investigation – Water Storage Tank, Mt. Sidney, Virginia” prepared by Geotechnics, Inc., dated October 6, 2022. Geotechnics, Inc. letter dated October 21, 2022.

SC-4.06. Add the following new paragraph(s) immediately after Paragraph 4.06 A:

1. In the preparation of Drawings and Specifications, Engineer or Engineer’s Consultants relied upon the following environmental reports for the Project:

None

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

- C. Failure of Owner to demand such certificates or other evidence of full compliance with these insurance requirements or failure of Owner to identify a deficiency from evidence provided shall not be construed as a waiver of Contractor’s obligation to maintain such insurance.
- D. By requiring such insurance and insurance limits herein, Owner does not represent that coverage and limits will necessarily be adequate to protect the Contractor, and such coverage and limits shall not be deemed as a limitation on Contractor’s liability under the indemnities granted to Owner in the Contract Documents.

SC-5.04. Add the following new paragraph immediately after paragraph 5.04.B:

C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 5.04.A.1 and A.2 of the General Conditions:

- a. State: Statutory
- b. Applicable Federal Statutory
- c. Employer's Liability: \$ 500,000

2. Contractor's General Liability under Paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:

- a. General Aggregate \$3,000,000
- b. Products – Completed Operations Aggregate \$1,000,000
- c. Personal and Advertising - Injury \$1,000,000
- d. Each Occurrence - (Bodily Injury and Property Damage) \$1,000,000
- e. Property Damage liability insurance will provide Explosion, Collapse, and Under-ground coverages where applicable.
- f. Excess or Umbrella Liability
 - 1) General Aggregate \$5,000,000
 - 2) Each Occurrence \$5,000,000

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

- a. Bodily Injury:
 - 1) Each person \$1,000,000
 - 2) Each Accident \$1,000,000
- b. Property Damage:
 - 1) Each Accident \$1,000,000
- c. Combined Single Limit of \$1,000,000

4. The Contractual Liability coverage required by Paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

- a. Bodily Injury:
 - 1) Each Accident \$2,000,000
 - 2) Annual Aggregate \$2,000,000

- b. Property Damage:
 - 1) Each Accident \$2,000,000
 - 2) Annual Aggregate \$2,000,000

- 5. The OWNER and ENGINEER shall be named in the policy as additional insured.
- 6. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall be provided by the CONTRACTOR as part of the CONTRACTOR’s General Liability Coverage.

SC-6.06 Add a new paragraph immediately after Paragraph 6.06.G:

- H. The Contractor shall not award work valued at more than fifty (50%) percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

SC-6.17 Add the following new paragraphs immediately after Paragraph 6.17.E:

F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer’s time for reviewing subsequent submittals of Shop Drawings, samples or other items requiring approval and Contractor shall reimburse Owner for Engineer’s charges for such time.

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

SC-7.04 Add the following new paragraph immediately after paragraph GC-7.03:

SC-7.04 Claims between Contractors

A. Should Contractor cause damage to the work or property of any other contractor at the Site, or should any claim arising out of Contractor’s performance of the Work at the Site be made by any other contractor against Contractor, Owner, Engineer, or the construction coordinator, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law.

B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, Engineer, the construction coordinator and the officers, directors, partners, employees, agents and other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any other contractor against Owner, Engineer, Engineer’s Consultants, or the construction coordinator to the extent said claim is based on or arises out of Contractor’s performance of the Work. Should another contractor cause damage to the Work or property of Contractor or should the performance of work by any other contractor at the Site give rise to any other Claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or the construction coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or the construction coordinator on account of any such damage or Claim.

C. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of another contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a Claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor’s exclusive remedy with respect to Owner, Engineer, and construction coordinator for any delay, disruption, interference, or hindrance caused by any other contractor.

This paragraph does not prevent recovery from Owner, Engineer, or construction coordinator for activities that are their respective responsibilities.

SC-9.03.A. Add the following language at the end of paragraph 9.03:

The Duties, Responsibilities, and Limitations of Authority of the Resident Project Representative will be as provided in the agreement between Owner and Engineer for this specific project. The Owner may be providing a Resident Project Representative.

SC-11.01.A.5.c, Delete Paragraph 11.01.A.5.c in its entirety and insert the following in its place:

c. Construction Equipment and Machinery:

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

2. Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in "The AED Green Book". An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than \$1,000 will be considered small tools.

SC-12.04. Add the following new paragraph immediately after paragraph 12.04.E:

When establishing the contract time, an allowance will be made for four (4) calendar days of work lost per month due to inclement weather conditions. The Contractor, at the time of each periodic pay request, shall submit to the Engineer and Owner for approval a list of all working days lost due to either inclement weather or site conditions caused by inclement weather for the period. Accompanying his list should be a summary of the specific conditions that caused the loss. This request will be reviewed by the Engineer in light of observations made by the Engineer and resident inspector. Approval of the periodic payment estimate by the Engineer and Owner will also include approval of the weather delay request. After substantial completion, and not until then, a change order must be executed if a time extension for weather related delays is requested by the Contractor. The time extension must be based solely on the time requested within the periodic payment estimates. Subtracted from this time will be the four (4) days per month allowance assumed in the contract. There cannot be a decrease in contract length if the allowance for inclement weather exceeds the actual number of days lost due to inclement weather. To convert working days into calendar days, multiply the working days by seven (7) and divide by the number of working days in a typical workweek.

SC-14.02.A.3 Add the following language at the end of paragraph 14.02.A.3:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage, or invest the retainage for the benefit of the Contractor.

SC-14.02.C.1. Delete paragraph 14.02.C.1 in its entirety and insert the following in its place:

1. The Application for Payment with Engineer's recommendations will be presented to the Owner for consideration. If the Owner finds the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 14.02.D will become due thirty (30) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

SC-18.08. Delete paragraph 18.08.A in its entirety and insert the following in its place:

A. Where this Contract exceeds \$100,000 Contractor shall comply with all the requirements of the Clean Air Act (42 U.S.C. §7414) and Section 308 of the Water Pollution Control Act (33 U.S.C. §1318) relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 of the Clean Air Act and Section 308 of the Water Pollution Control Act and all regulations and guidelines issued thereunder after the award of the contract. In so doing the Contractor further agrees:

1. As a condition for the award of contract, to notify the Owner of the receipt of any communication from the Environmental Protection Agency (EPA) indicating that a facility to be utilized in the performance of the contract is under consideration to be listed on the EPA list of Violating Facilities. Prompt notification is required prior to contract award.
2. To certify that any facility to be utilized in the performance of any nonexempt contractor subcontract is not listed on the EPA list of Violating Facilities pursuant to 40 CFR Part 32 as of the date of contract award.
3. To include or cause to be included the above criteria and the requirements in every nonexempt subcontract and that the Contractor will take such action as the Government may direct as a means of enforcing such provisions.

END OF SECTION 00800

00800A MISCELLANEOUS SUPPLEMENTARY CONDITIONS**18.11 *Anti-Discrimination***

By submitting their proposals, all Bidders certify to Owner they will conform to the provisions of the Presidential Order #11246, the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Act of 1975, as amended, where applicable, and Section 2.2-4311 of the Virginia Public Procurement Act and that during the performance of this contract, the Bidder agrees as follows:

The Bidder will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by the state law relating to discrimination in employment, except when there is bona fide occupational qualification reasonably necessary to the normal operation of the Bidder. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

Notices, advertisements and solicitations placed by or on behalf of the Bidder will state that such contractor is an equal opportunity employer. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.

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

18.12 *Nondiscrimination against faith-based organization*

In accordance with the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, P.L. 104-193, the OWNER will not discriminate against faith-based organizations. The bidder also agrees to abide by § 2.2-4343.1 of the Virginia Public Procurement Act.

18.13 *Minority and women-owned businesses*

In accordance with Presidential Executive Orders #12138 & #11625 OWNER actively solicits both minority and women-owned businesses to respond to all Invitations to Bid and Requests for Proposal, and if not already on the Authority's mailing list, you may request application for inclusion on the list. Should you be interested, please contact the Authority at (540) 245-5670 and request information.

Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees.

18.14 *Drug-Free workplace*

During the performance of this contract, the Bidder agrees to (i) provide a drug-free workplace for the Bidder'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 violation of such prohibition; (iii) state in all solicitations or advertisements for

employees placed by or on behalf of the Bidder that the Bidder 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 Bidder in accordance with this chapter, 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.

18.15 *Unauthorized aliens*

In accordance with Virginia Code § 2.2-4311.1. Compliance with federal, state, and local laws and federal immigration law requires that the Bidder does not, and shall not during the performance of any awarded contract, knowingly employ an unauthorized alien as defined in the federal Immigration Reform and Control Act of 1986.

18.16 *Ethics in public contracting*

By submitting their proposals, all Bidders certify that their proposals are made without collusion or fraud and they have not offered or received any kickbacks or inducements from any other Bidder, supplier, manufacturer or subcontractor in connection with their proposal.

18.17 *Ownership of material*

Ownership of all data, material and documentation originated and prepared for OWNER, including any electronic media, shall belong exclusively to OWNER and be subject to public inspection in accordance with the Virginia Freedom of Information Act. Trade secrets or proprietary information submitted by a Bidder shall not be subject to public disclosure under the Virginia Freedom of Information Act; however, the Bidder must invoke the protection of this section prior to, or upon submission of, the data or other materials, and must identify the data or other materials to be protected and state the reasons why protection is necessary to the extent that such protected material is separately packaged and so identified in the Bid Submittal envelope.

18.18 *Independent contractors*

The parties hereto are independent contractors and are not agents, partners, or joint venturers. Neither party shall have the ability to bind the other to any contract with a third party and neither party shall hold itself out to any third party as having the right to bind the other party to any contract.

18.19 *Antitrust*

By entering into a contract, Contractor conveys, sells, assigns, and transfers to Owner all rights, title and interest in and to all causes of action you may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or acquired by Owner under this contract.

18.20 *SCC registration*

Pursuant to Virginia Code § 2.2-4311.2, the Contractor must be registered with the State Corporation Commission if so required by Title 13.1 or Title 50 of the Virginia Code or otherwise required by law.

18.21 Escrow

In accordance with Virginia Code §2.2-4334, for bids of \$200,000 or more for construction of highways, roads, streets, bridges, parking lots, demolition, clearing, grading, excavating, paving, pile driving, miscellaneous drainage structures, and the installation of water, gas, sewer lines and pumping stations, the Bid Form will include a space for the bidder to indicate an option to use the escrow account procedure in order to have retained funds paid to an escrow agent.

18.22 Subrogation

Any and all waivers of subrogation by Owner contained in the Contract Documents, including without limitation the General Conditions, are hereby deleted. Any and all binding arbitration provisions contained in the Contract Documents are hereby deleted.

18.23 Governing Law

This Contract shall be governed in all respects by the laws of the Commonwealth of Virginia and any litigation between the parties arising under this Contract shall be brought in a court of competent jurisdiction in Augusta County, Virginia. The Contractor shall comply with all applicable federal, state and local laws, codes, rules and regulations.

18.24 Availability of funds

It is understood and agreed between the parties herein that OWNER shall be bound hereunder only to the extent of the funds available or which may hereafter become available for the purpose of this agreement. Unless canceled or rejected, a responsive bid from the lowest responsible bidder shall be accepted as submitted, except that, if the bid from the lowest responsible bidder exceeds available funds, the OWNER may negotiate with the apparent low bidder to obtain a contract price within available funds in accordance with SC-18.25, *negotiation with the lowest bidder*.

18.25 Negotiation with the lowest bidder

Unless all bids are cancelled or rejected, OWNER reserves the right granted by § 2.2-4318 of the Code of Virginia to negotiate with the lowest responsive, responsible bidder to obtain a contract price within the funds available to the OWNER whenever such low bid exceeds OWNER'S available funds. For the purpose of determining when such negotiations may take place, the term "available funds" shall mean those funds which were budgeted by OWNER for this contract prior to the issuance of the written Invitation to Bid. Negotiations with the low bidder may include both modifications of the bid price and other items required to be performed. The OWNER shall initiate such negotiations by written notice to the lowest responsive, responsible bidder that its bid exceeds the available funds and that the OWNER wishes to negotiate a lower contract price. The times, places, and manner of negotiating shall be agreed to by OWNER and the lowest responsive, responsible bidder(s).

18.26 DEBARMENT

By submitting a proposal the Bidder certifies neither it (nor he or she) nor any person or firm which has an interest in the Bidder's firm is disbarred or suspended from bidding or working on a state or federally funded project. No part of this contract will be subcontracted to any person or firm who has been debarred or suspended from bidding or working on a state or federally funded project.

18.27 *PUBLIC INSPECTION OF PROCUREMENT RECORDS*

Proposals submitted shall be subject to public inspection only in accordance with Virginia Code § 2.2-4342.

18.28 *COSTS OF PROPOSAL PREPARATION*

Any costs incurred by the Bidders in preparing or submitting proposals are the Bidders' responsibility. OWNER will not reimburse any Bidder for any costs incurred as a result of a response to this Invitation to Bid.



Environmental Management Systems

Contractor's Environmental Requirements

Index

1. Introduction
2. Material Handling / Spills
3. Waste Disposal
4. Water Discharges
5. Land Disturbance
6. Equipment Decommissioning
7. Inspections
8. Contractor Sign Off

1. Introduction

- 1.1 The following information is supplied to contractors who perform work on property owned by Augusta County, Augusta Water or Augusta County Public Schools. The contractor receives these requirements in the event contractor services have a potential to cause significant environmental impacts. The information presented in this package has been developed in response to the Augusta County's Environmental Management System (EMS). The intent of this information is to make on-site contractors aware of the EMS that has been implemented and to ensure that they conform to the applicable EMS program requirements as well as State and Federal regulations. The contractor will respond to receipt of this document by signing a statement indicating they have read these requirements, fully understand them and will comply with all EMS, State and Federal regulations.
- 1.2 Conformance with EMS requirements and State and Federal regulations are expected of all subcontractors and employees and will be enforced by the projects contractor.
- 1.3 For further information, or review of EMS details, please contact the Environmental Programs Manager at 540-245-5700.

2. Material Handling / Spills

- 2.1 There will be no outside storage of any hazardous materials without the consent of the owner's representative and/or Environmental Programs Manager.
- 2.2 Contractors will properly label, store and dispose of all hazardous materials.
- 2.3 When handling, storing or disposing of hazardous chemicals or materials contractors will meet all applicable laws and regulations.
- 2.4 Contractors will provide adequate spill/release prevention for all bulk materials.
- 2.5 The contractor will ensure that chemical containers are closed except when in use or if regulations prohibit closure.
- 2.6 The contractor will have available the Safety Data Sheets (SDS) for all chemical products on site. SDSs will be made available to maintenance personnel, medical personnel, environmental personnel or their representatives upon request.

- 2.7 Contractors will maintain spill kits to contain and clean up spills generated by their employees or from their materials. Spill kits will be kept on site and will be easily accessible in the event of an emergency.
- 2.8 Contractors will immediately notify the owner's representative who will contact the Environmental Programs Manager of any reportable spills, releases or other environmental incidents. Contractors will follow up by submitting a completed Environmental Tracking of Spills and Releases Form to the Environmental Programs Manager. The contractor is responsible for notifying appropriate State/Federal agencies and cleaning up the spill within legal time requirements.

3. Waste Disposal

- 3.1 Shipping information and paperwork (SDS, Waste Profiles, Land Ban Forms and Recycling/Disposal Certificates) must be provided to the owner's representative or Environmental Programs Manager upon request.
- 3.2 Contractors are responsible for all regulated wastes. All State, Federal, and EMS requirements must be met.

4. Water Discharges

- 4.1 Discharge of materials other than potable water to ANY drainage system is prohibited.
- 4.2 Discharges to sanitary sewers are prohibited unless approved by Augusta County Service Authority.

5. Land Disturbance

- 5.1 Solids must be prevented from entering sewer drains. Roadways and outside areas must be kept clean.
- 5.2 It is the contractor's responsibility to comply with all Virginia Erosion and Sediment Control Laws and County Ordinances administered by the County Engineer. The County Engineer may be contacted at 540-245-5700. A Land Disturbing Permit may be required.

6. Equipment Decommissioning

- 6.1 All equipment will be thoroughly inspected by the contractor for fluids and other hazardous materials prior to removal.
- 6.2 All fluids and other hazardous materials will be removed prior to decommissioning of equipment.
- 6.3 Disposal of any waste generated will be handled in accordance with EMS, State and Federal requirements.

7. Inspections

- 7.1 The owner's representative and/or Environmental Programs Manager may inspect hazardous materials, training/disposal records, equipment, etc. to insure compliance with EMS program requirements and State and Federal regulations. By execution of the contract, permission will be given for the owner's representative and/or Environmental Programs Manager to conduct the proper inspections. Any items found insufficient in protecting the environment will be corrected by the contractor.

8. Contractor Sign Off

- 8.1 Contractors are required to be familiar with the Contractor's Environmental Requirements and are required to sign the attached statement and submit it with the formal bid documents.



Environmental Management Systems

Compliance with Environmental Requirements

I have read and fully understand the environmental requirements contained in the Contractor's Environmental Requirements. My company and its subcontractors and employees will comply with all EMS requirements and State and Federal Regulations concerning storing, using, transporting, and disposing of hazardous chemicals and materials.

