SUMMIT ENGINEERING INC.

Civil Engineering

Upper Pompey Water Supply Project
Contracts 1 (AML) & Contract 2
Raccoon, Kentucky

Contract Documents & Technical Specifications

February 2016

Owner:
Mountain Water District
6332 Zebulon Hwy ~ P.O. Box 3157
Pikeville, Kentucky 41501

MWD
Mountain Water District

Prepared By:
Summit Engineering, Inc.
131 Summit Drive
Pikeville, Kentucky 41501

SECTION 00005

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SECTION 00111

ADVERTISEMENT FOR BIDS

Owner: **Mountain Water District**

Address: **6332 Zebulon Highway**
Pikeville, KY 41501

Project: **Upper Pompey Water Supply Project**

Sealed Bids for the construction of the **Upper Pompey Water Supply Project** will be received, by the **Mountain Water District**, at the office of the **Dan Stratton, Attorney, 111 Pike Street, Pikeville, KY 41501**, until **10:00 am** local time on **April 26, 2016**, at which time the Bids received will be **publicly** opened and read. The Project consists of constructing **9,400 LF of 6" DI Water Line, 2,800 LF of 4" DI Water Line, 3,100 LF of 6" HDPE Water Line, 12,000 LF of 4" HDPE Water Line, 1,350 LF of 3/4" Copper Service Line, 450 LF of 1" Copper Service Line, 31 Water Meter Sets, a Booster Pumping Station, a 20,000 Gal Water Storage Tank, and Pump Station Improvements.**

Bids shall be on a lump sum and unit price basis, with additive alternate bid items as indicated in the Bid Form.

The Issuing Office for the Bidding Documents is: **Lynn Imaging, 328 Old Vine Street, Lexington, KY 40507, 859/226-5850 or at** http://www.lynnimaging.com. Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of **8:30 am and 4:30 pm**, and may obtain copies of the Bidding Documents from the Issuing Office as described below.

Bidding Documents also may be examined at the following locations:

Mountain Water District, 6332 Zebulon Highway, Pikeville, KY 41502

Summit Engineering, Inc., 120 Prosperous Place, Suite 101, Lexington, KY 40509

Summit Engineering, Inc., 131 Summit Dr., Pikeville, KY 41501

Bidding Documents may be examined on Mondays through Fridays between the hours of **8:30 am and 4:30 pm.**

Printed copies of the Bidding Documents may be obtained from the Issuing Office, during the hours indicated above, upon payment of a non-refundable charge of **$150.00** for each set. Checks for Bidding Documents shall be payable to "**Lynn Imaging**". Upon request and receipt of the non-refundable payment indicated above plus a non-refundable shipping charge, the Issuing Office will transmit the Bidding Documents via delivery service. The shipping charge amount will depend on the shipping method selected by the prospective Bidder. The date that the Bidding Documents are transmitted by the Issuing Office will be considered the Bidder's date of receipt of the Bidding Documents. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.

Federal wage and hour provisions DO NOT apply to this project. State wage and hour provisions DO apply to this project.

A **Mandatory** pre-bid conference will be held at **3:00 pm** local time on **April 18, 2016** at the **Mountain Water District**.

Bid security shall be furnished in accordance with the Instructions to Bidders.

Date

SECTION 00200

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DEFINED TERMS

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

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

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

C. *Successful Bidder*--The lowest responsible Bidder submitting a responsive Bid to whom Owner (on the basis of Owner's evaluations as hereinafter provided) makes an award.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.

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

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

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within [5] days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

A. [Evidence of Bidder's authority to do business in the state where the Project is located.]

B. [Bidder's state or other contractor license number, if applicable.]

C. [Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."]

D. [Other required information regarding qualifications]

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

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

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

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.

b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in 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.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data: 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 subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 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 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

B. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

C. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

D. 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.

4.04 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

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

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent

to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

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

F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid 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 bid and within the times required, 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. 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;

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 A pre-Bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 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 delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven 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, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of [5] percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that 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 Contract or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released 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 completed and ready for final payment, are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

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

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or 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 in the case of proposed substitute and 5 days prior in the case of a proposed "or-equal." Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner. Substitutes and "or-equal" materials and equipment may be proposed by Contractor in accordance with Paragraphs 7.04 and 7.05 of the General Conditions after the Effective Date of the Contract.