Company: _____

Principle in Charge: _____

Signature of Principle: _____ Date: _____

Contractor's Application For Payment No. _____

	Application Period:	Application Date:
To (Owner): Augusta Water	From (Contractor):	Via (Engineer) Peed & Bortz, LLC
Project: Mt. Sidney Water Storage Tank	Contract:	
Owner's Contract No.: 1303048	Contractor's Project No.:	Engineer's Project No. 22-07

APPLICATION FOR PAYMENT

Change Order Summary

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

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

CONTRACTOR'S CERTIFICATION

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

By: _____ Date: _____

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

is recommended by: _____ (Engineer) _____ (Date)

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

is approved by: _____ (Owner) _____ (Date)

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

Stored Material Summary

Contractor's Application

For (contract): Mt. Sidney Water Storage Tank					Application Number:				
Application Period:					Application Date:				
A	B	C	D		E		F		G
Invoice No.	Shop Drawing Transmittal No.	Materials Description	Stored Previously		Stored this Month		Incorporated in Work		Materials Remaining in Storage (\$) (D + E - F)
			Date (Month/Year)	Amount (\$)	Amount (\$)	Subtotal	Date (Month/Year)	Amount (\$)	
		Totals							

Change Order

No. _____

Date of Issuance: _____ Effective Date: _____

Project: Mt. Sidney Water Storage Tank	Owner: Augusta Water	Owner's Contract No.: 1303048
Contract:		Date of Contract:
Contractor:		Engineer's Project No.: 22-07

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

Description:

Attachments: (List documents supporting change):

CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIMES:
Original Contract Price: \$ _____	Original Contract Times: <input type="checkbox"/> Working days <input type="checkbox"/> Calendar days Substantial completion (days or date): _____ Ready for final payment (days or date): _____
[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: Substantial completion (days): _____ Ready for final payment (days): _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial completion (days or date): _____ Ready for final payment (days or date): _____

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____ Engineer (Authorized Signature) & ACSA	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Date: _____	Date: _____	Date: _____
Approved by Funding Agency (if applicable): _____		Date: _____

Change Order

Instructions

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

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

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

SECTION 00945 WORK CHANGE DIRECTIVE

No. _____

DATE OF ISSUANCE _____ EFFECTIVE DATE _____

OWNER Augusta Water

CONTRACTOR _____

Contract: _____

Project: Mt. Sidney Water Storage Tank

OWNER'S Contract No. 1303048 ENGINEER's Project No. 22-07

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

Purpose of Work Change Directive:

Attachments: (List documents supporting change)

If OWNER or CONTRACTOR believe that the above change has affected the Contract Price any Claim for a Change Order based thereon will involve one or more of the following methods as defined in the Contract Documents.

Method of determining change in Contract Price:

- Unit Prices
- Lump Sum
- Cost of the Work _____

Estimated increase (decrease) in Contract Price:
\$ _____
If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Estimated increase (decrease) in Contract Times:
Substantial Completions: _____ days;
Ready for final payment: _____ days.

RECOMMENDED: _____

AUTHORIZED: _____

ENGINEER

OWNER

By: _____

By: _____

EJCDC No. 1910-8-F (1996 Edition)

WORK CHANGE DIRECTIVE

INSTRUCTIONS

A. GENERAL INFORMATION

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

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

B. COMPLETING THE WORK CHANGE DIRECTIVE FORM

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

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

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

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

Paragraph 10.03.A.2 of the General Conditions requires that a Change Order be initiated and processed to cover any undisputed sum or amount of time for Work actually performed pursuant to this Work Change Directive.

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

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

SECTION 01100 – SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Mt. Sidney Water Storage Tank
 - 1. Project Location: Off left side Seawright Springs Rd., approximately 0.45 mi. northwest of US Rt. 11, Mt. Sidney, VA. 38.2604, -78.9666
 - 2. Tank Description: 0.5 MG ground mounted water storage tank, approximately 50' D x 33' H.
 - 3. Owner: Augusta Water, P.O. Box 859, 18 Government Center Lane, Verona, Virginia 24482
- B. Engineer Identification: The Contract Documents were prepared for this Project by Peed & Bortz, LLC, 20 Midway Plaza Drive Ste. 100, Christiansburg, VA 24073. Owner may contract with Quinn Consulting Services, Inc. for project inspection services.
- C. Refer to Section 1270 Unit Prices for specific scope of work.

1.3 CONTRACT

- A. Project will be constructed under one contract.

1.4 WORK SEQUENCE

- A. No specific limitations.

1.5 USE OF PREMISES

- A. Potable water for use by the Contractor on the project will be provided by the Owner.

1.6 FUTURE WORK

- A. Future Contract: No future contractors are anticipated at this time.

1.7 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "Master Format" numbering system.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.8 RECORD DRAWINGS

- A. General: The Contractor will submit to the Engineer at the Final Completion inspection, record drawings of the project. Engineer will provide Contractor with one set of reproducible plan sheets upon request. The record drawings provided to the Engineer will be in a legible, reproducible format and show all revisions/changes to the plans made during construction, including horizontal and vertical location changes.

1.9 MATERIAL TESTING

- A. Spent blast abrasive and paint debris/residue testing: The Contractor will provide an approved testing agency to test this material in accordance with the Specifications.

1.10 SCHEDULE OF VALUES

- A. A Schedule of Values shall be submitted at the Pre-Construction Conference.

1.11 CONSTRUCTION STAKING

- A. Construction staking is not anticipated.

1.12 CLEARING AND EROSION CONTROL

- A. Any improvements necessary for access, including permits and restoration, will be the responsibility of Contractor.

1.13 OSHA REQUIREMENTS

- A. Work site shall be managed in accordance with all EPA, OSHA, and Virginia State regulations. The Contractor's responsibility also extends to providing a safe work environment for activities inside and outside of tanks, and providing a "Competent Person" as defined by the OSHA regulation referenced above on the job site.
- B. Contractor is advised that Confined Space may be present on the project site. Related hazards are poor air quality including lack of oxygen and potential exposure to airborne chemicals, and engulfment potential.
- C. Contractor is advised that hazards exist on the project site related to potential fall from height.

1.14 TRAFFIC

- A. Traffic Control is not anticipated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01270 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by bidders and stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: The Bid in Section 5.01 of the Bid Form consists of Unit Price bid items. The general scope of work included in these bid items is included at the end of this Section.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A list of unit price bid items is included at the end of this Section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

- A. Bid Items:
 - 1. A Lump Sum price is requested for all work.

B. Related Items:

1. Seeding: All necessary seeding, including fertilizer, lime, topsoil preparation, and mulch in accordance with the specifications, will be considered incidental to the other items of work and no separate payment or additional compensation will be made.
2. Erosion Control Measures: All erosion control measures not specified as payment line items will be considered incidental to the work and no additional payment will be made. Maintenance, repair, replacement of damage erosion control measures and removal of installed measures will be considered incidental to the work and no additional payment will be made.
3. Fencing: All fence repair or removal & construction will be considered incidental to the work and no separate payment or additional compensation will be made.
4. Temporary utility pole shoring: Any temporary shoring of existing utility poles or any other coordination efforts/charges/fees with utility companies required will be considered incidental to the other items of work and no separate payment or additional compensation will be made.
5. Testing and Disinfection: All water line and tank testing and disinfection is to be considered incidental to the other items of work and no separate payment or additional compensation will be made.
6. Record Drawings: Record Drawings will be considered part of the base bid items and will not be measured nor paid for separately.

END OF SECTION 01270

SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: The Contractor shall provide submittals for the Engineer's approval to show compliance with the specifications. Unacceptable submittals shall be revised and resubmitted as necessary until compliance with the specifications is achieved.
- B. Related Section: Additional Sections of the Documents which are referenced in this Section include:
 - 1. Section 00710 – General Conditions

1.2 QUALITY ASSURANCE

- A. Coordination of Submittals: The Contractor shall be responsible for reviewing the Specifications to ensure that the items being submitted conform in all respects with the requirements. All submittals shall be provided to the Engineer at least 3 weeks prior to commencing work on the items being submitted.
- B. Substitutions:
 - 1. The Contractor is bound to the standards of quality established in the Contract Documents. Refer to Article 6 of the General Conditions regarding "Equals".
 - 2. The substitution of materials or equipment shall not be permitted unless the Engineer has given prior approval for the substitution in writing.
 - 3. The Contractor shall certify that the proposed substitution has been determined to be equal or superior to the product specified. The proposed substitution shall be in complete compliance with the provisions in the Contract Documents.

PART 2 - PRODUCTS

2.1 SUBMITTALS

- A. General: The Contractor shall comply with Article 6 of the General Conditions regarding "Submittals".
- B. Submissions: Submittals will be stamped by the Engineer in one of the following ways:
 - 1. "Approved" – No exceptions are taken, subject to compliance with the Contract Documents.
 - 2. "Approved as Corrected" – Minor corrections are noted and a resubmittal is not required, subject to compliance with the corrections and the Contract Documents.
 - 3. "Not Approved" – The submittal material, method or system is totally rejected and does not meet the intent of the Specifications.
 - 4. "Revise and Resubmit" – Revise prior to resubmittal is required.
- C. Submission Procedure: The Contractor shall provide a minimum of 6 copies of each submittal to the Engineer for review. The Engineer will retain 2 copies, the Inspector receives 1 copy, the Owner receives 1 copy, and the Contractor receives the remaining copies.

2.2 SHOP DRAWINGS

- A. Scale and Measurements: Shop drawings shall be to a scale sufficiently large to show all pertinent aspects of the item.
- B. Review Comments: The Engineer will show all review comments on each copy of the submittal to be distributed as stated in Article 6 of the general conditions.

2.3 MANUFACTURER'S LITERATURE

- A. General: The Contractor shall provide all manufacturers' data pertinent to the submittal, clearly showing which portions of the contents are being provided for review.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

- A. Numbering: All submittals shall be consecutively numbered. Resubmittals shall cite the original submittal number for reference.
- B. Transmittal: Each submittal shall be accompanied by a transmittal letter showing all the information required for identification and checking, including the appropriate Specification sections.
- C. Submittal Log: The Contractor shall maintain a submittal log for the duration of the Work that indicates current status of all submittals. The submittal log shall be available to the Engineer at all times for the Engineer's review.

3.2 ENGINEER'S REVIEW

- A. General: Review by the Engineer does not relieve the Contractor from responsibility for errors that may result from the submitted data.
- B. Revisions: All revisions requested by the Engineer will be required. If the Contractor is considering any required revision to be changed, he shall notify the Engineer as provided in the General Conditions.

END OF SECTION 01330

SECTION 01450 - TESTING & INSPECTION REQUIREMENTS**PART 1 GENERAL****1.1 TESTING**

1. Testing Required: Testing shall be required for the following items of work in accordance with the Design and Construction Standards.
 - 1) Waterline bacteriological in accordance with Section 02510 – Water Distribution.
 - 2) Waterline leakage in accordance with Section 02080 – Utility Pipe and Materials.
 - 3) Force main leakage in accordance with Section 02080 – Utility Pipe and Materials.
 - 4) Backfill Compaction in accordance with Section 02317 – Execution.
2. Payment: The Contractor shall be responsible for coordination and payment of all sampling and testing by an independent testing laboratory for analysis of field samples. Testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor. AW will be responsible for the cost of testing only when additional tests are made at AW's request for a line that has been previously tested and found to be acceptable.
3. Re-Testing: Should any test results be unacceptable, the Contractor will at no cost provide the repairs and additional testing necessary.
4. Taking Samples: All specimens and samples shall be taken and cured/prepared by AW's Representative or Independent Testing Laboratory Personnel.
5. Qualifications: Individuals taking and performing the field tests shall have the proper training and qualifications.
6. Codes and Regulations: All testing shall be performed in accordance with all pertinent codes, regulations and standards.

1.2 INSPECTION

1. Inspection Required: Inspection by AW's Inspection Department shall be required for all work requiring a connection, modification of grades, or installation of other utilities in proximity to the Authority's existing utilities. Inspection shall also be required on installations that are to be dedicated to AW.
2. Pre-Construction Meeting: Prior to construction of any approved plans designating line extensions to be dedicated to AW, a pre-construction meeting must be held with AW's Representative and Engineer in accordance with the ACSA OPPM Policy No. 10.10.

1.3 CODE COMPLIANCE INSPECTION & TESTING

1. General: Inspections and testing required by codes or ordinances, a planning authority, or which are made by a legally constituted authority shall be the responsibility of and shall be paid for by the Contractor, unless otherwise provided for in the Design and Construction Standards or OPPM.

PART 2 PRODUCTS**2.1 EQUIPMENT**

1. Equipment: The Contractor shall be responsible for supplying all necessary equipment required for proper testing. AW shall be permitted to temporarily install its own gages when deemed necessary by AW's Representative. Any gage used for testing shall be UL listed and shall be calibrated on a regular basis.

PART 3 EXECUTION**3.1 CONNECTION TO EXISTING SYSTEM**

1. Newly constructed valves and/or pipes to be connected to the AW system shall remain closed and/or disconnected pending "Substantial Completion" in accordance with the ACSA OPPM Policy No. 10.10. A Final Inspection will be required in accordance with ACSA OPPM Policy No. 10.10.

3.2 SCHEDULE FOR TESTING

1. Schedule: The Contractor shall schedule testing with AW's Representative at least 48 hours in advance.

END OF SECTION

SECTION 01610 - DELIVERY, STORAGE, AND HANDLING**PART 1 GENERAL****1.1 DESCRIPTION**

1. Work Included: Products to be used in the work shall be properly stored and handled as described in this section. This section is not intended as a substitution for good judgment by the CONTRACTOR, nor is it intended to limit protective measures to be taken by the CONTRACTOR during construction.

1.2 QUALITY ASSURANCE

1. General: The CONTRACTOR shall take the necessary measures to protect the materials and work as required.

1.3 MANUFACTURER'S RECOMMENDATIONS

1. General: Unless otherwise approved by the ENGINEER or specified herein, the CONTRACTOR shall comply with the manufacturer's recommendations on product handling, storage and protection.

1.4 PACKAGING

1. General: Products shall be delivered to the job site in their manufacturer's original container with labels intact and legible. Damaged materials shall be immediately replaced at no additional cost to the OWNER. The ENGINEER may reject, as non-complying, any materials that do not bear the proper identification such as manufacturer, grade, quality and other pertinent information.

1.5 PROTECTION OF SURFACES

1. General: The CONTRACTOR shall protect and maintain all finished surfaces from damage during storage and construction. Finished surfaces shall remain clean, unmarred and suitably protected until the work is accepted by the OWNER.

1.6 REPAIRS AND REPLACEMENTS

1. General: In the event of damage, the CONTRACTOR shall make the necessary replacements as approved by the ENGINEER at no additional cost to the OWNER. No extension of contract time will be given for work associated with replacement of damaged materials. Damaged materials shall be removed immediately from the jobsite.

1.7 DELIVERY AND STORAGE

1. Delivery: The CONTRACTOR shall be responsible for making all the arrangements for the delivery, unloading, receiving and storage of materials.
2. Storage: The CONTRACTOR shall store all products and materials in a protected location to prevent any damage or deterioration due to moisture, freezing temperatures or other detrimental conditions.
3. Damaged or Rejected Material: Any damaged or rejected material shall be removed from the job site immediately.

END OF SECTION

SECTION 02080 – UTILITY PIPE AND MATERIALS**PART 1 GENERAL****1.1 REFERENCES**

1. General: The Work shall comply with the most recent or tentative standards as published at the date of the Contract and as listed in the Design and Design and Construction Standards.
2. Related Sections: Additional Sections of the Documents which are referenced in this Section Include:
 - 1) Section 01450 – Testing & Inspection Requirements
 - 2) Section 02085 - Valves and Cocks
 - 3) Section 02317- Excavating, Trenching, and Backfilling for Utilities
 - 4) Section 02510 - Water Distribution

1.2 QUALITY ASSURANCE

1. Quality Assurance: All pipe and fittings shall be new, free from defects or contamination and shall, whenever possible, be the standard product of a single manufacturer.
2. Manufacturer's Limitations: Products used in the work of this section shall be manufactured in the U.S. where possible by manufacturer's regularly engaged in production of similar items.

PART 2 PRODUCTS**2.1 APPROVED PRODUCTS**

1. All products shall be from the Augusta County Service Authority List of Approved Products included in Appendix A. Proposed alternate products must be approved by OWNER. Additional material specifications in this section are intended to supplement the Approved Products List. Where any conflicts exist, the Approved Products List shall take precedence.

2.2 PIPE

1. Polyvinyl Chloride (PVC) Pipe: Polyvinyl chloride pipe shall be made from clean, virgin, PVC compound conforming to ASTM D 1784, and meet the following requirements. Precautions shall be taken to prevent the storage of PVC pipe under direct sunlight for extended periods. PVC pipe that has not been installed more than 18 months from the manufacture date shall not be used. The cost to replace expired pipe shall be borne by the Contractor.
 - 1) Schedule 40 PVC: Schedule 40 PVC pipe for tank shade drain line shall be Type 1, Grade 1, plain end conforming to ASTM D 1784 and ASTM D 1785 with solvent weld joints and fittings.
 - 2) Schedule 80: Pipe for miscellaneous applications and where specified on the plans shall be Schedule 80 conforming to ASTM D 1785 with solvent weld or flanged joints.
2. Ductile Iron Pipe: Ductile iron pipe (DIP) and fittings shall meet or exceed the following requirements:
 - 1) Pipe and fittings shall be the diameter shown on the plans.
 - 2) Pipe and joints shall be manufactured in accordance with ANSI/AWWA C 151/A21.51.

- 3) All pipe shall be cement-mortar lined in accordance with ANSI/AWWA C 104/A21.4 except on air piping or as otherwise noted.
- 4) All lines below grade shall be constructed with push-on joints with O-ring gasket in accordance with ANSI/AWWA C111, and mechanical joints at fittings unless otherwise specified. Pipe lines inside of buildings or vaults and exterior non-buried lines shall be with flanged joints.
- 5) Ball and socket ductile iron pipe shall have push on joints with an allowable deflection of up to 15 degrees and be equal to Griffin SNAPLOCK River Crossing Pipe or approved equal.
4. Copper Tubing: All copper tubing shall meet the requirements of ASTM B 88 for Type “L” copper, hard drawn for above ground and Type “K” hard drawn for services.
5. Polyethylene (PE) Pressure Tubing: PE tubing shall be pressure class 200, copper tube size, meeting the requirements of AWWA C 901.