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

11.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 If required by the bid documents the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the Work.

If requested by Owner, 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, or other individual or entity. 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 an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

12.03 Contractor shall not be required to employ any Subcontractor, Supplier, or 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 on SC 7.06.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

13.03 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 partnership's address for receiving notices shall be shown.

13.04 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the firm's address for receiving notices shall be shown.

13.05 A Bid by an individual shall show the Bidder's name and address for receiving notices.

13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture's address for receiving notices shall be shown.

13.07 All names shall be printed in ink below the signatures.

13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

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

ARTICLE 14 – BASIS OF BID

14.01 *Lump Sum*

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

14.02 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

14.03 *Allowances*

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

ARTICLE 15 – SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.

15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package 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 package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to Mountain Water District; 111 Pike St. ; Pikeville, KY 41501; Attn: Dan Stratton.

15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

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

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports

to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive. 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 If Owner awards the contract for the Work, such award shall be to the responsible Bidder who's Bid, conforming to all the material terms and conditions of the Advertisement for Bids, is lowest, price and other facts considered, unless all bids are rejected. All bids shall not be rejected without proper justification. submitting the lowest responsive Bid.

19.03 Evaluation of Bids

A. 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.

B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

19.06 In evaluating Bids, it is the Owner's intent to award both Contracts to a single Bidder. Therefore, the evaluation of lowest price Bid shall be the sum of both contracts

ARTICLE 20 – BONDS AND INSURANCE

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

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 22 – SALES AND USE TAXES – NOT APPLICABLE

ARTICLE 23 – CONTRACTS TO BE ASSIGNED - NOT APPLICABLE

ARTICLE 24 – WAGE RATE REQUIREMENTS

24.01 If the contract price is in excess of $100,000, provisions of the Contract Work Hours and Safety Standards Act at 29 CFR 5.5(b) apply.

SECTION 00410

BID FORM

Upper Pompey Water Supply Project

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Mountain Water District (at the Office of Daniel P. Stratton)
111 Pike Street
Pikeville, KY 41501

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

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 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, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum, Date**

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

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

D. NOT USED

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

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid

and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

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

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

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

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

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

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

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s): (See attached bid schedule on the following pages)

Bid Schedule for

Pompey Water Supply Project
Contract 1 (AML)

Item No.	Item Description	Unit	Unit Price	Quantity	Amount
1	**GENERAL**				
a	Mobilization/Demobilization (Note 2)	LS		1	
b	Seeding and Cleanup	LS		1	
c	Special Pipe Bedding (Note 3)	TON		100	
d	Flowable Fill	CY		25	
e	Pavement Replacement (Note 4)	LS		1	
2	**WATER LINE**				
a	Connect to Existing Water Line	EA		2	
b	6" DI Water Line, CL 350, PJ	LF		7,900	
c	6" DI Water Line, CL 350, PJ Restrained Joint	LF		1,500	
d	4" DI Water Line, CL 350, PJ	LF		0	
e	6" HDPE SDR 9	LF		3,100	
f	4" HDPE SDR 9	LF		0	
3	**ENCASEMENTS**				
a	Bore and Encase 6" Water Line	LF		55	
b	Bore and Encase 4" Water Line	LF		0	
c	Open Cut and Encase 6" Water Line	LF		30	
d	Open Cut and Encase 4" Water Line	LF		0	
4	**VALVES AND FITTINGS**				
a	6" Resilient Wedge Gate Valve, MJ, 250 psi	EA		3	
b	4" Resilient Wedge Gate Valve, MJ, 250 psi	EA		0	
c	Air Release Valve, MJ	EA		1	
d	Blow-off	EA		0	
5	**SERVICE CONNECTIONS**				
a	5/8" x 3/4" Water Meter Set w/ PRV	EA		0	
b	5/8" x 3/4" Water Meter Set w/ Double Cut Regulation	EA		0	
c	3/4" Double Cut Copper Service Line - Type "K"	LF		0	
d	1" Double Cut Copper Service Line - Type "K"	LF		0	
6	**MISCELLANEOUS**				
a	Master Meter Station	LS		0	
b	6" PRV Station	LS		1	
c	4" PRV Station	LS		0	
d	20,000 Gal Water Stroage Tank - Upper Pompey	LS		1	
e	Water Booster Pumping Station - Upper Pompey	LS		1	
f	Telemetry RTU Water Storage Tank - Upper Pompey	LS		1	
g	Telemetry RTU Water Booster Pumping Station- Upper Pompey	LS		1	
h	Hunts Br. / Anderson Br. Mobile Generator	LS		1	
I	Ferrells Creek Stationary Generator	LS		1	
j	Ferrells Creek Pump Replacement	LS		1	
	TOTAL CONTRACT 1 - AML				

1. The method of payment varies with the individual item and is described at the close of each section of the Technical Specifications.
2. The amount bid for "Mobilization/Demobilization" may not exceed 3% of the Base Bid Total.
3. May only be installed on written order of the ENGINEER.
4. Pavement Replacement is a Lump Sum
5. In evaluating Bids, it is the Owner's intent to award both Contracts to a single Bidder. Therefore, the evaluation of lowest price Bid shall be the sum of both Contracts.

Bid Schedule for

Pompey Water Supply Project
Contract 2

Item No.	Item Description	Unit	Unit Price	Quantity	Amount
1	**GENERAL**				
a	Mobilization/Demobilization (Note 2)	LS		1	
b	Seeding and Cleanup	LS		1	
c	Special Pipe Bedding (Note 3)	TON		100	
d	Flowable Fill	CY		25	
e	Pavement Replacement (Note 4)	LS		1	
2	**WATER LINE**				
a	Connect to Existing Water Line	EA		0	
b	6" DI Water Line, CL 350, PJ	LF		0	
c	6" DI Water Line, CL 350, PJ Restrained Joint	LF		0	
d	4" DI Water Line, CL 350, PJ	LF		2,800	
e	6" HDPE SDR 9	LF		0	
f	4" HDPE SDR 9	LF		12,000	
3	**ENCASEMENTS**				
a	Bore and Encase 6" Water Line	LF		0	
b	Bore and Encase 4" Water Line	LF		0	
c	Open Cut and Encase 6" Water Line	LF		0	
d	Open Cut and Encase 4" Water Line	LF		90	
4	**VALVES AND FITTINGS**				
a	6" Resilient Wedge Gate Valve, MJ, 250 psi	EA		0	
b	4" Resilient Wedge Gate Valve, MJ, 250 psi	EA		8	
c	Air Release Valve, MJ	EA		0	
d	Blow-off	EA		4	
5	**SERVICE CONNECTIONS**				
a	5/8" x 3/4" Water Meter Set w/ PRV	EA		24	
b	5/8" x 3/4" Water Meter Set w/ Double Cut Regulation	EA		7	
c	3/4" Double Cut Copper Service Line - Type "K"	LF		1,350	
d	1" Double Cut Copper Service Line - Type "K"	LF		450	
6	**MISCELLANEOUS**				
a	Master Meter Station	LS		1	
b	6" PRV Station	LS		0	
c	4" PRV Station	LS		1	
d	20,000 Gal Water Storage Tank - Upper Pompey	LS		0	
e	Water Booster Pumping Station - Upper Pompey	LS		0	
f	Telemetry RTU Water Storage Tank - Upper Pompey	LS		0	
g	Telemetry RTU Water Booster Pumping Station- Upper Pompey	LS		0	
h	Hunts Br. / Anderson Br. Mobile Generator	LS		0	
I	Ferrells Creek Stationary Generator	LS		0	
j	Ferrells Creek Pump Replacement	LS		0	
	TOTAL CONTRACT 2				
	TOTAL BOTH CONTRACTS				

1. The method of payment varies with the individual item and is described at the close of each section of the Technical Specifications.
2. The amount bid for "Mobilization/Demobilization" may not exceed 3% of the Base Bid Total.
3. May only be installed on written order of the ENGINEER.
4. Pavement Replacement is a Lump Sum
5. In evaluating Bids, it is the Owner's intent to award both Contracts to a single Bidder. Therefore, the evaluation of lowest price Bid shall be the sum of both Contracts.