2.3 FITTINGS

1. Polyvinyl Chloride (PVC) Fittings: Polyvinyl chloride fittings shall be made from clean, virgin, PVC compound conforming to ASTM D 1784 and shall conform to the following requirements:
 - 1) Drain, Waste, and Vent: Fittings shall be Schedule 40 socket type conforming to ASTM D 2467.
 - 2) Solvent Cement: Solvent cement for use on PVC pipe and fittings shall conform to ASTM F 493 ASTM D 2564, or ASTM D 2846 as appropriate for pipe used.
2. Ductile Iron Fittings: Ductile iron fittings shall be lined and seal coated in accordance with ANSI/AWWA C 104/A21.04, and shall be manufactured in accordance with ANSI/AWWA C 110/A21.10 for standard body and ANSI/AWWA C 153/A21.53 for compact body fittings, and meet the following requirements:
 - 1) Buried fittings shall be mechanical joint and supplied with the proper adapter and/or transition gasket for use with PVC pipe. Buried fittings shall be rated for a working pressure of 350 psi.
 - 2) Flanged fittings shall be 125 pound fittings meeting ANSI/ASME B 16.42, or meeting ANSI/ASME B 16.1 for fittings not available in ductile iron.
3. Copper Pipe Fittings: Fittings shall meet requirements of ANSI/ASME B 16.22 for wrought copper, sweat joint.
4. Pressure Tubing Fittings: Couplings and fittings for copper or polyethylene pressure tubing shall be bronze compression type Ford Pack Joint or Grip Joint, McDonald “T” series, or approved equal.
5. Couplings:
 - 1) Connections between DIP to PVC pressure pipe shall be done with regular mechanical joint sleeves as manufactured by American Cast Iron Pipe Company, Anvil International, Inc., Mueller Company or coupling systems similar to Styles 38 and 138 as manufactured by Dresser Industries, Inc., Style FCI-1-510 as manufactured by Ford Meter Box Company, Inc., Style 501 as manufactured by Romac Industries, Inc., or approved equal. Shall be ductile iron.
6. Restrained Joint Fittings: Restrained joints shall use mechanical joint pipe with a mechanical retainer gland. Dimensions of the glands shall be such that they can be used with the standardized mechanical joint bell and tee head bolts conforming to the requirements of AWWA C 111 and AWWA C 153. Restraining glands shall be as listed in the ACSA Approved Products list or approved equal.

- 1) Mechanical to Push-On Joint Connection: An appropriate adapter shall be used to convert from mechanical joint pipe to push-on joint pipe. Adapters shall be by Griffin or approved equal.
- 2) Push On Joint Pipe: If push-on joint pipe is used, restraining mechanisms shall be a contoured wedge-action retainer gland installed on the spigot (plain) end of the pipe, connected to a standard mechanical joint gland seated behind the pipe bell.

2.4 WATER METERS

1. Recirculation Flow Sensor: The flow sensor shall use a four-blade, open-cell rotor design using insertion paddlewheel technology and operate with a power input of 5 to 24 VDC. The sensor output shall be an open-collector pulse via twisted pair, foil-shielded cable with drain wire. Linearity of the output signal with respect to flow rate shall be $\pm 1\%$ of full range and measurement repeatability shall be $\pm 0.5\%$ of full range. The operating range of the sensor shall accommodate nominal flow rates from 0.1 to 6 m/s (0.3 to 20 ft/s). The sensor body shall be made of 316 stainless steel and rated for working pressures of 250 psi. Rotor materials shall be CD4MCu alloy and shafts shall be Tungsten Carbide. The sensor shall provide 1.5 in. NPT male pipe threads for attachment to a pipe. The sensor shall be +GF+ SIGNET, Model 2540 High Performance, or equal.
2. Recirculation Flow Transmitter: The transmitter shall be panel mountable, have flow rate and dual totalization capability, and be compatible with the flow sensor provided. Operating voltage shall be 12 to 24 VDC. Display units shall be fully scaleable. The transmitter shall meet appropriate CE, CSA & UL standards, be manufactured under ISO 9001 and 14001 certified processes, and meet NEMA 4X and IP65 standards. The transmitter shall have a 4 to 20 mA output and include simulate capability. The transmitter shall be +GF+ SIGNET 8550 Flow Transmitter, or equal.

2.5 MISCELLANEOUS DEVICES

1. Floor Drains: Drains shall conform to ANSI/ASME A 112.21.1. Floor drains shall be coated cast iron with double drainage flange, weepholes, threaded outlet connection, integral bell trap, and adjustable polished nickel alloy round removable strainer. Strainer shall be 6 inches in diameter and shall be made with light duty grate in buildings except in traffic areas where medium duty shall be used.
2. Pressure Gauges: Pressure gauges shall be bronze Bourdon tube in cast aluminum case with male 1/4 inch IPT connection at bottom, at least 4 1/2 inch face diameter with a range adequate to measure all working pressures, installed with brass piston type pulsation dampener. Gauges on the suction side of pumps shall be a pressure and vacuum gauge with a range adequate to measure all working pressures. Each gauge shall be mounted with a bronze ball cock to allow removal or servicing and a piston type pressure snubber to protect the gauge from rapid changes in line pressure. Gauges for use in wastewater applications shall be isolated from direct contact with wastewater by means of a diaphragm type isolator.
3. Tapping Saddles: Saddles shall be made of a malleable material and have flat stainless steel straps. Rubber gaskets shall be required for all pipe sizes and classes. Lead gaskets are prohibited. Saddles shall provide full support around the circumference of the pipe and have a bearing area of sufficient width along the axis of the pipe 1-1/2 inch minimum. Saddles shall not have lugs that will dig into the pipe when the saddle is tightened. The U-bolt type strap will not be allowed. Saddles shall be Ford FS 202, Mueller DE2S SERIES, Romac Style 202S or approved equal.

PART 3 EXECUTION**3.1 EXCAVATION, BACKFILLING AND COMPACTION**

1. General: Trench excavation shall be in accordance with Section 02317 – Excavation, Trenching, and Backfilling for Utilities

3.2 SEPARATION OF WATER AND SEWER LINES

1. Parallel Installation:

- 1) Normal conditions – Water mains shall be separated at least 10 feet horizontally from a sewer or sewer manhole. The distance shall be measured edge-to-edge. All water and sewer lines shall be installed a minimum of 20 feet from structures, including but not limited to, buildings, columns, and signs. Sewer lines and wells shall be separated a minimum of 50 feet.
- 2) Unusual conditions – When local conditions prevent a horizontal separation of 10 feet, the Contractor shall notify the Authority's Representative. The Authority's Representative, after consultation with the Virginia Department of Health, shall provide special instructions for construction within the area of conflict. In some cases, if authorized by the Authority's Representative, the 10 foot separation requirement may be waived provided that:
 - a) The bottom (invert) of the water main shall be at least 18 inches above the top (crown) of the sewer.
 - b) Where this vertical separation cannot be obtained, the sewer shall be constructed of AWWA approved water pipe, pressure tested in place to 30 psi without leakage prior to backfilling.
 - c) The sewer manhole shall be of watertight construction and tested in place.

2. Crossings:

- 1) Normal conditions – Water lines crossing over sewers shall have a separation of at least 18 inches between the bottom of the water line and the top of the sewer.
- 2) Unusual conditions – When local conditions prevent a vertical separation described above, the Contractor shall notify the Authority's Representative. The Authority's Representative, after consultation with the Virginia Department of Health, shall provide special instructions for construction within the area of conflict. In some cases, if authorized by the Authority's Representative, the following construction shall be used:
 - a) Sewers passing over or under water mains shall be constructed of AWWA approved water pipe, pressure tested in place to 30 psi without leakage prior to backfilling. Sewer pipe shall also be centered at the point of water line crossing such that the joints are equidistant from the crossing.
 - b) Water lines passing under sewers shall, in addition, be protected by providing:
 - A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water line.
 - Adequate structural support for the sewers to prevent excessive deflection of the joints and the settling on and breaking of the waterline.

- That the length of the water line be centered at the point of the crossing so that joints shall be equidistant and as far as possible from the crossing.
3. **Intersections:** No water pipe shall pass through or come in contact with any part of the sewer or sewer manhole. Nor shall any water distribution flushing device be directly connected to any sewer.
 4. **Special Cases:** In the event that existing utilities or field conditions make it impossible or impractical to meet the separation requirements, the Contractor shall notify the Authority's Representative. The Authority's Representative, after consultation with the Virginia Department of Health, shall provide special instructions for construction within the area of conflict.

3.3 INSTALLATION OF PIPE AND FITTINGS

1. **General:** No valve, hydrant, or other appurtenance on existing water lines shall be opened or closed for any purpose by the Contractor. Any opening or closing of valves, hydrants, whatsoever shall be by the Authority only. The Contractor shall notify the Authority at least 48 hours prior to the need to open or close any appurtenance, except in emergencies, at which time the Authority shall be notified immediately.
2. **Depth and Cover:** All water lines shall be constructed with a properly prepared trench, pipe bedding, and backfill. All water lines shall have a minimum of 42-inch and maximum of 60-inch cover measured from the top of the pipe to the finished grade at the proposed pipe centerline. Only under extraordinary circumstances and with special permission of the Authority shall water lines be deeper than 60 inches, or less than 42-inches deep (see Standard Detail W-1).
3. **Slope:** When installing gravity sewer on slopes of less than one percent, laser technology shall be used to insure proper grades.
4. **Handling:** Pipe shall be placed in the trench in such a manner as to prevent damage to pipe and protective coatings and linings. Under no circumstances shall pipe be dropped or dumped into the trench. As the temperature approaches or drops below freezing, extra care shall be used in handling pipe.
5. **Cleaning:** Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. Spigot and bell ends of pipe and gaskets shall be cleaned and lubricated according to manufacturer's instructions. If the pipe cannot be placed without getting debris into it, the Authority may require that a heavy tightly woven canvas bag of suitable size be placed over each end of the pipe before lowering the pipe into the trench and left there until the connection is made to the adjacent pipe. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug. If water accumulates in the trench, plugs shall remain in place until the trench is dry.
6. **Cutting:** Pipe shall be cut in a neat and workmanlike manner without damage to the pipe. Unless otherwise authorized by the Authority's Representative, cutting shall be done by means of approved type of mechanical cutters. Wheel cutters shall be used when practicable. Use of oxy-acetylene torch or similar method to cut pipe will not be permitted.
7. **Direction of Laying:** All pipe shall be laid with bell ends facing in the direction of laying unless otherwise directed by the Authority's Representative. Where pipe is laid on a grade of 10 percent or greater, or for gravity pipe systems, the laying shall start at bottom and shall proceed upward with the bell ends of pipe upgrade. Each piece of pipe shall be laid true to line and grade. The bottom of the trench shall be smoothly graded and bell holes provided so that the trench bottom provides uniform support to the barrel of the pipe when in final position. Adjustments to line or grade shall be made by removing or adding granular material under the barrel. In no case shall wedges or blocks be used under the body of the pipe. The pipe shall be pushed fully "home" by hand, with a bar and block of wood to cushion the bell, or other similar methods for large diameter pipe.

8. **Bedding:** Bedding of pipe shall be placed to the depth shown on the plans or standard details and shall be compacted to specified density. Bedding of ductile iron pressure pipe shall consist of firm subgrade with excavation for bell holes. When in rock excavation or for gravity sewer, bedding shall consist of a gravel base as shown in Standard Details W-1 and S-1.

Special care must be taken during installation of ribbed PVC pipe to insure ribs are completely imbedded in the bedding material to prevent settling after installation. This material (sometimes referred to as “haunching”) from the bedding to the springline must be rodded with bars or consolidated with shovels to assure complete filling of the voids between each rib. If pipe is completely covered with bedding/haunching material the same procedures shall be followed to prevent any voids between the pipe ribs.

9. **Lateral Connections:** In-Line wyes and tees for cleanouts/laterals shall be installed during initial construction. When lines are required to be tapped, connections shall be made using an approved watertight saddle. Tapping into the ribbed PVC pipe with the wye tapping saddle or the Inserta Tee will only be authorized to accommodate additional requirements subsequent to acceptance of project by the Authority or as explicitly authorized by the Authority’s Representative.

10. **Deflection at Joints:** Maximum deflection for force main and pressure pipe joints will be as follows:

Pipe Size	Allowable Deflection (in inches)							
	Ductile Iron (Push on)				Ductile Iron (Mechanical)			
	Lengths							
	12'	16'	18'	20'	12'	16'	18'	20'
4"	12	17	19	21	21	28	31	34
6"	12	17	19	21	18	24	27	30
8"	12	17	19	21	13	18	20	22
10"	12	17	19	21	13	18	20	22
12"	12	17	19	21	13	18	20	22
16"	7.5	10	11	12	9	12	13.5	15

11. **Installation of Fittings:** Fittings shall be installed with the same care that mainline pipe is installed. Caps or plugs shall be braced to prevent blow off during testing.

- 1) Ductile iron fittings used on Force main and Other Pressure Pipe shall be supported in accordance with PART 2 PRODUCTS of this Section.

Use fittings and gaskets manufactured by the pipe manufacturer designed specifically for connection to, and repair of, ribbed PVC pipe. Installation of fittings and repairs to pipe must be in accordance with the Manufacturer’s procedures and recommendations.

12. **Jointing:**

- 1) **Mechanical Joints:** When installing mechanical joint (MJ) ductile iron pipe, the socket, spigot end and rubber gasket shall be thoroughly washed with soapy water to remove any grease or grit that might damage the gasket. In making up the joint, the gland for MJ pipe followed by the gasket, shall be placed over the plain end of the pipe and inserted into the socket. The gasket shall be pushed into position without excessive force and evenly seated in the socket of the pipe bell, and the gland for MJ pipe, then moved into position against the face of the rubber gasket.
- 2) **Flanged Joints:** Where flanged joints are used, they shall be installed by skilled workmen in accordance with the best standard practice. Bolts shall be tightened so as to evenly distribute the joint stress and insure proper pipe alignment.

13. Water Service Connections:

- 1) Existing Waterlines: New service taps on existing water lines shall be made under pressure with proper tapping machine for the pipe being tapped and with the Authority's Representative present.
- 2) New Water Lines: New service taps on new water lines shall be made under pressure with proper tapping machine for the pipe being tapped. The water main shall be tested and disinfected after service taps are made.

17. Setting of Valves: Valves shall be installed in accordance with manufacturer's instructions and shall be in accordance with Section 02085 - Valves and Cocks and as shown on the Standard Details.

18. Anchorage and Joint Restraint: For pipe installation at grades over 20 percent, the pipe shall be anchored in accordance with Standard Detail G-5. Pressure pipe lines shall be mechanical joint and protected against joint pulling or thrust damage by suitable mechanical joint restraining glands installed at direction changes as a result of fittings and all other critical points. Other methods of restraint may be approved by the Authority depending on the conditions.

Rods and clamps, for use on hydrant installations only, shall be galvanized or otherwise rust proof treated.

Concrete thrust blocks may be used when connecting to an existing unrestrained pipe or in other circumstances as approved or required by the Authority's Representative. See Standard Detail G-3 and G-4.

Mechanical joint pipe and restraining devices shall be installed in accordance with Standard Detail W-14 and shall be in accordance with the Approved Products List.

3.4 TESTING

1. General: Testing of pipe lines and structures shall be in accordance with Section 01450 – Testing & Inspection Requirements and these Design and Construction Standards.
2. The Authority's Representative shall be present at all required water/sewer facility testing. Copies of all test results shall be submitted to the Authority's Representative in accordance with the ACSA OPPM 10.10.

3.5 PIPELINE TESTING

1. General: Water for the first test shall be provided by the Authority. Subsequent water for tests shall be at the Contractor's expense in accordance with Section 01450 – Testing & Inspection Requirements. In the event the mains are damaged and are in need of repairing, cleaning, disinfection, flushing, testing, or similar operational actions, they shall be done in accordance with the most current standard issued by AWWA.
2. Pressure Testing – Water and Force Mains:
 - 1) Test Section: Pressure and leakage testing shall be conducted on each valved section (between adjacent valves) of pressure pipeline. Testing taps shall be provided and installed by Contractor as necessary where service connections are not available. Force mains and other pressure pipe without valves shall be tested in sections not to exceed 5,000 feet.
 - 2) Procedures: Pressurization, air removal, and allowances shall be in accordance with AWWA C 600, Section 5. Testing shall begin on the first valved section of line within ten days after its completion. Waterline shall not be considered ready for testing until all service taps have been installed. If testing is performed before services are installed additional testing may be required. The pressure and leakage tests shall be conducted concurrently for a duration of two hours. Testing through fire hydrants shall not be permitted. The valved section of the pipe under consideration shall be slowly

filled with water and brought to the specified pressure based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, by means of a pump. Before supplying the specified test pressure, all air shall be expelled from the pipe.

Testing shall not begin until at least seven days after the last concrete anchor, if used, has been poured on the section of line being tested (if high early concrete is used, two days). The Authority’s Representative shall observe all leakage tests. If the pipe fails to meet test requirements, all leaks shall be repaired and defective pipe replaced at the Contractor’s expense. The test shall be repeated until satisfactory results are obtained. The Contractor shall be charged for all retests at the normal rates for inspection services in accordance with Section 01450 – Testing & Inspection Requirements.

Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with sound material, and the test shall be repeated until it meets the testing requirements in these Design and Construction Standards.

- 3) Test Pressures: Test pressure shall not exceed the rated pressure of valves, piping, or thrust restraint design pressures. For test pressures less than 200 psi, Contractor shall demonstrate that there is no significant pressure (other than static) in the adjacent sections of pipeline to the one being tested.

Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. When hydrants are in the test section, the test shall be made against closed hydrant valves. The system shall be stabilized at the test pressure before conducting the leakage test.

- 4) Leakage: Leakage shall be defined as the quantity of water that must be supplied into the valved pipe section to maintain pressure within 5 psi of the specified test pressure. The allowable leakage shall not exceed the values given in table labeled Allowable Leakage Per 1,000 Feet of Pipeline.

Allowable Leakage Per 1,000 Feet (305 m) of ductile iron or 1111 feet (339 m) of PVC Pipeline - gph (multiply by 2 for 2 hour test)

Avg. Test Pressure psi	Pipe Diameter										
	3	4	6	8	10	12	14	16	18	20	24
300	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12
275	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99
250	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85
225	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70
200	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55
175	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21
125	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01
100	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80

- 5) Test acceptance shall be determined on the basis of passing the above mentioned test. If any test of laid pipe fails, the contractor shall locate and make approved repairs as necessary until the line passes the test.
- 6) All visible leaks are to be repaired, regardless of the amount of leakage.

3.9 DISINFECTION

1. General: Disinfection of water mains shall be in accordance with Section 02510 - Water Distribution.

3.10 EXPOSED PIPING IDENTIFICATION

1. General: To identify exposed piping, the different lines shall have contrasting colors. Pipes and valves shall be color coded in a manner that will permit ready identification of pipes at any location. Labeling of the identification of the pipe with or without an accompanying color code shall be considered as an acceptable substitute for the color scheme contained herein. Where color bands are utilized, the bands are to be one-inch wide and placed on 18 inch centers.

Potable Water Line – Dark Blue

Drain Line – Light Brown

END OF SECTION

SECTION 02085 - VALVES AND COCKS**PART 1 GENERAL****1.1 REFERENCES**

1. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification.
2. Related Sections: Additional Sections of the Documents which are referenced in this Section include:
 - 1) Section 02080 - Utility Pipe and Materials

1.2 SYSTEM DESCRIPTION

1. General: Valves shall be non-rising stem, with handwheel, lever, nut, or hydraulic operator, as shown on the Plans and specified herein.

1.3 DELIVERY, STORAGE AND HANDLING

1. Delivery: Deliver valves to the job site packaged, tagged, and marked.
2. Storage: Store valves at the job site in a manner to prevent damage and accumulation of dirt and rust.

PART 2 PRODUCTS**2.1 APPROVED PRODUCTS**

1. All products shall be from the Augusta County Service Authority List of Approved Products included in Appendix A. Proposed alternate products must be approved by OWNER. Additional material specifications in this section are intended to supplement the Approved Products List. Where any conflicts exist, the Approved Products List shall take precedence.

2.2 GATE VALVES

1. Gate Valves: Valves shall be ductile iron, resilient wedge conforming to ANSI/AWWA C 509. Wedge disc shall have two seating surfaces and provide smooth unobstructed waterway with 100 percent smooth passage. The valve shall be designed so that no sliding or shear on the resilient seating surface is present when compressed to a drip tight shut off. Working pressure shall be at least 200 psi for valves 12 inches in diameter and smaller. Valves shall have O-ring seals and open left (counterclockwise) with a 2 inch square wrench nut. Handwheel operators shall be provided for all interior installation. Valves shall have a permanent designation of the direction of opening on the valve. Valve ends shall be of mechanical joint type unless otherwise shown on the plans. Valve shall have fusion bonded epoxy coating inside and out. The valve shall be permanently lubricated. The valve shall have a manganese bronze stem and nut with anti-thrust washers. Valves shall be Mueller A-2360-20, Kennedy 4571, American Flow Series 2500, Clow 2639, or AVK 45 or approved equal.

Valves 3 inches and smaller shall be flanged and may be ANSI/AWWA C 500 double disc gate valves if resilient seat units are not available.

2.3 CHECK VALVES

1. Swing Check Valves (Liquid): Liquid check valves shall be of the swing check type, bronze mounted with cast iron body conforming to ANSI/AWWA C 508. Valve shall be operated by an external lever and adjustable weight. Disc shall provide a positive seal in the closed position and pivot to provide an

unobstructed flowway in the open position. Valve shall be Kennedy Figure 106 LW, Mueller A 2600-01, GA Figure 250D or approved equal.

2. Flexible Check Valves: Tank riser pipe outlet and drain discharge check valves are to be all rubber flow operated check type with a flanged end or slip-on screw clamp connection. The port area shall contour down to a duckbill which shall allow passage of flow in one direction while preventing reverse flow. The flange and flexible duckbill sleeve shall be one piece rubber construction with nylon reinforcement. Valves shall be rated for back pressure up to 25 psi. Valves shall be Proco 700 series, Cla-Val DB series, or Tideflex TF-2 or 35 series.

2.4 BUTTERFLY VALVES

1. Butterfly Valves (Water): Butterfly valves shall be rubber seated, short body in accordance with AWWA C 504, Class 250 B for installation between 125 pound standard flanges with ASTM A 126 Class B cast iron bodies, bronze discs, 416 stainless steel stems, #12 Buna-N or Ethylene-Propylene seat and steam O-rings, and with hand-wheel actuator with position indicator. Butterfly valves shall be DeZurik or approved equal.

2.5 PVC BALL VALVES

1. General: Valves shall be manufactured of PVC Type 1 Grade 1 with EPDM O-ring seals, true union connections, and threaded end connectors. Valves shall be listed by NSF International Standard 61.

2.6 AIR RELEASE VALVES

1. Air Release Valves: Air release valves and combination air/vacuum release valves shall conform to ANSI/AWWA C 512 with a cast iron body, stainless steel float, bronze trim, Buna-N seat, and one inch threaded pipe inlet.

2.7 ALTITUDE VALVE

- F. Altitude (Water Level) Control Valve: Valve(s) shall be one way flow, automatic control valve used to shut off incoming flow in a reservoir at a field adjustable water level without the use of floats or other external control devices. Valve shall be of the center guided diaphragm actuated globe type, flanged end, capable of being serviced without removal from the piping. Body and cover shall be cast iron, ASTM A 126 Class B, with bronze seat. Valve stem shall be stainless steel and diaphragms shall be of reinforced synthetic rubber. The control pilot shall be a direct acting, adjustable, spring loaded diaphragm actuated valve of corrosion resistant construction. Water to the pilot shall be fed directly from a connection to the tank or as shown on the plans. Valve control tubing shall include strainer and shutoff cocks to isolate the control loop. Valve shall be rated for working pressures up to 150 psi. Downstream Adjustment range shall be 5 to 40 ft. Valve shall be full ported type similar to Cla-Val model 210-03.

2.8 MISCELLANEOUS VALVES

1. Corporation Stop: Shall be 3/4 inch unless otherwise indicated with inlet threads conforming to ANSI/AWWA C 800, commonly known as the "Mueller" thread, and an outlet compatible with the service pipe and shall be Ford #F600 or Mueller #H-15000 for copper outlet.
2. Hose Bibb: Assembly shall be anti-contamination wall faucet. Valve shall be furnished with approved vacuum breaker which complies with ANSI/ASSE 1011 and has 3/4 inch male hose threads. Valve shall be of brass construction with adjustable packing nut and deep stem guard, Teflon impregnated packing and standard "O" size washer and wheel handle. Inlet shall be 1/2 inch copper tube.
3. Sampling Taps: The sampling tap shall be plain end spigot facet, renewable seats, tee handles, polished chrome plated similar to American Standard 4221.024.

2.9 RELATED ITEMS

1. **Valve Boxes:** Boxes shall be furnished and installed for all valves buried in the earth. Valve boxes shall be installed directly over valves, and carefully backfilled so that the box is plumb, level and flush with the finish grade. The valve boxes shall be a 2-piece sliding type, 24"-36" variable height with 5 ¼ inch shaft in accordance with Standard Detail W-7. The word "water" shall be cast on the box lid in letters not less than 1 inch high for all water valves. Valve box shall be Bingham and Taylor, Tyler Pipe #6855, or Capitol Foundry.
2. **Valve Operators:** Shall be either handwheel or wrench for nut operated valves as indicated on the plans. Minimum two wrenches shall be provided by the manufacturer of nut operated valves.

PART 3 EXECUTION**3.1 INSTALLATION - ALL VALVES**

1. **General:** Valve installation shall comply with Standard Details and the Manufacturer's recommendations.
2. **Stems:** Shall be oriented for accessibility as approved by the Authority's representative. Do not install valves with stems in the downward direction.
3. **Setting of Valves:** A valve box shall be provided for every valve. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the wrench nut of the valve, with the box cover flush with the surface of the finished grade or as directed by the Authority's Representative. Valves boxes shall be installed in accordance with the Standard Details W-7.
4. **Transmitting Forces:** Valves and valve boxes shall be installed so no forces are transmitted to the valve through the piping or valve boxes. All valves shall be provided with retainer glands and concrete block underneath.
5. **Cleaning:** All valves and appurtenances shall be flushed clear of all foreign material after installation.
6. **Calibration:** Contractor shall furnish the service of factory authorized service Engineer to instruct and check out the calibration of backwash plug valve.
7. **Testing:** Field test all valves and appurtenances for proper operation, proper adjustments and settings, freedom from vibration, binding, scrapings, and other defects. Check all valve supports for strength and high quality workmanship. All defects shall be corrected to the satisfaction of the Authority's Representative. Hydrostatic and leakage tests shall be in accordance with Section 02080 - Utility Pipe and Materials.

END OF SECTION

SECTION 02200 - SITE CONSTRUCTION**PART 1 GENERAL****1.1 REFERENCES**

1. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification.

1.2 QUALITY ASSURANCE

1. Asphalt: The VDOT Standards and Specifications shall define temperature restrictions, application procedures, mix components, and material references. All materials and application procedures shall be in accordance with VDOT Standards and Specifications.
2. Cast-in Place Concrete: Cast-in-place concrete shall comply with the Building Code Requirements for Structural Concrete (ANSI/ACI 318) and all applicable requirements of the Specifications for Structural Concrete (ANSI/ACI 301).
3. Testing: The Geotechnical Engineer shall observe the following to determine if the work has been performed in accordance with these specifications:
 - 1) Subgrade prior to placing base stone.
 - 2) Base stone prior to laying asphalt.
 - 3) Surface course application.

It is the Contractor's responsibility to coordinate inspections with the Geotechnical Engineer.

1.3 SUBMITTALS

1. Concrete Mix Designs:
 - 1) Prior to proceeding with any concrete work, secure concrete mix designs from the concrete supplier, and submit to the Authority's Representative for review and approval.
 - 2) Distribute approved mix designs to testing laboratory, batch plant, job site, and governmental agencies having jurisdiction.

1.4 MAINTENANCE

1. Streets: The CONTRACTOR shall maintain and repair existing streets as necessary during the construction period and provide for additional applications of compacted #21B stone after completion of trenching and prior to paving, as required.

1.5 DEFINITIONS

1. Clearing: Clearing shall consist of the satisfactory disposal of the trees and other vegetation designated for removal, including down timber, snags, brush, and rubbish occurring in the areas to be cleared.
2. Grubbing: Grubbing shall consist of the removal and disposal of brush, stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.

1.6 EROSION AND SEDIMENT CONTROL

1. General: Erosion and Sediment control is the sole responsibility of the Contractor/Developer. No site requiring additional Erosion and Sediment Control work will be accepted by the Authority.

PART 2 PRODUCTS

2.1 ACCESS ROAD AND PARKING SURFACE TREATMENT

1. General: Gravel roads, access drives, parking areas, or other gravel surfaces shall consist of a minimum of 6 inches of compacted VDOT #21A aggregate unless shown otherwise on the plans.
2. Subgrade: Subgrade shall conform to VDOT Specification 305.
3. Asphalt Surface Treatment: Asphalt surface treatment, where required, shall comply with VDOT Specification 314. Joints in existing pavement shall be overlapped and sealed
4. Prime and Surface: Where required, pavement shall consist of a prime coat and two surface coats as follows:

Prime Coat

CRS-2	Liquid Asphalt	0.30 Gal/S.Y.
VDOT #8	Cover Stone	25 lbs./S.Y.

Seal Coats (each)

CRS-2	Liquid Asphalt	0.30 Gal/S.Y.
VDOT #8	Cover Stone	25 lbs./S.Y.

5. Asphalt Drive and Parking Areas:
 - 1) Aggregate base course shall consist of VDOT #21A aggregate base material and shall conform to VDOT Specification 208.
 - 2) Prime coat shall consist of liquid asphalt material meeting the requirements of VDOT Specification 311.
 - 3) Bituminous concrete base course shall consist of bituminous concrete base material Type IM-19.0 and conform to VDOT Specification 315.
6. Asphalt Surface Course and Pavement Overlay:
 - 1) Tack coat shall consist of liquid asphalt material meeting the requirements of VDOT Specification 310.
 - 2) Bituminous concrete surface course or overlay shall consist of bituminous concrete surface material Type SM-2A and shall conform to VDOT Specification 211.

7. Asphalt Paving Limitations:

- 1) Apply prime and tack coats when ambient temperature is above 50 degrees F. (10 degrees C) and when temperature has not been below 35 degrees F. (1 degree C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.
- 2) Construct asphalt concrete base and surface course only when atmospheric temperature is above 40 degrees F. (4 degrees C) and when base is dry. Aggregate base course may be placed when air temperature is above 30 degrees F.

2.2 CONCRETE

1. General: Concrete work shall conform to all requirements of ACI 301 and ACI 350R, except as modified by supplemental requirements below. The CONTRACTOR shall provide at the construction site all ACI specifications referenced herein.

2. Strength: Concrete shall have a minimum allowable compressive strength specified at 28 days (ACI 301, 3.2). Concrete shall reach a minimum of 80 percent of this design strength before weight supporting forms may be removed (ACI 301, 4.5.5). Earlier removal of non load bearing forms shall be permitted only if approved by the Authority's Representative.

3. Materials and Testing: Contractor shall comply with the following as minimums:

- 1) Portland cement: 4,000 psi ASTM C 150, Type I or II. Low alkali cement shall be used where aggregates are alkali reactive.
- 2) Aggregate, shall meet requirements of ASTM C 33 and be uniformly graded and clean. Aggregate shall be tested in accordance with ASTM C 29. Do not use aggregate known to cause excessive shrinkage.
- 3) Aggregate, coarse: Crushed rock or washed gravel with minimum size between 3/4 inch and 1-1/2 inch, and with a maximum size Number 4.
- 4) Aggregate, fine: Natural washed sand of hard and durable particles varying from fine to particles passing a 3/8 inch screen, of which at least 12 percent shall pass a 50 mesh screen.
- 5) Provide concrete with compressive strengths shown on the plans. When such strengths are not shown on the plans, concrete shall be a minimum of 4000 psi.
- 6) Slump Limits: Design mixes shall result in concrete slump at point of placement of not less than 2 inches and not more than 4 inches. If the approved mix design includes the use of admixtures which affect slump, slump at point of placement shall comply with mix design.
- 7) Water cement ratio for tank slab shall be maximum 0.45.

4. Reinforcement

- 1) General: Reinforcement materials and installation shall conform to the applicable sections of the latest version or revision of ACI 301, except as modified by the Supplemental Requirements listed below.
- 2) Strength: Reinforcement shall be of the size shown on the plans with all bars being billet steel, ASTM A 615, Grade 60 unless noted otherwise. Welded wire fabric gauge and mesh size shall be as shown on the plans.

- 3) Spacing: The clear distance between parallel bars shall not be less than the nominal diameter of the bars, 1-1/3 times the maximum size of the coarse aggregate, not 1 inch. All main reinforcement shall be spaced not less than 2 inches from any concrete surface unless authorized or indicated on the plans. Clearance between ground and rebar shall be a minimum of 3 inches. For stirrups, spacer rods and similar secondary reinforcement, this clearance may be reduced by the diameter of such rods.
- 4) Splicing: Where splicing of bars is necessary, the minimum length of the splice shall be 30 diameters of the largest bar, unless shown to be otherwise on plans.
- 5) Hooks and Bends: When a hook is indicated on the plans, it shall mean either a 180 degree turn plus an extension of at least 4 bar diameters, or a 90 degree turn plus an extension of at least 6 bar diameters.
- 6) Quality Assurance: Comply with the following as minimums:
 - 1) Bars: ASTM A 615, grade 60 unless otherwise shown on the plans using deformed bars for number 3 and larger.
 - 2) Welded wire fabric: ASTM A 185.
 - 3) Bending of rebar shall be in accordance with ACI 318.
 - 4) Supports for reinforcement: Supports for reinforcing bars and welded wire fabric shall comply with CRSI recommendations, including bolsters, chairs and spacers. Wire bar supports shall be rust protected in accordance with CRSI Class 2. Under no circumstances will rebar or other metal pins driven into the ground to support reinforcing steel be allowed.
 - 5) Fabricate reinforcement to the required shapes and dimensions, within fabrication tolerances stated in the CRSI "Manual of Standard Practices" and ACI 315.
 - 6) Reinforcement: Do not use reinforcement having any of the following defects:
 - a) Bar lengths, depths, or bends exceeding the specified fabricating tolerances.
 - b) Bends or kinks not indicated on the plans or required for this work.
 - c) Bars with cross-section reduced due to excessive rust or other causes.
 - 7) Contractor shall fabricate reinforcement to the required shapes and dimensions, within fabrication tolerances stated in the CRSI "Manual of Standard Practices".
5. Waterstops: Waterstops shall be neoprene and of sufficient size to insure proper anchorage into both adjacent pours.
6. Joint Filler: Joint filler shall be a premolded expansion joint filler complying with ASTM D 1751.
7. Pipe Sleeves: Pipe sleeves shall be cast iron or PVC in accordance with Section 02080 - Utility Pipe and Materials. Sleeves shall be two piece for assembly around existing pipes or sleeves may be cut and reassembled around existing pipes. Sleeve size shall be adequate to install sleeve seal.
8. Sleeve Seals: Sleeve to pipe seals shall be synthetic rubber compression type seals similar to Link-Seal manufactured by Thunderline Corporation.

9. Portland Cement Concrete Limitations:

- 1) All concrete work shall be protected from damage or reduced strength which could be caused by precipitation, freezing action, or low temperatures. All work with concrete when air temperature is below 40 degrees F shall comply with Standard Specification for Cold Weather Concreting ANSI/ACI 306R and as specified herein.
- 2) Do not use antifreeze agents or chemical accelerators, unless written approval for such use has been given by the Geotechnical Engineer.
- 3) Do not use aggregates that contain ice or snow. Do not place concrete on frozen soils or subgrade.
- 4) If air temperatures have fallen below 40 degrees F, or are expected to fall below 40 degrees F within twenty-four hours, heat water and all aggregates before mixing. Concrete mixture temperature at point of placement shall not be less than 60 degrees F nor more than 80 degrees F.