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

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 15.06 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.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors; (**Bidder's Questionnaire SECTION 00420)**

C. List of Proposed Suppliers; **(Bidder's Questionnaire SECTION 00420)**

D. List of Project References; **(Bidder's Questionnaire SECTION 00420)**

E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

F. Contractor's License No.: _____ **[or]** Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;

G. Required Bidder Qualification Statement with supporting data; and

H. If Bid amount exceeds $10,000, signed Compliance Statement (RD 400-06). Refer to specific equal opportunity requirements set forth in the Supplemental General Conditions;

I. If Bid amount exceeds $25,000, signed Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions (AD-1048);

J. If Bid amount exceeds $100,000, signed RD instruction 1940-Q, Exhibit A-1, Certification for Contracts, Grants, and Loans.

ARTICLE 8 – DEFINED TERMS

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

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

Bidder's License No.: _____
(where applicable)

SECTION 00415

BIDDER'S CERTIFICATION

SITE AND CONTRACT DOCUMENT INSPECTION

The undersigned bidder for Upper Pompey Water Supply Project, Pike County, Kentucky certifies that he has thoroughly examined the site and informed himself fully regarding the conditions under which he will be obligated to operate and that in any way affect the Work, and knows, understands and accepts the existing conditions.

The undersigned bidder further certifies that he has thoroughly reviewed the Contract Documents and has had the opportunity, as provided in the Instructions to Bidders to ask questions of the ENGINEER concerning the Contract Documents. Failure to submit this certification with the Bid shall result in the rejection of that Bid.

BIDDER _____

BY _____

NAME AND TITLE _____

SECTION 00420

BIDDER'S QUESTIONNAIRE

It is the intention of the OWNER to award this contract to a Bidder competent to perform and complete the Work in a satisfactory manner. Bidders for this contract **MUST** have successfully completed, as the prime contractor, three construction projects of a similar nature within the last five years. Bidders must be able to demonstrate compliance with the experience requirements of the specifications. Bidders shall list projects that demonstrate their qualifications on the bidders questionnaire and attach same to the bid form. Failure of Bidders to comply with minimum experience criteria shall result in OWNER's rejection of Bidder's submittal.

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets as necessary.

1. How many years has your organization been in business as a (circle one) General Contractor/Subcontractor/Vendor?

   Bidder: _____

   Years: _____

2. List of Project References; List the projects which demonstrate Contractor's qualifications.

Date Completed	Title	Project Location	Owner	Phone Number	Contract Amount
A.					
B.					
C.					
D.					
E.					

3. Have you personally inspected the site of the proposed work? Describe any anticipated problems with the site and your proposed solutions:

_____

_____

_____

_____

_____

4. Will you subcontract any part of this Work?

_____

_____

5. Please list the names and addresses of the subcontractors to be used for the work. Additional information will be required in accordance with the Instruction to Bidders.

Subcontractor 1 - _____

(Portion of the Work)

Name: _____

Address: _____

Phone: _____

Subcontractor 2 - _____

(Portion of the Work)

Name: _____

Address: _____

Phone: _____

Subcontractor 3 - _____

(Portion of the Work)

Name: _____

Address: _____

Phone: _____

6. Please list the proposed suppliers.

Supplier Name:	Materials / Equipment Supplied

SECTION 00425
QUALIFICATIONS STATEMENT

THE INFORMATION SUPPLIED IN THIS DOCUMENT IS CONFIDENTIAL TO THE EXTENT PERMITTED BY LAWS AND REGULATIONS

1. SUBMITTED BY:

Official Name of Firm: _____

Address: _____

_____

_____

2. SUBMITTED TO: _____

3. SUBMITTED FOR: _____

Owner: _____

Project Name: _____

_____

_____

_____

TYPE OF WORK: _____

_____

_____

4. CONTRACTOR'S CONTACT INFORMATION

Contact Person: _____

Title: _____

Phone: _____

Email: _____

5. AFFILIATED COMPANIES:

Name: _____

Address: _____

_____

_____

6. TYPE OF ORGANIZATION:

☐ SOLE PROPRIETORSHIP

Name of Owner: _____

Doing Business As: _____

Date of Organization: _____

☐ PARTNERSHIP

Date of Organization: _____

Type of Partnership: _____

Name of General Partner(s): _____

_____

_____

☐ CORPORATION

State of Organization: _____

Date of Organization: _____

Executive Officers:

- President: _____

- Vice President(s): _____

_____

_____

- Treasurer: _____

- Secretary: _____

☐ LIMITED LIABILITY COMPANY

State of Organization: _____

Date of Organization: _____

Members: _____

_____

_____

_____

☐ JOINT VENTURE

Sate of Organization: _____

Date of Organization: _____

Form of Organization: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

_____

_____

Joint Venture Managing Partner

- Name: _____

- Address: _____

_____

Joint Venture Managing Partner

- Name: _____

- Address: _____

_____

7. LICENSING

Jurisdiction: _____

Type of License: _____

License Number: _____

Jurisdiction: _____

Type of License: _____

License Number: _____

8. CERTIFICATIONS CERTIFIED BY:

Disadvantage Business Enterprise: _____

Minority Business Enterprise: _____

Woman Owned Enterprise: _____

Small Business Enterprise: _____

Other (_____): _____

9. BONDING INFORMATION

Bonding Company: _____

Address: _____

_____

Bonding Agent: _____

Address: _____

_____

_____

Contact Name: _____

Phone: _____

Aggregate Bonding Capacity: _____

Available Bonding Capacity as of date of this submittal: _____

10. FINANCIAL INFORMATION

Financial Institution: _____

Address: _____

_____

Account Manager: _____

Phone: _____

INCLUDE AS AN ATTACHMENT AN AUDITED BALANCE SHEET FOR EACH OF THE LAST 3 YEARS

11. CONSTRUCTION EXPERIENCE:

Current Experience:

List on **Schedule A** all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on **Schedule B** all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

12. SAFETY PROGRAM:

Name of Contractor's Safety Officer:_____

Include the following as attachments:

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) OSHA No. 500- Log & Summary of Occupational Injuries & Illnesses for the past 5 years.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all OSHA Citations & Notifications of Penalty (monetary or other) received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all safety citations or violations under any state all received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide the following for the firm listed in Section V (and for each proposed Subcontractor furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) the following (attach additional sheets as necessary):

Workers' compensation Experience Modification Rate (EMR) for the last 5 years:

YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____

Total Recordable Frequency Rate (TRFR) for the last 5 years:

YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____

Total number of man-hours worked for the last 5 Years:

YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____

Provide Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) Days Away From Work, Days of Restricted Work Activity or Job Transfer (DART) incidence rate for the particular industry or type of Work to be performed by Contractor and each of Contractor's proposed Subcontractors and Suppliers) for the last 5 years:

YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____

13. EQUIPMENT:

MAJOR EQUIPMENT:

List on **Schedule C** all pieces of major equipment available for use on Owner's Project.

I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HEREWITH, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: _____

BY: _____

TITLE: _____

DATED: _____

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS _____ DAY OF _____, 20___

NOTARY PUBLIC - STATE OF _____

MY COMMISSION EXPIRES:_____

REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).
3. Schedule C (Major Equipment).
4. Audited balance sheet for each of the last 3 years for firm named in Section 1.
5. Evidence of authority for individuals listed in Section 7 to bind organization to an agreement.
6. Resumes of officers and key individuals (including Safety Officer) of firm named in Section 1.
7. Required safety program submittals listed in Section 13.
8. Additional items as pertinent.

SCHEDULE A

CURRENT EXPERIENCE

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE C - LIST OF MAJOR EQUIPMENT AVAILABLE

ITEM	PURCHASE DATE	CONDITION	ACQUIRED VALUE

SECTION 00430

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)*:

BID

Bid Due Date:

Description *(Project Name— Include Location)*:

BOND

Bond Number:

Date:

Penal sum _____ $ _____

(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
Title	Title

Note: Addresses are to be used for giving any required notice.
Provide execution by any additional parties, such as joint venturers, if necessary.

SECTION 00430

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

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 of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the 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 the 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.