2.3 SEEDING

1. Delivery: All seed shall be kept cool, dry and free of contaminants during transportation. Seed and soil amendments shall be delivered in original, unopened containers with appropriate labels attached.
2. Storage: Seed which is not sown within 24 hours after delivery shall be stored as follows, unless other methods of storage are requested by the Contractor and approved by the Authority's Representative.
 - 1) Seed storage location shall be cool, dry, and sheltered from wind, traffic and construction activities.
 - 2) Fertilizers, lime, herbicides, insecticides, and other agricultural chemicals shall be stored separately from the seed.
3. Grass seed: Seed shall comply with all applicable state and federal seed laws and contract requirements. Seed shall comply with all pertinent provisions of VESCH and VDOT 244.
 - 1) Grass seed shall consist of pure, live, certified grass seed mixture, of the latest crop, and containing weed seed less than 0.5 percent by weight of the total mixture.
4. Fertilizer: Fertilizer shall be commercially-prepared and granular. Fertilizer shall be uniform in composition, dry, and free-flowing.
 - 1) Fertilizer must comply with pertinent provisions of VESCH and VDOT 244. Fertilizer shall conform to all applicable state and federal regulations.
5. Mulch: Oat or wheat straw shall be used. Straw shall be dry and free from weeds, weed seeds, and foreign matter detrimental to plant life. Mulch shall conform to VDOT 244.
6. Straw blanket: Straw blanket shall consist of a 100 percent straw blanket sewn into a lightweight photodegradable net. The straw blanket shall be designed for installation on 3:1 and steeper slopes. Weight of blanket shall be approximately 0.5 pounds per square yard. Straw blankets shall be used in areas indicated on plans.
7. Paper matting: Paper matting shall consist of a flexible knitted construction of high strength degradable yarn interwoven with strips of biodegradable paper. Weight of matting shall be approximately 0.2 pounds per square yard.
8. Water: Water shall be potable or clean water free of contaminants harmful to plant growth. Brackish water shall not be used.

9. Lime: Unless otherwise noted, lime shall be agricultural ground or pulverized limestone.
10. Warranty Maintenance: Contractor shall provide, during the warranty period, maintenance as necessary to establish a healthy uniform stand of turf. Contractor's maintenance shall generally include overseeding, application of amendments, and repair of erosion as necessary.

PART 3 EXECUTION

3.1 SITE WORK

1. Clearing: An acceptable site shall have all trees, stumps, roots, brush, and other vegetation in areas to be cleared cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated on the plans to be left standing. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require. A healthy stand of grass shall be provided on all cleared areas of the site.
2. Grubbing: Material to be grubbed, together with logs and other organic debris not suitable for foundation purposes, shall be removed to a depth of not less than 12 inches below the original ground in areas such as proposed buildings, grassed areas, and areas to be paved. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the adjacent surfaces.
3. Disposal of Materials: All disposal of debris and unsuitable or surplus material is the sole responsibility of the Contractor. All excess materials must be removed from the site prior to acceptance by the Authority.
4. Drainage: The Contractor/Developer shall be responsible for providing proper stormwater drainage for the site .

3.2 ACCESS ROAD AND PARKING SURFACE TREATMENT

1. General. Asphalt concrete pavement construction shall be in accordance with the details on the plans and construction shall be in accordance with VDOT Specification 315.
2. Subgrade: Uniformly smooth grade excavated areas, filled sections and adjacent transition areas. Subgrade shall be rolled and compacted prior to stone application.
3. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
4. Barricades: Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.
5. Surface Drainage: The surface of all paving work shall slope and drain surface water toward catch basins or swales. If water stands, paving shall be corrected to prevent standing water, subject to the Authority's Representative's approval.
6. Remedial Work: Repair or replace deficient work as directed by the Authority's Representative at no cost to the Authority.

3.3 CONCRETE

1. General: A subbase of 6 inches of VDOT #57 stone shall be placed under all slabs, unless otherwise indicated on the plans.
2. Reinforcing: Comply with the following, as well as the specified standards, for details and methods of reinforcing placement and supports.

- 1) Clean reinforcement and remove loose dust and mill scale, earth, and other materials which reduce bond or destroy bond with concrete.
 - 2) Position, support, and secure reinforcement against displacement by forms, construction, and the concrete placement operations.
 - 3) Place reinforcement to obtain the required coverages for concrete protection as specified by ACI 301.
 - 4) Install welded wire fabric in as long lengths as practicable, lapping adjoining pieces one full mesh minimum.
 - 5) Dowels shall match reinforcement with which they lap unless noted.
 - 6) Unless otherwise shown on the plans, or required by governmental agencies having jurisdiction, or mechanical lap type splices are used, overlap bars per paragraph 2.2.4 (splicing) of this specification. Mechanical lap devices shall be approved by the Authority's Representative prior to use.
 - 7) Do not field bend reinforcement without written permission of the Authority's Representative. In no case may bars be heated to facilitate bending.
 - 8) Welding, oxy-acetylene torch cutting, or the application of heat to reinforcing steel, anchor bolts, or any metal object embedded in concrete is strictly forbidden unless approved in writing by the Authority's Representative.
3. Embedded Items:
- 1) Do not embed conduit or piping in structural concrete.
 - 2) Set bolts, post bases, inserts, and other required items in the concrete, accurately secured so they will not be displaced, and in the precise locations needed.
4. Pipe Sleeves: Provide pipe sleeves for all existing and new pipes penetrating the wall. Sleeves shall be installed flush with the outside surfaces of the wall. Pipes shall be sealed within the sleeves by a compression type pipe penetration seal similar to "Link-Seal" manufactured by Thunderline Corporation of Belleville, MI.
5. Footing: Footing depth and construction shall be as shown on the plans. Bottoms of all exterior footings shall be adequately drained before foundation concrete is placed.
6. Insulation: Insulation shall be placed at the locations as shown on the plans.
7. Mixing Concrete:
- 1) Transit mix the concrete in accordance with provisions of ASTM C 94.
 - 2) Mixing Water:

A maximum of 2-1/2 gallons of water per cubic yard of concrete, may be withheld at the batch plant.

Upon arrival at the job site, add all or part of the withheld water (as required for proper slump) before the concrete is discharged from the mixer.

Mix not less than five minutes after the withheld water has been added, and not less than one minute of that time immediately prior to discharge of the batch.

Unless otherwise directed, provide at least 15 minutes total mixing time per batch after first addition of water.

- 3) Do not use concrete that has stood for over 30 minutes after leaving the mixer, or concrete that is not placed within 60 minutes after water is first introduced into the mix. Plasticizers or other admixtures shall not be used unless prior approval from the Authority's Representative has been obtained.
8. Placing Concrete:
- 1) Remove foreign matter accumulated in the forms.
 - 2) Rigidly close openings left in the formwork.
 - 3) Wet wood forms sufficiently to tighten up cracks. Wet other material sufficiently to maintain workability of the concrete.
 - 4) Use only clean tools.
 - 5) Masonry wall shall be sufficiently wet to maintain workability of the concrete.
9. Conveying:
- 1) Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic.
 - 2) Deposit concrete as nearly as practicable in its final location so as to avoid separation due to rehandling and flowing.
 - 3) Do not use concrete which becomes non-plastic and unworkable, does not meet required quality control limits, or has been contaminated by foreign materials.
 - 4) Remove rejected concrete from the job site.
10. Placing Concrete in Forms:
- 1) Deposit concrete in horizontal layers not deeper than 24 inches and avoid inclined construction joints.
 - 2) Remove temporary spreaders in forms when concrete has reached the elevation of the spreaders.
11. Placing Concrete for Walls: Concrete shall be deposited and consolidated in horizontal layers not deeper than 24 inches in a continuous operation. Placing shall be carried on at such rate that the concrete which is being integrated with fresh concrete is still plastic. Temporary spreaders in forms shall be removed when concrete has reached the elevation of the spreaders.
12. Placing Concrete Slabs:
- 1) Deposit and consolidate concrete slabs in a continuous operation.
 - 2) Bring slab surfaces to the correct level with a straightedge, and then strike off.
 - 3) Use bullfloats or darbies to smooth the surface, leaving the surface free from bumps and hollows.

- 4) Do not sprinkle water on the plastic surface. Do not disturb the slab surface prior to start of finishing operations.
13. Cold Weather Placement:
- 1) All concrete work shall be protected from damage or reduced strength which could be caused by freezing actions or low temperatures. All work with concrete mixture when air temperature is below 40 degrees F shall comply with ACI 306R and as specified herein.
 - 2) Do not use antifreeze agents or chemical accelerators, unless written approval for such use has been given by the Authority's Representative.
 - 3) Do not use aggregates that contain ice or snow. Do not place concrete over frozen soils or subgrade.
 - 4) If air temperatures have fallen below 40 degrees F, or are expected to fall below 40 degrees F within twenty-four hours, heat water and all aggregates before mixing. Concrete mixture temperature at point of placement shall not be less than 60 degrees F nor more than 80 degrees F.
14. Consolidation:
- 1) Consolidate each layer of concrete immediately after placing, by use of internal concrete vibrators supplemented by hand spading, rodding, or tamping.
 - 2) Do not vibrate forms or reinforcement.
 - 3) Do not use vibrators to transport concrete inside the forms.
15. Curing: Concrete curing shall be done with accordance with ACI 303R. Cold weather curing shall be in accordance with ACI 306R.
16. Expansion Joints: Expansion joints are to be provided at locations shown on the plans or at other locations during construction as approved by the Authority's Representative. Joints shall be filled with a premolded expansion joint filler complying with ASTM D 1751.
17. Construction Joints: Construction joints shall be provided as shown on the plans or as preapproved by the Authority's Representative. Joints shall be kept free of form oil or other materials which may hamper bonding. Soiled surfaces shall be washed, mechanically cleaned or brushed blasted to the satisfaction of the Authority's Representative. A surface bonding agent similar to Larsen Products "Weld Crete" shall be applied at all joints in accordance with the manufacturer's recommendation.
- 1) Do not use construction joints except as shown on the plans.
 - 2) If additional construction joints are found to be required, secure the Authority's Representative's approval of joint design and location prior to start of concrete placement.
18. Waterstops: Waterstops shall be installed at all joints shown and all construction joints used by the Contractor in placing the concrete. Waterstops shall be anchored securely in place by using split forms, tie wires, or other methods that will insure correct positioning and proper embedment of the waterstop while the concrete is being placed. Concrete shall be thoroughly vibrated around the waterstop to avoid honey combing and insure proper bonding to the waterstop.
19. Finishing: All exposed concrete surfaces shall receive as a minimum, a smooth rubbed or grout cleaned finish conforming to ACI 301. Alternative methods of finishing concrete, such as an application of a concrete finish/sealer such as Thoroseal or similar product, shall be acceptable if approved by the

Authority's Representative. Except as may be shown otherwise on the plans provide the following finishes at the indicated locations.

- 1) Float Finish: apply to footings
 - 2) Trowel Finish: apply to bond beams and other surfaces that are to be exposed to view, unless otherwise shown
 - 3) Non-slip Broom Finish: apply to walks
20. Slabs: Concrete slabs shall be finished in accordance with ACI 301. 11 with floors receiving a trowled finish and exterior slabs to receive a broom finish.
21. Testing: An independent testing agency shall be designated by the Contractor and approved by the Authority's Representative prior to the preconstruction conference. Services so designated to be performed by the testing agency in ACI 301 shall be paid for by the Contractor. The Contractor shall provide the qualifications of proposed materials and mix designs as well as other testing services specifically required of the Contractor. Testing services to be provided by the Contractor shall include the following:
- 1) Additional testing and inspection required because of changes in materials or proportions requested by the Contractor.
 - 2) Additional testing of materials or concrete occasioned by their failure by test or inspection to meet specification requirements.
 - 3) The Contractor shall provide the materials, tools and labor necessary to prepare the test specimens and deliver them to the testing agency. The Contractor's Laboratory Technician shall conduct the slump test and the compressive strength testing of cylinders.
 - 4) The Contractor shall provide test results verifying that the concrete meets the strength requirements of these Specifications.
22. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
- 1) Testing Frequency: Obtain at least one composite sample for each 100 cu. Yd. Or fraction thereof of each concrete mix placed each day.

When frequency of testing will provide a fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

- 2) Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
- 3) Air Content: ASTM C 231, pressure method for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
- 4) Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
- 5) Compression Test specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.

- 6) Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days. Test two field-cured specimens at 7 days and two at 28 days. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.
23. Concrete Strength: Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

3.4 SEEDING

1. Preparation: Rake the soil surface to remove all root clumps, stones, and debris 1 inch or greater in size. True up all depressions and edges. Soil in the area to be seeded shall be prepared in accordance with VESCH and VDOT 602 and 603.
2. Application: Seeding shall conform with VESCH 3.31 or VESCH 3.32, and VDOT 603. Initial seeding shall consist of uniformly applying seed, mulch, and water on prepared areas. Over-seeding shall consist of applying seed, mulch, and water to areas previously seeded.
3. Grading: Establish a smooth grade ready to receive seed. Finish grade must conform to the grades and elevations as shown on the plans.
4. Topsoil: Topsoil shall be in place for all areas to be permanently seeded.

END OF SECTION

SECTION 02317 - EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES**PART 1 GENERAL****1.1 REFERENCES**

1. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification.

1.2 DEFINITIONS

1. Controlled Fill and Compacted Backfill: Controlled fill and compacted backfill are satisfactory materials compacted according to these Standards. Controlled fill is required beneath all areas on which final grade is not placed on original excavated soil.
2. Satisfactory Materials: Materials classified by ASTM D 2487 as GW, GP, GM, GC, SW, SP, SM, SC, ML, and CL are satisfactory as fill for overlot grading and are satisfactory in-situ.
3. Unsatisfactory Materials: Materials classified by ASTM D 2487 as OL, OH, MH, CH, and PT are unsatisfactory in-situ and as fill. Unsatisfactory materials also include those materials containing roots and other organic matter, trash, debris, frozen materials, mud, and stones larger than 6 inches. Unsatisfactory materials also include man-made fills, refuse, or backfills from previous construction.
4. Cohesionless and Cohesive Materials: Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the fines have plasticity index of zero.
5. Degree of Compaction: Degree of compaction is a percentage of the maximum density obtained by the test procedure presented in ASTM D 698 or ASTM D 1557 as specified, abbreviated above as a percent of laboratory maximum density.
6. Topsoil: Material obtained from excavations, suitable for topsoils, shall consist of friable clay loam, free from roots, stones, other undesirable material and shall be capable of supporting a good growth of grass.
7. Rock: Rock shall consist of boulders measuring 1/2 cubic yard or more and materials that cannot be removed without systematic drilling and blasting such as rock material in ledges, bedded deposits, unstratified masses and conglomerate deposits, and below ground concrete or masonry structures, exceeding 1/2 cubic yard in volume.
8. Unyielding Material: Unyielding material shall consist of rock and gravelly soils with stones greater than 18 inches in any dimension.
9. Unstable Material: Unstable material shall consist of materials too wet to properly support the utility pipe, conduit, or appurtenant structure.
10. Select Granular Material: Select granular material shall consist of well-graded sand, gravel, crushed stone or crushed slag composed of hard, tough and durable particles, and shall not contain more than 10 percent by weight of material passing a No. 200 mesh sieve. The maximum allowable aggregate size shall be 1 inch, or the maximum size recommended by the pipe manufacturer, whichever is smaller.
11. Select Initial Backfill Material: Initial backfill material shall consist of select granular material or satisfactory materials free from rocks 1 inch or larger in any dimension.

1.3 QUALITY ASSURANCE

1. Testing Results: Copies of all laboratory and field test reports shall be submitted to the Authority's Representative within 72 hours of the completion of the test.

PART 2 PRODUCTS

N/A

PART 3 EXECUTION

3.1 EXCAVATION AND PREPARATION OF TRENCH

1. General: Excavation within the VDOT right-of-way shall be in accordance with VDOT requirements.
2. Depth: Depth of trenches shall be as shown on plans and Standard Details except that the trench shall be excavated to allow for a depth of 1/4 of the pipe's outside diameter or a minimum of 6 inches of ASTM D 448 #68 aggregate bedding for gravity sewer. For force main and water main, excavation for bell holes in firm subgrade shall be sufficient except in rock where 6 inches of bedding, ASTM D 448 #68 stone, will be required. Where the trench is inadvertently excavated to a depth below grade, it shall be backfilled with ASTM D 448 #68 stone, compacted to provide sound and uniform support for the pipe at the proper level as shown on the plans. Minimum cover over any pipe shall be 42 inches. Maximum cover over any pipe shall be 18 feet, unless otherwise approved by the Authority.
3. Width: Width shall be sufficient to allow pipe installation without walking or standing on pipe. The trench width at a point 12 inches above the top of the pipe shall be 8 inches on each side of the pipe unless otherwise directed by the Authority's Representative. Excavation at manholes and similar structures shall be sufficient to leave at least 12 inches clearance between their outer surface and the embankment or sheeting. See Standard Detail W-1 and S-1 regarding pipe installation.
4. Excess and Unsuitable Material: Wet or otherwise unsuitable soil at the subgrade shall be removed to a minimum depth of 12 inches below the bottom of the pipe or to a depth required by the Authority's Representative and replaced with compacted ASTM D 448 #68 stone to the bottom of the normal trench bedding, See Standard Details W-1 and S-1.

When the bottom of the trench or subgrade is found to consist of material that is unstable to such a degree that it cannot be removed, the Developer's Engineer shall submit plans to the Authority's Engineer for review showing the proposed foundation for the pipe and/or appurtenances, using concrete or other material. Concrete encasement may be required where the amount of cover material would be two feet in depth (or less) over the top of the pipe.

5. Rock Excavation: Ledge rock, boulders, and large stones shall be removed to provide a clearance of at least 6 inches below and on each side of all pipe, manholes, valves or other appurtenances and overdepth shall be backfilled with satisfactory material and compacted in conformance with BACKFILLING subsection. These clearances shall also be observed for pieces of concrete or masonry and other debris or subterranean structures, such as masonry walls, piers, or foundations that may be encountered during excavation. See Standard Details W-1 and S-1.
6. Trench Protection: Protection shall be the sole responsibility of the Contractor.
7. Pumping, Bailing, and Draining: The Contractor shall remove any water which may accumulate or be found in the trenches or other excavations and shall keep the excavations clear of water while work is being installed, unless approval to the contrary is granted by the Authority's Representative.

8. **Blasting:** Blasting shall be in accordance with local ordinances and shall be the sole responsibility of the Contractor.

3.2 BACKFILLING

1. **Materials:** All backfill materials shall be free from mud, refuse, construction debris, organic material, boulders, frozen or otherwise unsuitable material. Select initial backfill shall be as defined in Part 1 of this section. Remaining backfill may contain stones up to 5 inches in their greatest dimension, unless otherwise specified. The Contractor may backfill with the excavated material, provided it meets the conditions as stated above.
2. **Gravity Sewer Bedding:** Bedding shall be required on all gravity sewer lines, and shall be in accordance with Standard Detail S-1. Bedding material shall extend from the excavated trench bottom to the pipe springline (midpoint) except on PVC pipe where it shall extend to 6 inches above the top of the pipe. Bedding material shall be compacted to 95 percent of maximum density as measured by ASTM D 698.
3. **Pressure Pipe Bedding:** Bedding for pressure pipe shall consist of firm subgrade with excavation for bell holes. When trench is in rock or non-select material bedding shall consist of a gravel base, unless shown otherwise on plans, and shall be in accordance with Standard Detail W-1. Gravel bedding material shall extend from the excavated trench bottom to the pipe springline (midpoint). Bedding material shall be compacted to 95 percent of maximum density as measured by ASTM D 698.
4. **Backfilling to Grade:** Initial backfill shall be with select material to a depth of at least two feet over the pipe and compacted prior to placement of remaining backfill. Initial backfill shall be placed in lifts not to exceed 6 inches (prior to compaction). Remaining backfilling shall be carried up evenly in lifts not to exceed 2 feet.
5. **Backfilling in Controlled Areas:** Backfill under pavement, proposed pavement, or in areas within rights-of-way shall be in layers of selected earth not more than 6 inches in thickness, and each layer shall be compacted to a minimum of 95 percent of maximum density at optimum moisture when tested in accordance with ASTM D 698. Compaction shall be in accordance with instructions in this Section as modified herein. The top course of backfill directly under pavement shall consist of aggregate base material meeting the requirements of VDOT #21A stone. The depth of this course shall be at least 1-1/2 times greater than the existing base course, but in no case shall be less than 6 inches. Moisture content shall be within 20 percent of optimum.
6. **Backfill Compaction Testing:** The Contractor shall demonstrate the adequacy of backfill compaction by performing density testing of the completed trench at no cost to the Authority. Testing shall be performed by an independent testing laboratory qualified to perform such tests and approved by Authority's Representative. Density testing shall be performed at three depths for each test location: surface, mid-depth, and near maximum trench depth. The character of the backfill material will be observed during the excavation for density testing to determine conformance with the specifications. Density testing shall be performed using nuclear field density equipment or conventional weight-volume methods. If the weight-volume method is used, volume shall be determined by using the sand replacement test (ASTM D 1556) or liquid displacement methods (ASTM D 2167). If nuclear methods are used, the trench correction effect shall be accounted for by recalibrating the nuclear gauge on its calibration block at the location of each test prior to taking the density measurement. The Contractor shall furnish all equipment, tools, and labor to prepare the test site for testing. Testing shall be performed by an independent testing laboratory qualified to perform such tests and approved by the Authority's Representative. All testing shall be witnessed by the Resident Project Representative. The test shall be repeated until satisfactory results are obtained. The Contractor shall be charged for all retests at the normal rates for inspection services.
 - 1) **Normal Testing Frequency:** One test shall be performed within the first 500 feet of pipe installed by each crew. This test will be used as an initial evaluation of the compaction methods being used. Beyond the initial 500 feet, one test shall be performed in each 1,000 foot section of pipe installed or

fraction thereof. Testing shall progress as each 1,000 foot section is completed. The location of the test within each section shall be selected by the Resident Project Representative. Testing which indicated that unacceptable material has been incorporated into the backfill, or that insufficient compaction is being obtained shall be followed by expanded testing to determine the limits of the unacceptable backfill.

- 2) **Expanded Testing Requirements:** If normal testing within a test section indicated unacceptable backfill, the Authority's Representative may require additional testing within the same test section to determine the limits of unacceptable backfill. Unacceptable backfill within the limits established by the testing shall be removed and replaced by the Contractor at no cost to the Authority. Additional testing beyond that required may be performed by the Contractor at his expense to further delineate limits of unacceptable backfill.
 - 3) **Additional Testing:** Testing beyond the normal frequency or expanded testing required which is requested by the Authority's Representative, and approved by the Authority, shall be at the Authority's expense.
7. **Finished Surfaces:** Uniformly smooth grading of disturbed areas shall be required after backfill and compaction. Road shoulders shall have a minimum depth of 6 inches of VDOT #25 or #26 crusher run aggregate, compacted to a minimum 95 percent of maximum density as measured by ASTM D 698. Ditches and gutters shall be finished to drain readily. In grass or lawn areas, the last 4 inches of compacted fill will consist of topsoil or an approved soil which will support a turf growth after fertilizing and seeding. Settlement or other damage that occurs prior to acceptance of this work shall be repaired and grades satisfactorily re-established.
 8. **Quality Assurance:** The Developer will be responsible for and shall repair any settlement in the backfill or pavement for a period of one year after acceptance of the work.

END OF SECTION

SECTION 02510 - WATER DISTRIBUTION**PART 1 GENERAL****1.1 REFERENCES**

1. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification.
2. Related Sections: Additional Sections of the Documents which are referenced in this Section include:
 - 1) Section 02080 - Utility Pipe and Materials
 - 2) Section 02085 - Valves and Cocks
3. American National Standards Institute (ANSI)/American Water Works Association (AWWA):
 - 1) C 651 Standard for Disinfecting Water Mains
4. American National Standards Institute / National Sanitation Foundation (ANSI/NSF):
 - 1) Std. 61 Drinking Water System Components-Health Effects

PART 2 PRODUCTS**2.1 MATERIALS**

1. General: All materials for use with potable water shall be in accordance with applicable ANSI/AWWA standards and approved for use with potable water in accordance with ANSI/NSF 61.
2. Waterlines: Water mains and distribution lines shall be ductile iron pipe; thickness class 52 for pipe diameters 12 inches and less, and thickness class 51 for pipe diameters 14 inches and greater, in accordance with Section 02080 – Utility Pipe and Materials. The Authority reserves the right to select the type of material. (See the Approved Products List for a complete list of manufacturer's materials and model numbers approved for use.)
3. Service Laterals: Service laterals shall be type “K” copper and shall be 1” minimum in diameter when serving 2 or more connections or under roadways. Laterals serving only one connection may be ¾” in diameter. Laterals shall be in accordance with the Section 02080 - Utility Pipe and Materials and Standard Detail W-8.
4. Pipe Fittings: All fittings 4 inch and larger shall be ductile iron and shall be in accordance with the Section 02080 - Utility Pipe and Materials.
5. Valves: All valves shall be in accordance with Section 02085 - Valves and Cocks.
6. Concrete: Miscellaneous concrete shall be VDOT Type A-3 specifications.
7. Restrained Joints: Joint restraint shall be performed by mechanical joint pipe and retainer glands in accordance with Section 02080 – Utility Pipe and Materials. Tie rods may be used with hydrant installations in accordance with Section 02080 – Utility Pipe and Materials.
8. Stone: Stone for repair of gravel road shoulder shall be VDOT #25 or #26.
9. Drain, Waste, and Vent: Shall be Schedule 40 PVC in accordance with Section 02080 – Utility Pipe and Materials.

- 10. Water Plumbing Pipe: Interior potable water plumbing shall be Schedule 40 PVC pipe in accordance with Section 02080 – Utility Pipe and Materials.
- 11. Vault and Interior Piping: Pipe lines inside of buildings or vaults shall be flanged ductile iron pipe for 4 inches and larger pipe. Pipe which is less than 4 inches in diameter shall be galvanized steel pipe with NPT threaded couplings or Schedule 80 PVC pipe. Pipe shall be in accordance with Section 02080 – Utility Pipe and Materials.

PART 3 EXECUTION

3.1 INSTALLATION OF PIPE, FITTINGS, AND ACCESSORIES

- 1. Pipe and Fitting Installation: All work shall be in accordance with Section 02080 - Utility Pipe and Materials.
- 2. Valve Installation: All work shall be in accordance with Section 02085 - Valves and Cocks.

3.2 DISINFECTION

- 1. Disinfecting Water Mains: Water mains and accessories shall be disinfected using the “continuous-feed” or “slug method” in accordance with ANSI/AWWA C 651. The “Tablet Method” described in ANSI/AWWA C 651 shall not be used. The Contractor shall obtain the most recent applicable AWWA standard. This standard shall be at jobsite with access granted to the Authority’s Representative. Care shall be taken to minimize entrance of foreign material into pipe, fittings and valves. The main shall be flushed prior to disinfection with sufficient flow to produce a velocity of 3.0 fps. Flushing shall take place in areas with adequate drainage.

1) Continuous Feed Method

During construction, calcium hypochlorite granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500-ft intervals. The quantity of granules shall be as shown in Table 1. This procedure shall provide a strong chlorine concentration in the first flow of flushing water that flows down the main. The main shall be filled prior to flushing to eliminate air pockets and to remove particulates.

Water supplied from a temporary, backflow prevented connection to the existing distribution system or other approved source of supply shall be made to flow at a constant, measured rate into the newly installed water main. At a point not more than 10 ft downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 50 mg/L free chlorine. The chlorinated water shall remain in the pipe at least 24 hours, after which, the chlorine concentration in the water shall be at least 10 mg/l. All valves and appurtenances shall be operated while the chlorinated water remains in the pipe. Table 2 gives the amount of chlorine required for each 100 ft of pipe of various diameters.

Table 1. Application of Calcium Hypochlorite Granules in Water Main for the Continuous Feed Method

Pipe Diameter (inch)	Calcium Hypochlorite Granules (ounce)
4	1.0
6	2.0
8	4.0
12	8.0
16	16.0

Direct feed chlorinators, which operate solely from gas pressure in the chlorine cylinder, shall not be used for the application of liquid chlorine.

Table 2. Chlorine Required to Produce 50 mg/L Concentration in 100 ft. of Pipe by Diameter.

Pipe Diameter (inch)	100% Chlorine (lb)	1% Chlorine Solution (gallon)
4	0.026	0.32
6	0.060	0.72
8	0.108	1.30
10	0.170	2.04
12	0.240	2.88
16	0.434	5.20

2) Slug Method

Calcium hypochlorite granules shall be placed in the main during construction as in the Continuous Feed Method. Preliminary flushing and chlorinating of the main shall be the same as in the Continuous Feed Method except for free chlorine concentrations and contact time. At a point not more than 10 ft. downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 100 mg/L free chlorine. The chlorine shall be applied continuously and for a sufficient period to develop a "slug" of chlorinated water that will, as it moves through the main, expose all interior surfaces to a concentration of 100 mg/L for at least 3 hours.

The free chlorine residual shall be measured in the slug as it moves through the main at intervals not more than 2000 ft.

As the chlorinated water flows past fittings and valves, related valves and hydrants shall be opened so as to disinfect appurtenances and pipe branches.

After the required retention period, the main shall be flushed using potable water until the water leaving the system shows a chlorine concentration of less than 1 mg/L or no higher than that prevailing in the water used for flushing. A neutralizing chemical shall be applied to the water to be wasted to neutralize thoroughly the remaining chlorine residual.

In the event the mains are damaged and are in need of repairing, cleaning, disinfection, flushing, testing, or similar operational actions, they shall be done in accordance with the most current standard issued by AWWA (AWWA C-601).

2. Final flushing: Shall be performed with potable water and shall follow to ensure that the chlorine concentration is not higher than that generally prevailing in the system. Chlorinated water shall not be discharged to any water course or drainage way until it is diluted or reduced to a level, which will result in no damage to aquatic life.
3. Bacteriological Tests: After final flushing and before the water main is placed in service, 2 consecutive samples shall be collected at 16 hours intervals for each 1200 feet of line. These samples shall be tested for bacteriological quality by the State Laboratory or other certified laboratory and shall show the absence of coliform organisms. Samples will be collected by the Authority Inspector (through the use of sample taps supplied by the Contractor) and delivered to the Testing Laboratory by the Authority within 48 hours of written notifications from Contractor. If the initial disinfection fails to produce satisfactory samples, the new main may be flushed again and re-sampled. If bacteriological samples still fail to produce acceptable results, then disinfection shall be repeated until satisfactory samples have been obtained. The contractor/developer will be billed by the Authority for the cost of the bacteriological testing.

END OF SECTION

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 REFERENCES

- A. Virginia Department of Transportation (VDOT) publications:
 - 1. Road and Bridge Specifications: latest edition.
 - 2. Road and Bridge Standards: latest edition.

1.3 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mix water to be withheld for later addition at Project site.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
- D. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - 1. Cementitious materials and aggregates.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Admixtures.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
 - 1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.

- B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- D. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."
- E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
 - 1. ACI 301, "Specification for Structural Concrete."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- F. Comply with VDOT standards and specifications.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Provide forms, formwork, ties, form-release agents in accordance with VDOT Specification Section 404.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: Provide steel reinforcement in accordance with VDOT Specification Section 223.

2.3 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete.

2.4 CONCRETE MATERIALS

- A. General: Provide cement, aggregates, water, and admixtures in accordance with VDOT Specification Section 217.

2.5 CURING MATERIALS

- A. General: Provide curing materials in accordance with VDOT Specification Section 220.

2.6 CONCRETE MIXES

- A. Within VDOT Right-of-way- Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
 - 1. Concrete curb and gutters: VDOT Class A-3 General Concrete
 - 2. Concrete storm drainage structures: Use mix design as indicated on VDOT Standards.
 - 3. Concrete slabs: 4000 psi mix General Concrete.
 - 4. Concrete encasement: VDOT Class A-3 General Concrete
- B. Prepare design mixes for each type and strength of concrete for all other structures as shown on the plans or as called for in the specifications. Minimum concrete strength is 4000 psi mix unless called for otherwise.
- C. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.
- D. Admixtures: Only use admixtures according VDOT Specification Section 217.
 - 1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.

PART 3 - EXECUTION

3.1 FORMWORK

- A. General: Provide formwork in accordance with VDOT Specification Section 404.
- B. Chamfer exterior corners and edges of permanently exposed concrete.
- C. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- D. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 STEEL REINFORCEMENT

- A. General: Provide steel placement in accordance with VDOT Specification Section 404.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.3 JOINTS

- A. General: Construct transverse joints true to line with faces perpendicular to surface plane of concrete in accordance with VDOT Specification Section 502.

3.4 CONCRETE PLACEMENT

- A. General: Place concrete in accordance with VDOT Specification Section 217.
- B. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- C. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mix.

3.5 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.

3.6 MISCELLANEOUS CONCRETE ITEMS

- A. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3.7 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with VDOT Specification Section 404 for concrete protection and curing.

3.8 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval and at no additional cost to the Owner.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: The Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mix placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
 5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 6. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.
 - a. Cast and field cure one set of four standard cylinder specimens for each composite sample.
 7. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days.
 - a. Test two field-cured specimens at 7 days and two at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.
- C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
- E. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch plant, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.

END OF SECTION 03300

SECTION 13200 – GROUND STORAGE TANK- POTABLE WATER

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Furnish all equipment, material, labor and appurtenances necessary for the design, manufacture, delivery, erection, painting and testing of an above ground water storage tank as indicated on the plans.

1.2 QUALITY CONTROL SUBMITTALS

- A. General: The CONTRACTOR shall be a specialist in the design, fabrication and erection of tanks, and shall provide such documentation as required in Document 0451 Contractor Qualification Statement. The CONTRACTOR shall provide the OWNER and ENGINEER with written documentation that the tank provided for installation on this project is approved by all pertinent local, state and federal agencies.
- B. Qualifications: The tank shall be erected by the manufacturer or by a licensed agent of the tank manufacturer. Upon request, crews must be able to document three tanks of comparable size and design they have constructed.
- C. Submittals: The tank construction company shall submit digitally properly identified and neatly bound complete design calculations, sketches and illustrations along with detailed working drawings for the tank. All design data shall be listed and referenced to the chapter, section and paragraph of applicable codes noted. Structural calculations for the tank and foundation shall be reviewed, signed and sealed by a currently registered Professional Engineer in the Commonwealth of Virginia.

1.3 SYSTEM DESCRIPTION

- A. General: The storage tank shall be of the glass-lined bolted steel or prestressed concrete type with a storage capacity as indicated on the plans. The elevation of the high and low water levels shall be as shown on the plans.
- B. Design: Design of the tank shall be in accordance with the latest revision of AWWA Standards referenced in this section. The tank shall be designed to withstand wind and earthquake loadings according to AWWA and BOCA requirements. Earthquake design shall be made according to the Pseudodynamic approach in the applicable ANSI/AWWA standard. Shop drawings from the tank manufacturer shall be certified by a Virginia registered Professional Engineer. The cost of any modification of the tank foundation required by the specific tank design shall be borne by the CONTRACTOR. The following design parameters shall apply, and the structure shall safely withstand the following loads acting separately or in combination.
1. Nominal Diameter: 50 ft.
 2. Nominal Size: 500,000 gallons.
 3. Weight of Structure and all accessories.
 4. Weight of Water in tank
 5. Wind Loading: 100 MPH in any direction

6. Seismic Zone: 1
7. Snow load: minimum of 25 PSF

1.4 DELIVERY, STORAGE, AND HANDLING

- A. General: The Contractor shall comply with Section 01610 - Delivery, Storage, and Handling.

1.5 SITE PREPARATION

- A. 1. General: All site work shall be performed in accordance with Sections 02200.

PART 2 - PRODUCTS

2.1 GENERAL

- A. General: All materials and accessories shall comply with ANSI/AWWA Specification D 103 (Factory-Coated Bolted Carbon Steel Tanks for Water Storage) or D 110 (Wire- and Strand-Wound, Circular, Prestressed Concrete Water Tanks).
- B. Bolts, Anchor Bolts, and Rods: Bolts and anchor bolts shall conform to the latest revision of ASTM A 307 and ASTM A 193/193M. Anchor bolts shall be galvanized or stainless steel. Rods shall be open-hearth or electric steel conforming to the latest revisions of ASTM A 36. If bolted tanks are used, all bolt heads shall be coated with an approved corrosion resistant material similar to EPDM. Bolts shall be rust proof treated prior to erection and be installed with the appropriate gasket and sealant as required by ANSI/AWWA D 103.
- C. Piping: All internal piping shall be stainless steel, including pipe supports. External piping may be ductile iron or as approved by the ENGINEER. Piping for tank shall be in accordance with Section 02510 – Water Distribution.
- D. Shell Manhole: The CONTRACTOR shall provide 24 inch diameter shell manholes, furnished with hinged and bolted covers located in the first ring of the tank shell. Concrete and bolted steel tanks shall require a minimum of one shell manhole. Welded steel tanks shall require a minimum of two shell manholes.
- E. Pipe Connections: The CONTRACTOR shall be responsible for making all pipe connections indicated on the drawings.
- F. Overflow: The tank shall be equipped with an overflow as indicated on the drawings. The overflow pipe shall be suitably anchored to the shell of the tank with a reducer at the inlet, designed for a pumping rate capacity of 1400 gpm. The elevation of the overflow shall be set to provide the specified tank capacity above the outlet. Overflow outlet shall be screened at the discharge with No. 4 mesh 8 gauge stainless steel screen.