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

SECTION 00510

NOTICE OF AWARD

Date of Issuance:

Owner: Owner's Contract No.:

Engineer: Engineer's Project No.:

Project: Contract Name:

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated [_____] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

_____ .

[describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is: $_____

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

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

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

1. Deliver to Owner [____]counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance and payment bonds]* and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

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 Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner**:**

Authorized Signature

By:

Title:

Copy: Engineer

SECTION 00520

AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between _____ ("Owner") and _____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

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

Upper Pompey Water Supply Project – Contract 1 & Contract 2

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

Upper Pompey Water Supply Project – Contract 1 & Contract 2

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by Summit Engineering, Inc..

3.02 The Owner has retained Summit Engineering, Inc. ("Engineer") 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 *Contract Times: Dates*

A. The Work will be substantially completed on or before 180, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the

actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $ 500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

4.04 *[Deleted]*

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

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

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the Last day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

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 Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

a. 95 percent of Work completed (with the balance being retainage); ~~If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and~~

b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion of the entire construction to be provided under the Contract Documents, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 100 percent of Engineer's

estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

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

ARTICLE 7 – INTEREST

7.01 NOT USED

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

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

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

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

D. NOT USED

E. NOT USED

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

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

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 6, inclusive).

2. Performance bond (pages __00610-1__ to __00610-3__, inclusive).
3. Payment bond (pages __00615-1__ to __00615-3__, inclusive).
4. Other bonds.
    a. __N/A__ (pages __N/A__ to __N/A__, inclusive).
5. General Conditions (pages __00700-1__ to __00700-71__, inclusive).
6. Supplementary Conditions (pages __00800-1__ to __00800-15__, inclusive).
7. Specifications as listed in the table of contents of the Project Manual.
8. Drawings (not attached but incorporated by reference) consisting of __17__ sheets with each sheet bearing the following general title: __Upper Pompey Water Supply Project__ **[or]** the Drawings listed on the attached sheet index.
9. Addenda (numbers ___ to ___, inclusive).
10. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid (pages ___ to ___, inclusive).
11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.

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 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. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this 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 successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

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

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

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

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
	License No.: _____ *(where applicable)*
(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 this Agreement.)	*NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

SECTION 00550

NOTICE TO PROCEED

Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:
	Effective Date of Contract:

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [_____, 20__]. *[see Paragraph 4.01 of the General Conditions]*

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with 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 starting any Work at the Site, Contractor must comply with the following:
[Note any access limitations, security procedures, or other restrictions]

Owner**:**

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

SECTION 00610

PERFORMANCE BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
Title	Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable. (3) Bond must be at least 100% of the bid amount.

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

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

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

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

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

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

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

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

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

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

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

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

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

the Owner or its heirs, executors, administrators, successors, and assigns.

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

11. Any proceeding, legal or equitable, under this Bond 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 a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

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

14. Definitions

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

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

SECTION 00615

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND

Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	Signature
_____	_____
Title	Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable. (3) Bond must be at least 100% of the bid amount.

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

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond shall arise after the following:

    5.1 Claimants who do not have a direct contract with the Contractor,

        5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2 Pay or arrange for payment of any undisputed amounts.

    7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

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

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

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

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. **Definitions**

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default**: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

SECTION 00700

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

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

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

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

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision

regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

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 does not change the Contract Price or the Contract Times.

22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

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

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. *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.

30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

35. *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.

36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and

submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. *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.

40. *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.

41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

46. *Unit Price Work*—Work to be paid for on the basis of unit prices.

47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the

result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

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

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*:

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

D. *Defective*:

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

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

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

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

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

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

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

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

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

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

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

C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

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

2. a preliminary Schedule of Submittals; and

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

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

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

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

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

2.06 *Electronic Transmittals*

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

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

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

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

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

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

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract

Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

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

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

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

4.02 *Starting the Work*

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

4.03 *Reference Points*

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

requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;

3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and

4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility

that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

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

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

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

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

5.02 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise;

(b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

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

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and

procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

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

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

5.04 *Differing Subsurface or Physical Conditions*

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

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or

2. is of such a nature as to require a change in the Drawings or Specifications; or

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

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

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or

decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

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

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

c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

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

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

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

a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

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

d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and

d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

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

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

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

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required

by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this

Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

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

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or

authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.