- G. Level indicator: A float-operated gage level-indicator will be provided and installed the tank. This indicator will consist of stainless steel float, aluminum sheave elbow with stainless steel trim and teflon bearings, stainless steel cable and guides, and all necessary clamps, guides, and fasteners to make a complete and operable system. Install target board painted per exterior specifications and will be marked in foot increments and numbered every two feet. Markings and numbers will be easily visible from outside of perimeter fence.
- H. Vent: The CONTRACTOR shall furnish a suitable vent with the capacity to pass air so that at the maximum possible rate of water either entering or leaving the tank, dangerous pressures will not develop. Maximum design outlet rate from tank is 2500 gpm. The overflow pipe shall not be considered a tank vent. The vent shall be a freeze proof design and constructed with No. 4 mesh 8 gauge stainless steel screen as to prevent the ingress of birds or animals.
- I. Tank Ladders: The CONTRACTOR shall furnish a tank ladder on the outside of the tank shell at the location indicated on the drawings. An OSHA approved suitable locked guard or other device similar to "Ladder Guard" as manufactured by the Leary Construction Company shall be provided on the outside ladder to prevent unauthorized access. Ladders shall be aluminum or stainless steel.

Tank climbing safety equipment shall include the following (all 304/316 Stainless Steel):

Lad-Saf Vertical Climbing Safety System Kit, 3M Part No. 6116613

Cable Guide, 3M Part No. 6100457

Detachable Cable Sleeve, 3M Part No. 6160030

Cable (length as required), 3M Part No. 6119070

The above equipment is designed for use with the following (items are not included in Work): Full Body Harness (ANSI Z359 latest edition), Self Retracting Lifeline (ANSI Z359 latest edition), Shock Absorbing Lanyard – 12' free fall (ANSI Z359 latest edition).

All equipment shall be installed, maintained, and utilized in strict compliance with manufacturer's instructions.

- J. Tank Roof Hatch: The CONTRACTOR shall furnish a roof hatch located as shown on the drawings. The hatch shall be equipped with hinges and hasps for locking. The opening shall have a curb at least 4 inches high, and the cover shall overlap the curb by two inches. The roof hatch shall be located to allow viewing of and access to the inlet/outlet piping, overflow, and drain.
- K. Floor: Tank floor shall be of concrete construction, and shall be monolithic to the concrete walls where prestressed concrete tanks are provided. Where glass lined steel tank is constructed, a sealer shall be applied around the base of the reservoir to prevent water from running back under the bottom of the tank on the exterior. The base sealant shall be a two component, non-sag, elastomeric, polyurethane sealant formulated to remain flexible under atmospheric extremes. Base sealant shall be Sikaflex-2c NS, Saunders #2000 Sealant, Old North Mfg., Inc. ONA SEAL or approved equal.
- L. Gaskets/Interior Sealants/Coatings/Sealants/Any Other Product in Contact with Potable Water: Shall be NSF 61 approved and shall be in accordance with applicable ANSI/AWWA standards.
- M. Identification Plate: A manufacturer's identification plate shall be provided and shall list the tank serial number, diameter, height, minimum capacity, intended storage use, date of installation, and bear the NSF certification mark. The identification plate shall be affixed to the tank exterior sidewall at a location approximately 5 feet from grade elevation in a position of unobstructed view.

- N. Tank Foundation: The tank foundation shall be designed and constructed in accordance with the applicable ANSI/AWWA standard and the Subsurface Exploration & Geotechnical Analysis Report. Tank foundation shall be constructed on a minimum of 24" thickness of #57 stone, with a minimum of 24" of soil depth provided around the foundation for frost protection. A turndown foundation may be required for bolted & welded steel tanks to meet this requirement. Concrete work shall comply with Section 03300 – Cast-in-Place Concrete and the following:
1. Reinforcing steel shall be supported to prevent direct contact with the ground. Masonry brick or plastic coated metal chairs may be used. The use of steel rods or other materials driven into the ground shall be strictly prohibited. Alternate methods of supporting reinforcing may be approved by Engineer, provided that they do not include any direct connection between uncoated reinforcing steel and ground.
 2. Concrete slabs within the perimeter of the tank walls shall receive a trowel finish. Exterior concrete shall receive a broom finish.
- O. Roof: Roof shall be of same material as tank walls or aluminum in accordance with AWWA Standards.

2.2 PRESTRESSED CONCRETE TANKS

- A. General: Prestressed concrete tanks shall be designed and constructed in accordance with ANSI/AWWA D 110.
- B. Walls: Core wall design shall be in accordance with AWWA D 110 Section 3.5, and the following:
1. Design: The wire-prestressed composite wall shall be a type II wall as specified in AWWA D 110 Section 1, consisting of a shotcrete core wall encasing a steel shell diaphragm continuous the full wall height.
 2. Steel Shell Diaphragm: A 26 gauge steel tank shell, complying with ASTM A 1008/1008M for Commercial Quality Cold Rolled Steel, shall be used within and throughout the core wall providing a positive waterstop. All vertical joints in the diaphragm shall be sealed watertight by epoxy injection. The sealant shall conform to the requirements of ASTM C 881, Type III, Grade 1. In all tanks designed to use a waterstop at the floor/wall joint, the steel shell diaphragm shall be epoxy bonded to the waterstop.
- C. Dome Roof: Dome roof design shall be in accordance with AWWA D 110 Section 3.6. Roof shall be constructed of reinforced concrete or shotcrete, circumferentially prestressed. Dome shell reinforcement shall consist of reinforcing steel bars or welded wire fabric meeting ASTM A 185, hot galvanized. The dome shell shall be designed as a free span, spherical thin shell, with a one-tenth rise to one-twelfth rise. All surfaces in the wall/dome ring girder joint shall be coated with an approved bonding epoxy. The water level in the tank shall be permitted to encroach on the dome shell no higher than the upper horizontal plane of the dome ring girder.
- D. Prestressing Wire: Prestressing wire shall in be cold-drawn, high carbon wire complying with ASTM A 648 and AWWA D 110 Section 3, placed under high tension.
- E. Shotcrete: Shotcrete shall be in accordance with AWWA D 110 Section 2 and 3. Should the strengths of mortar shown by the test specimens made and tested in accordance with the above provisions fall below the values given, the ENGINEER shall have the right to require changes in the mortar mix for the remainder of the work. Furthermore, the ENGINEER shall have the right to require additional curing on those portions of the structure represented by the failing test specimens. In the event that such additional curing does not give the strength required, as evidenced by core and/or other tests, the ENGINEER shall have the right to require strengthening or replacement of those portions of the structure which fail to develop the required strength. The CONTRACTOR shall have no claim for reimbursement for the required corrective measures. Use of fly ash in the shotcrete is prohibited.

2.3 BOLTED GLASS-FUSED-TO-STEEL TANKS

- A. General: Bolted steel water tanks shall be fabricated in accordance with ANSI/AWWA D 103.
- B. Foundation: Foundation shall be in accordance with ANSI/AWWA D 103, Section 11.4, Type 2 or 6.
- C. Plates: Plate material shall be open-hearth or electric furnace steel conforming to the latest revision of ASTM A 283.
- D. Rolled Structural Steel: Rolled structural shapes shall conform to the minimum standards of ANSI/AWWA D 103, Section 2.5, and ASTM A 6 and ASTM A 36.
- E. Coating: Wall plates shall be of glass fused to steel construction, factory prepared in accordance with ANSI/AWWA D 103 and shipped to the site ready for assembly. Coating shall be a “three coat” Aquastore Vitrium™ system. Coating shall be applied on all panel surfaces, including edges.
- F. Roof panels shall be of either glass fused to steel or aluminum construction.

PART 3 - EXECUTION

3.1 GENERAL

- A. General: The tank shall be erected by the manufacturer or a licensed agent of the tank manufacturer.
- B. Cleaning: Upon completion of construction, and painting, including recommended cure, the tank shall be cleaned to remove dirt, construction debris, or other loose materials prior to disinfection of the structure. Only potable water shall be used to clean and rinse the tank. All equipment including pumps, hoses, brooms, brushes, and workman’s boots shall be disinfected before being used to perform the cleaning operations.
- C. Field Inspection: Field inspection of the tank may be made by an Resident Project Representative designated by the OWNER. The OWNER will bear the cost of this inspection. Field inspection shall be conducted in accordance with applicable designations of AWWA D 110, Section 6. Any inspections by the OWNER shall in no way relieve the CONTRACTOR of his obligation to certify that the construction is performed according to the plans and specifications.
- D. Foundation Testing: Slump, air and compressive cylinder testing shall be performed by an independent laboratory approved by the ENGINEER. A minimum of two test cylinders shall be cast and tested at 7, 14 and 28 days. All test results are to be submitted to the ENGINEER. The CONTRACTOR shall be responsible for all costs associated with testing.
- E. Watertightness Testing: After the tank is completed, it shall be filled with water furnished at the site by the OWNER. OWNER will provide at no cost to the CONTRACTOR an adequate volume of water to fill each tank as many as two times. If additional water is required for repeat testing, CONTRACTOR maybe responsible for purchasing water from the OWNER at the standard bulk rate. Any leaks that are disclosed in this test of the shell, shall be appropriately repaired. No repair work shall be done on any joints unless the water in the tank is at least 2 feet below the point being repaired.

3.2 PRESTRESSED CONCRETE TANKS

- A. General: The tank shall be erected by the manufacturer or a licensed agent of the tank manufacturer. Erection of the tank shall be in accordance with AWWA D 110, Section 5.
- B. Shotcrete: All shotcrete shall be applied in accordance with ACI 506, under the direct supervision of experienced nozzlemen certified in accordance with the guidelines of ACI 506.3R-82.
- C. Painting: Painting of the exposed exterior surfaces of the tank shall consist of a prime coat of masonry undercoat, plus two coats of exterior masonry paint (Tnemec Series 156 Enviro-Crete or approved equal). All painting shall be performed in accordance with the paint manufacturer's recommendations.

3.3 BOLTED GLASS FUSED STEEL TANK

- A. Shop Fabrication: Shop fabrication shall conform to applicable designations of ANSI/AWWA D 100, Section 9, or AWWA D 103, Section 7 as applicable.
- B. Erection: Erection of the tank shall be in accordance with ANSI/AWWA D 100, Section 10 or ANSI/AWWA D 103, Section 7 as applicable.
- C. Interior Sealant (Bolted Floors): If a bolted plate floor is constructed, interior base sealant shall be applied around entire perimeter of floor/wall joint.
- D. Tank Bottom Testing: Upon completion of the tank bottom, it shall be tested and shall be made entirely tight to the satisfaction of the OWNER's Resident Project Representative. Testing may be done by applying vacuum to the joint using soap suds, linseed oil, or other suitable material for the detection of leaks. Vacuum testing shall be in accordance with ANSI/AWWA D 100, Section 11.12. The magnetic particle methods may also be used for testing of the joints.

3.4 TANK DISINFECTION

- A. General: After construction and repairs have been effected and painting has been completed, including curing and cleaning, the tank shall be disinfected in accordance with ANSI/AWWA C652-19. CONTRACTOR shall possess on site a written or digital copy of said standard before, during, and at the conclusion of disinfection. CONTRACTOR shall be responsible for all related costs, including laboratory.

END OF SECTION 13200

APPENDICES - GEOTECHNICAL REPORTS



Telephone (540) 966-4795
Fax (540) 992-4234

686 Lee Highway
Roanoke, Virginia 24019

SUBSURFACE INVESTIGATION

WATER STORAGE TANK

MT. SIDNEY, VIRGINIA

Geotechnics, Inc.

Commission No. 5573

6 October 2022

SUBSURFACE INVESTIGATION

WATER STORAGE TANK

MT. SIDNEY, VIRGINIA

General -

Three (3) core borings and two (2) auger probes were made at the above-identified site on the 26th and 27th of September 2022 with a CME-55 track-mounted power auger using six (6) inch diameter hollow-stem continuous flight augers. Standard Penetration tests were made at five (5) foot intervals or less. Borings No. 1, 2 and 3 were advanced into the bedrock beneath auger refusal with an N-Series, double-tube, wire-line core barrel with diamond bits.

The auger probes were advanced to auger refusal, without sampling.

The center location of the proposed tank site was staked in the field by the Augusta County Service Authority (ACSA). The elevation of the ground surface at each boring location

was interpolated from a site plan provided by the Engineer (Peed & Bortz).

All soil samples and rock core were retained by Geotechnics and may be examined at this office, upon request, for a period of sixty (60) days from the date of this report by the Owner, his Engineer, Contractors or other authorized persons.

Detailed descriptions of the materials encountered and recorded groundwater measurements are shown on the accompanying boring logs.

Location -

The proposed Water Storage Tank site is located at the existing water tank site at 188 Seawright Spring Road in Mt. Sidney, Virginia. The proposed tank site is southeast of and adjacent to the existing water tank. The tank site slopes moderately to the northeast, with roughly seven (7) feet of topographic relief across the proposed fifty (50) foot tank diameter.

General Geology -

State geologic mapping indicates the water tank site is underlain by the Beekmantown Formation of Ordovician Age. The Beekmantown consists of light to dark gray, fine-grained limestone; light gray, fine-grained dolomite; and dark gray crystalline dolomite.

Soils -

Soils identified in the test borings include topsoil and residuum. A 0.5 foot thickness of topsoil was penetrated at the ground surface in all three (3) borings.

Residuum (soil derived from the in-place weathering or decomposition of bedrock) was encountered beneath the topsoil in all borings. The residuum was described as tan, reddish-tan and/or gray clay, sandy clay, clayey silt, sandy silt or silty sand.

Borings No. 1, 2 and 3 were advanced to auger refusal at depths ranging from 7.3 feet to 12.5 feet. Borings No. 1, 2 and 3 were advanced into the bedrock beneath auger refusal with an N-Series, double-tube, wire-line core barrel with diamond bits.

Foundation Conditions -

Standard Penetration tests on residuum indicate the allowable bearing value varies from about 1,000 PSF to more than 8,000 PSF. However, the higher values are believed to be erroneously high due to rock fragments in the materials sampled.

The allowable bearing value for weathered dolomite bedrock ranges from about 2 TSF to 8 TSF or more, depending upon the degree of weathering.

Laboratory Testing -

Two (2) split-spoon samples from the test borings were selected for laboratory Soil Classification Testing. Sample No. 2 from Boring No. 2 classified as a fat clay with sand (CH), with a Liquid Limit of 52, a Plastic Limit of 26 and a Plasticity Index of 26, with 100.0% passing a No. 4 sieve and 82.6% passing a No. 200 Sieve.

Sample No. 2 from Boring No. 3 classified as a non-plastic silty sand with gravel (SM), with 84.7% passing a No. 4 sieve and 22.1% passing a No. 200 sieve.

Discussion -

It is our understanding the proposed 500,000 Gallon Capacity Water Storage Tank will be 50 feet in diameter and 35 feet tall with the base at Elevation 1493, and the overflow at Elevation 1528.

The proposed Water Storage Tank site slopes to the northeast with about seven (7) feet of topographic relief across the fifty (50) foot tank diameter.

Borings No. 1, 2 and 3 were drilled at the proposed 500,000 Gallon Water Storage Tank site. Auger probes 4 and 5 were made at the alternate tank site location, as shown on the attached sketch.

Borings No. 1, 2 and 3 refused on dolomite bedrock at depths ranging from 7.3 feet to 12.5 feet. Auger probes 4 and 5 refused at depths of 10.2 feet and 11.1 feet, respectively. Borings No. 1, 2 and 3 were advanced into the bedrock beneath auger refusal with an N-Series, double-tube, wire-line core barrel with diamond bits.

Boring No. 1 refused at a depth of 8.7 feet. Partially weathered gray dolomite was encountered from 8.7 feet 12.2 feet. A highly weathered zone or mud seam was encountered from 12.2 feet to 15.2 feet. Partially weathered gray

dolomite was encountered from 15.2 feet the bottom of the boring at 19.2 feet. The Core Recovery from 8.7 feet to 15.2 feet was 49% with a Rock Quality Designation (RQD) of 49%. The Core Recovery from 15.2 feet to 19.2 feet was 93% with a Rock Quality Designation (RQD) of 93%.

Boring No. 2 refused at a depth of 12.5 feet. Partially weathered gray dolomite was encountered from 12.5 feet 16.2 feet. A highly weathered zone or mud seam was encountered from 16.2 feet to 17.5 feet. Partially weathered gray dolomite was encountered from 17.5 feet to 18.2 feet. A highly weathered zone or mud seam was encountered from 18.2 feet to 19.0 feet. Partially weathered gray dolomite was encountered from 19.0 feet to the bottom of the boring at 20.5 feet. The Core Recovery from 12.5 feet to 17.5 feet was 76% with a Rock Quality Designation (RQD) of 76%. The Core Recovery from 17.5 feet to 20.5 feet was 37% with a Rock Quality Designation (RQD) of 37%. The boring drilled solid from 19.0 feet to 20.5 feet and it is believed that some rock core was left in the bottom of the hole when the tools were removed.