2. claims for damages insured by reasonably available personal injury liability coverage.

3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Broad form property damage coverage.

4. Severability of interest.

5. Underground, explosion, and collapse coverage.

6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.

2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.

3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.

5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

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

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available

under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
6. extend to cover damage or loss to insured property while in transit.
7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
8. allow for the waiver of the insurer's subrogation rights, as set forth below.
9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
10. not include a co-insurance clause.
11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
12. include performance/hot testing and start-up.
13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will

provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

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

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

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

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

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of

recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

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

7.02 *Labor; Working Hours*

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

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

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

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

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

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

4) it is not objectionable to Owner.

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

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

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

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

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

a. shall certify that the proposed substitute item will:

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

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

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

2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

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

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

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

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

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

O. Nothing in the Contract Documents:

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

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

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights 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, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

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

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

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

7.10 *Laws and Regulations*

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

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

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

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

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

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

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

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

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of

Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

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

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

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

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

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

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

1. *Shop Drawings*:

a. Contractor shall submit the number of copies required in the Specifications.

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

2. *Samples*:

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

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

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review*:

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

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures*:

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

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

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

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

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

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

2. normal wear and tear under normal usage.

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

1. observations by Engineer;

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

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

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

5. any review and approval of a Shop Drawing or Sample submittal;

6. the issuance of a notice of acceptability by Engineer;

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

8. any correction of defective Work by Owner.

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

7.18 *Indemnification*

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

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any

limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

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

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

7.19 *Delegation of Professional Design Services*

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

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

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

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner

may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor

must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

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

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

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

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

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

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

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

10.06 *Determinations for Unit Price Work*

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

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

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

10.08 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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

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

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

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

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

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change

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

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.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 Paragraphs 11.04.C.2.a and

11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole,

approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

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

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

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

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction,

the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

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

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

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

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

5. Supplemental costs including the following:

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

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

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

    d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

    e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

    f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

    g. The cost of utilities, fuel, and sanitary facilities at the Site.

    h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

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

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

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

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

13.03 *Unit Price Work*

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

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

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

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

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

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

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

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

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

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

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

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

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for

Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

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

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

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

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

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

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

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

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

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

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

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

   a. the Work is defective, requiring correction or replacement;

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

   c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

   e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

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

E. *Reductions in Payment by Owner*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

    b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

    c. Contractor has failed to provide and maintain required bonds or insurance;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

    e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

    f. the Work is defective, requiring correction or replacement;

    g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

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

    i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

    j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

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

    l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction

imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

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

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

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

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

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor

may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

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

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

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

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of

inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

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

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all disputes that Contractor believes are unsettled; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

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

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

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer

(less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

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

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;

2. correct such defective Work;

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with

respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs,

losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

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

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

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

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

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the

Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

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

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of

them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Headings*

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

SECTION 00800

SUPPLEMENTARY CONDITIONS

GENERAL

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

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

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 Defined Terms

SC-1.01.A.8 Add the following language at the end of last sentence of Paragraph 1.0.A.8:

The Change Order form to be used on this Project is EJCDC C-941. Agency approval is required before Change Orders are effective.

SC-1.01.A.48 Add the following language at the end of eh last Paragraph 1.01A.48:

A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

SC-1.01.A.49 Add the following new Paragraph after Paragraph 1.01.A.48:

Abnormal Weather Conditions – Conditions of extreme or unusual weather for a given region, elevation, or season as determined by Engineer. Extreme or unusual weather that is typical for a region, elevation, or season should not be considered Abnormal Weather Conditions.

SC 1.01.A.50 Add the following new Paragraph after Paragraph 1.01.A.49:

Agency - The Project is financed in whole or in part by USDA Rural Utilities Service pursuant to the Consolidated Farm and Rural Development Act (7 USC Section 1921 et seq.). The Rural Utilities Service programs are administered through the USDA Rural Development offices; therefore, the Agency for these documents is USDA Rural Development.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.02 C Copies of Documents

SC 2.02.A Amend the first sentence of Paragraph 2.02.A. to read as follows:

Owner shall furnish to Contractor five copies of the Contract Documents (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF).