Boring No. 3 refused at a depth of 7.3 feet. Partially weathered gray dolomite was encountered from 7.3 feet 8.6 feet. A highly weathered zone or mud seam was encountered

from 8.6 feet to 13.2 feet. Highly weathered gray dolomite was encountered from 13.2 feet to 14.3 feet. Partially weathered gray dolomite was encountered from 14.3 feet to the bottom of the boring at 20.1 feet. The Core Recovery from 7.3 feet to 10.3 feet was 40% with a Rock Quality Designation (RQD) of 40%. The Core Recovery from 10.3 feet to 15.3 feet was 18% with a Rock Quality Designation (RQD) of 18%. The Core Recovery from 15.3 feet to 18.6 feet was 82% with a Rock Quality Designation (RQD) of 82%. The Core Recovery from 18.6 feet to 20.1 feet was 99% with a Rock Quality Designation (RQD) of 99%.

All three (3) borings encountered very hard partially weathered gray dolomite with intervening zones of highly weathered rock, or soil mudseams.

A sidehill bench cut will be required to develop the proposed tank site. The proposed cut slope above the tank pad should not be steeper than 2:1 (horizontal:vertical).

The bedrock surface is hummocky or irregular and some rock excavation will likely be required to develop the tank pad and to install the ringwall foundation. The Grading Contractor should exercise care to prevent excessive disturbance of the material below the tank pad and founding elevations.

The tank site should be excavated to subgrade and the exposed surface should be proof-rolled in the presence of Geotechnical Engineer to check for soft spots or other deficiencies. Any soft material should be undercut and replaced with select stone backfill (such as VDOT No. 21-A crushed stone).

All fill and backfill at the site should be placed in eight (8) inch horizontal lifts compacted to at least 95% of the maximum dry density as determined by ASTM D-698 (Standard Proctor). The maximum dimension of rock fragments included in the fill should not exceed four (4) inches.

The test borings indicate the proposed Water Storage Tank may be founded on a ringwall or slab foundation bearing on residuum or bedrock. An allowable bearing value not to exceed 2,500 PSF may be utilized for foundation design.

Groundwater was not encountered in the test borings and is not anticipated to be a problem provided the foundation work is not performed during or immediately after a prolonged wet period.

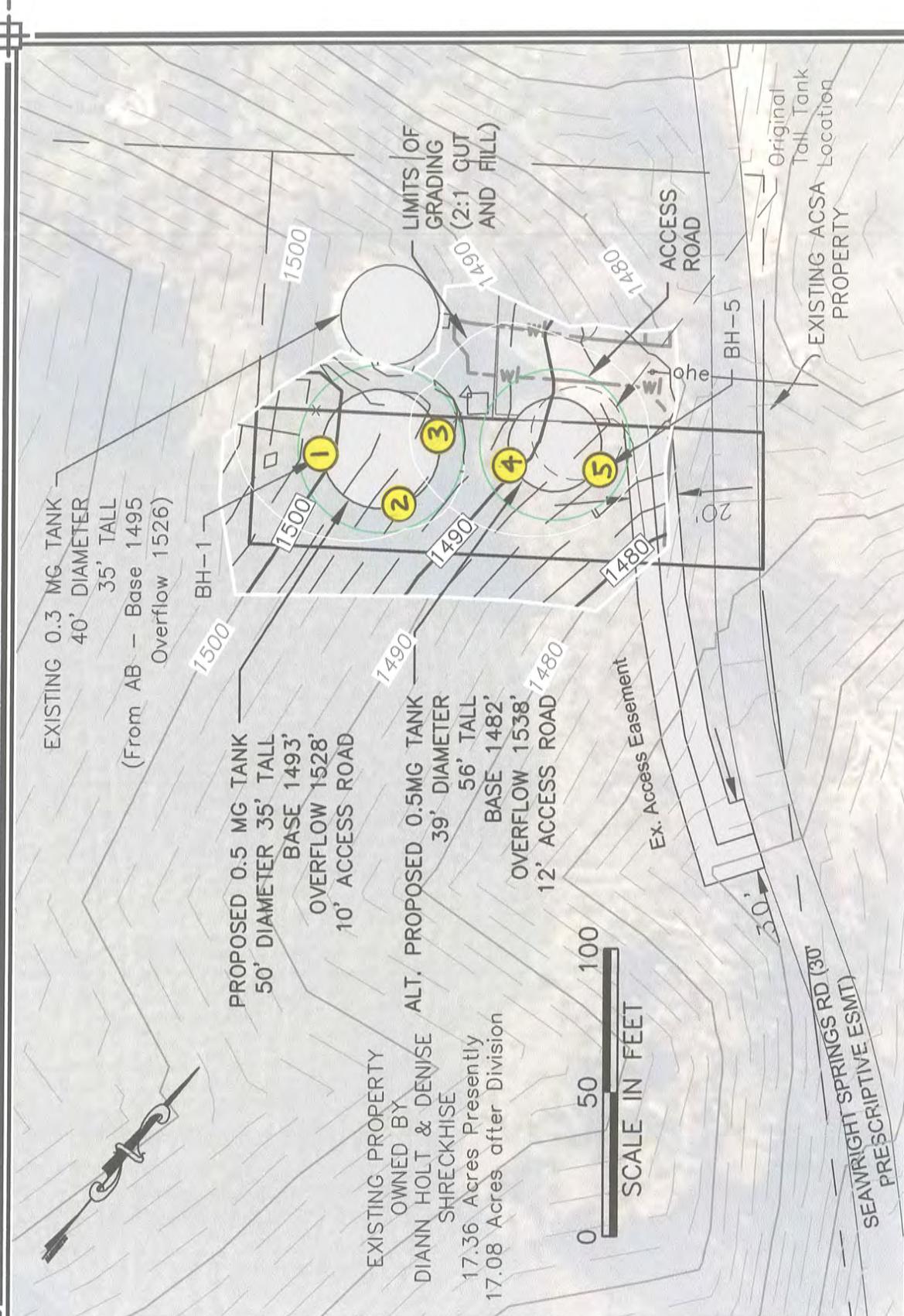
Conclusions and Recommendations -

1. It is our understanding the proposed 500,000 Gallon Capacity Water Storage Tank will be 50 feet in diameter and 35 feet tall with the base at Elevation 1493, and the overflow at Elevation 1528. Relief across the tank diameter is on the order of seven (7) feet.
2. A sidehill bench cut will be required to develop the proposed tank site. The proposed cut slope above the tank pad should not be steeper than 2:1.
3. The bedrock surface is hummocky or irregular and some rock excavation will likely be required to develop the tank pad and to install the ringwall foundation. The Grading Contractor should exercise care to prevent excessive disturbance of the material below the tank pad and founding elevations.
4. The tank site should be excavated to subgrade and the exposed surface should be proof-rolled in the presence of a Geotechnical Engineer to check for soft spots or other deficiencies. Any soft material should be undercut and replaced with select stone backfill.

5. All fill and backfill at the site should be placed in eight (8) inch horizontal lifts compacted to at least 95% of the maximum dry density as determined by Standard Proctor.
6. The test borings indicate the proposed Water Storage Tank may be founded on a ringwall or slab foundation bearing on residuum or bedrock. An allowable bearing value not to exceed 2,500 PSF may be utilized for foundation design.
7. Groundwater was not encountered in the test borings and is not anticipated to be a problem provided the foundation work is not performed during or immediately after a prolonged wet period.
8. Upon completion of the Plans and Specifications, and prior to release for construction, a copy should be submitted to Geotechnics for our review and comments.



Geotechnics, Inc.
686 Lee Highway South
Roanoke, Virginia 24019



EXISTING 0.3 MG TANK
40' DIAMETER
35' TALL
(From AB - Base 1495
Overflow 1526)

PROPOSED 0.5 MG TANK
50' DIAMETER 35' TALL
BASE 1493'
OVERFLOW 1528'
10' ACCESS ROAD

ALT. PROPOSED 0.5MG TANK
39' DIAMETER
56' TALL
BASE 1482'
OVERFLOW 1538'
12' ACCESS ROAD

EXISTING PROPERTY
OWNED BY
DIANN HOLT & DENISE
SHRECKHISE
17.36 Acres Presently
17.08 Acres after Division

0 50 100
SCALE IN FEET

SEAWRIGHT SPRINGS RD (30'
PRESCRIPTIVE ESMT)

ACSA
MT. SIDNEY TANK
GEOTECH INVESTIGATION
REVISED 9/30/2022

Reed & Bortz, L.L.C.
CIVIL & ENVIRONMENTAL ENGINEERS

BORING LOG

Comm. No. 5573

Location WATER STORAGE TANK
MT. SIDNEY, VA

Structure WATER TANK

Sheet 1 of 1

Geologist _____

Boring No. 1

Contractor Geotechnics, Inc.

Engineer JRC

Date 26 SEP 22

Stratification			Description of Materials (Type, color & Consistency)	Sampler or Spoon		Sample No.	Misc. Data
Elevation	Depth	Legend		Blows	Penetration		Length of hole 19.2'
1500.3	0						Rock 10.5'
							Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water ----
							REMARKS
1499.8	0.5		TOPSOIL RESIDUUM Tan and Reddish-Tan CLAY with Sand	6 9 12	0.5' 0.5' 0.5'	1	SAMPLE 1.0'-2.5'
1497.3	3.0		Tan and Reddish-Tan Silty SAND with Sandstone Fragments	13 15 24	0.5' 0.5' 0.5'	2	SAMPLE 3.5'-5.0'
1494.8	5.5		Tan Clayey SILT	2 4 6	0.5' 0.5' 0.5'	3	SAMPLE 6.0'-7.5'
1491.6	8.7		TOP OF ROCK Partially Weathered Gray DOLOMITE	10	0.0'	4	SAMPLE 8.5'-8.5'
1488.1	12.2		Highly Weathered Zone or Mudseam				CORE REC. 8.7'-15.2' 49% RQD 8.7'-15.2': 49%
1485.1	15.2		Partially Weathered Gray DOLOMITE				CORE REC. 15.2'-19.2' 93% RQD 15.2'-19.2': 93%
1481.1	19.2		BOTTOM OF HOLE Completed: 1:25 PM 26 SEP 22				Auger Hole Dry

BORING LOG

Comm. No. 5573

Location WATER STORAGE TANK
MT. SIDNEY, VA

Structure WATER TANK

Sheet 1 of 1

Geologist _____

Boring No. 2

Contractor Geotechnics, Inc.

Engineer JRC

Date 26 SEP 22

Stratification			Description of Materials (Type, color & Consistency)	Sampler or Spoon		Sample No.	Misc. Data		
Elevation	Depth	Legend		Blows	Penetration		Length of hole 20.5'		
1494.1	0						Rock 8.0'		
							Wt. of hammer 140#		
							Avg. fall of hammer 30"		
							El of ground water ----		
							REMARKS		
1493.6	0.5		TOPSOIL	8	0.5'	1	SAMPLE 1.0'-2.5'		
			RESIDUUM	12	0.5'				
			Tan and Reddish-Tan CLAY with Sand	11	0.5'				
					3	0.5'	2	SAMPLE 3.5'-5.0'	
				6	0.5'				
				8	0.5'				
					2	0.5'	3	SAMPLE 6.0'-7.5'	
				2	0.5'				
				3	0.5'				
1486.1	8.0			Reddish-Tan Sandy CLAY	1	0.5'	4	82.6 Passing No. 200	
					2	0.5'			
					1	0.5'			
1481.6	12.5		TOP OF ROCK	10	0.0'	5	SAMPLE 12.5'-12.5'		
			Partially Weathered Gray DOLOMITE				Tools Bouncing		
							CORE REC. 12.5'-17.5' 76%		
							RQD 12.5'-17.5': 76%		
1477.9	16.2		Highly Weathered Zone or Mudseam				CORE REC. 17.5'-20.5' 37%		
1476.6	17.5		Partially Weathered Gray DOLOMITE				RQD 17.5'-20.5': 37%		
1475.9	18.2		Highly Weathered Zone or Mudseam						
1475.1	19.0		Partially Weathered Gray DOLOMITE						
1473.6	20.5		BOTTOM OF HOLE				Drilled Solid 19.0'-20.5'		
			Completed: 4:00 PM				Left Some Core in Hole		
			26 SEP 22				Auger Hole Dry		

BORING LOG

Location **WATER STORAGE TANK**
MT. SIDNEY, VA

Structure WATER TANK

Comm. No. 5573

Sheet 1 of 1

Geologist _____

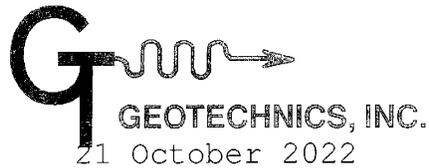
Boring No. 3

Contractor Geotechnics, Inc.

Engineer JRC

Date 27 SEP 22

Stratification			Description of Materials (Type, color & Consistency)	Sampler or Spoon		Sample No.	Misc. Data
Elevation	Depth	Legend		Blows	Penetration		Length of hole 20.1'
1494.2	0						Rock 12.8'
							Wt. of hammer 140#
							Avg. fall of hammer 30"
							El of ground water ----
							REMARKS
1493.7	0.5		TOPSOIL	7	0.5'		SAMPLE 1.0'-2.5'
			RESIDUUM	9	0.5'		
			Tan and Reddish-Tan CLAY with Sand	12	0.5'		
1491.2	3.0		Tan and Reddish-Tan Silty SAND with Sandstone Fragments	9	0.5'		SAMPLE 3.5'-5.0' Non-Plastic (SM) 84.7% Passing No. 4
				22	0.5'		
				25	0.5'		
1488.2	6.0		Tan and Gray Sandy SILT	4	0.5'		22.1% Passing No. 200 SAMPLE 6.0'-6.6'
1486.9	7.3		TOP OF ROCK	10	0.1'		
1485.6	8.6		Partially Weathered Gray DOLOMITE Highly Weathered Zone or Mudseam				
							CORE REC. 7.3'-10.3' 40% RQD 7.3'-10.3': 40%
1481.0	13.2		Highly Weathered Gray DOLOMITE				CORE REC. 10.3'-15.3' 18% RQD 10.3'-15.3': 18%
1479.9	14.3		Partially Weathered Gray DOLOMITE				
							CORE REC. 15.3'-18.6' 82% RQD 15.3'-18.6': 82%
							CORE REC. 18.6'-20.1' 99% RQD 8.6'-20.1': 99%
1474.1	20.1		BOTTOM OF HOLE Completed: 11:45 AM 27 SEP 22				Auger Hole Dry



Telephone (540) 966-4795
Fax (540) 992-4234

686 Lee Highway
Roanoke, Virginia 24019

Peed and Bortz

Attention: Martin

Re: Subsurface Investigation
Mount Sidney Water Tank
Geotechnics No. 5573

Gentlemen:

Based on the anticipated tank loading, we recommended a ringwall foundation bearing on residual soil or bedrock a few feet below the tank subgrade elevation, utilizing an allowable bearing value of 2,500 PSF for design.

The borings indicate the bedrock surface is hummocky or irregular and some rock ledges and/or mud seams will likely be encountered. The tank site should be excavated to subgrade and the exposed surface should be proof-rolled in the presence of Geotechnical Engineer to check for soft spots or other deficiencies. Any soft material should be undercut and replaced with select stone backfill (such as VDOT No. 21-A crushed stone).

Total settlement should not exceed one (1) inch provided the foundation is properly installed, with differential settlement on the order of 0.5 inch across the tank diameter.

The geologic mapping and test borings indicate Site Classification C should be utilized for Seismic Design.

In the event that a higher allowable bearing value is required, the entire tank foot print, plus about five (5) feet beyond the tank perimeter could be undercut to bedrock and backfilled with select stone backfill placed in eight (8) inch horizontal lifts compacted to at least 95% of Standard Proctor. An allowable bearing value not to exceed 4,000 PSF may be utilized for footings bearing on the select stone backfill overlying bedrock.

This approach will likely require excavation adjacent to the existing tank that extends five (5) or more feet below the bottom

of the existing tank foundation. This work would have to be performed in narrow strips about five (5) to eight (8) feet wide oriented perpendicular to the tank (southeast-northwest). Each strip should be excavated and backfilled before excavating the adjacent strip to limit the area of open excavation near the existing foundation, or the existing tank foundation would have to be shored or otherwise supported.

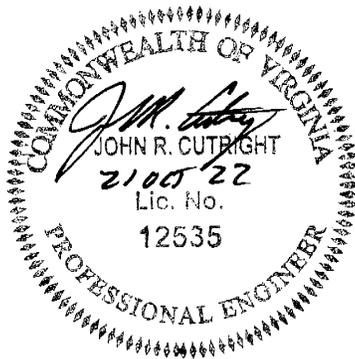
Again, settlement should not exceed one (1) inch provided the foundation is properly installed, with differential settlement on the order of 0.5 inch across the tank diameter.

We trust this information is satisfactory for your purposes.

Very truly yours,

Geotechnics, Inc.


John R. Cutright, P.E.





Telephone (540) 966-4795
Fax (540) 992-4234

686 Lee Highway
Roanoke, Virginia 24019

Reed and Rortz

Attention: Martin

Re: Site Visit
Mount Sidney Water Tank
Geotechnical No. 5573

Gentlemen:

In accordance with your request, Mr. John R. Cutright visited the above identified site on the 13th of July 2022 with Jonathan McClure (F&B) and Jesse Beach and William Monroe (ACSA) to examine the proposed Mount Sidney Water Storage Tank site.

A significant quantity of bedrock was encountered in the western portion and ACSA personnel were hoe-ramming the rock for removal. The eastern portion of the tank had been cut or lowered to the approximate tank bottom elevation, and the exposed earth surface was firm with no obvious soft areas.

There is a significant lead time (perhaps six months or so) for procuring the tank. ACSA will remove the bedrock down to the tank subgrade level and from the proposed ringwall foundation and backfill the ringwall excavation with No. 21-A crushed stone.

Where soil is exposed at the tank bottom elevation, they will leave the area high for now and backfill the rock cut portion with earth fill and gently slope the site to provide positive site drainage without ponding. This will protect the subgrade materials until construction can begin.

When construction begins, ACSA will cut the site to subgrade. At that time, the subgrade should be proofrolled to check for soft spots or other deficiencies.

Once the subgrade is approved, the ringwall should be excavated and the exposed materials examined by a Geotechnical Engineer.

Any soft material encountered at subgrade or in the ringwall excavation should be undercut and replaced with select stone backfill (such as VDOT No. 21-A crushed stone).

We trust this information is satisfactory for your purposes.

Very truly yours,

Geotechnics, Inc.


John R. Cutright, P.E.