SC-2.06 Electronic Transmittals

SC- 2.06.B Delete Paragraph 2.06.B and replace it with the term [Deleted].

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

NO CHANGE

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01 Commencement of Contract Times; Notice to Proceed

SC 4.01.A Amend the last sentence of Paragraph 4.01.A by striking out the following words: In no event will the Contract Times commence to run later than the ninetieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

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

SC-5.03 Subsurface and Physical Conditions

SC 5.03 Delete Paragraphs 5.03.A and 5.03.B in their entirety and insert the following:

A. No reports of explorations or tests of subsurface conditions at or adjacent to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to Owner.

SC-5.06 Hazardous Environmental Conditions

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

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

B. Not Used.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.03 Contractor's Insurance

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

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

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

State:		**Statutory**
Federal, if applicable (e.g., Longshoreman's):		**Statutory**
Jones Act coverage, if applicable:		
Bodily injury by accident, each accident	**$**	**N/A**
Bodily injury by disease, aggregate	**$**	**N/A**
Employer's Liability:		
Bodily injury, each accident	**$**	**500,000**
Bodily injury by disease, each employee	**$**	**500,000**
Bodily injury/disease aggregate	**$**	**500,000**
For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	**$**	**N/A**
Foreign voluntary worker compensation		**Statutory**

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

General Aggregate	**$ 2,000,000**
Products - Completed Operations Aggregate	**$ 1,000,000**
Personal and Advertising Injury	**$ 1,000,000**
Each Occurrence (Bodily Injury and Property Damage)	**$ 1,000,000**

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

Bodily Injury:	
Each person	**$ 500,000**
Each accident	**$ 1,000,000**
Property Damage:	
Each accident	**$ 1,000,000**
[or]	
Combined Single Limit of	**$ 1,000,000**

4. Excess or Umbrella Liability:

Per Occurrence	**$ 1,000,000**
General Aggregate	**$ 1,000,000**

5. Contractor's Pollution Liability:

Each Occurrence	**$ N/A**
General Aggregate	**$ N/A**

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

6. Additional Insureds: Mountain Water District and Summit Engineering, Inc. shall be included on policy as Additional Insureds.

7. Contractor's Professional Liability:

Each Claim	**$ N/A**
Annual Aggregate	**$ N/A**

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.02 *Labor; Working Hours*

SC-7.02.C. **Add the following new paragraph immediately after Paragraph 7.02.B:**

Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-7.04 *"Or Equals"*

SC-7.04.A **Amend the third sentence of Paragraph 7.04.A by striking out the following words:**

Unless the specification or description contains or is followed by words reading that no like, equivalent, or 'or-equal' item is permitted.

SC 7.04.A.1 **Amend the last sentence of Paragraph a.3 by striking out "and;" and adding a period at the end of the Paragraph.**

SC 7.04.A.1 **Delete paragraph 7.04.A.1.a.4 in its entirety and insert the following in its place:**

[Deleted]

SC-7.06 *Concerning Subcontractors, Suppliers, and Others*

SC 7.06.A **Amend Paragraph 7.06.A by adding the following text to the end of the Paragraph:**

The Contractor shall not award work valued at more than fifty percent of the Contract Price to Subcontractor(s).

SC 7.06.B **Delete paragraph 7.06.B in its entirety and insert the following in its place:**

[Deleted]

SC 7.06.E **Amend the second sentence of Paragraph 7.06.E by striking out "Owner may also require Contractor to retain specific replacements; provided, however, that".**

ARTICLE 8 – OTHER WORK AT THE SITE

NO CHANGE

ARTICLE 9 – OWNER'S RESPONSIBILITIES

NO CHANGE

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Project Representative

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:

B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.

4. Liaison:

a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

6. Shop Drawings and Samples:

a. **Record date of receipt of Samples and Contractor-approved Shop Drawings.**

b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

7. **Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.**

8. **Review of Work and Rejection of Defective Work:**

    a. **Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.**

    b. **Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.**

9. **Inspections, Tests, and System Start-ups:**

    a. **Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.**

    b. **Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.**

10. **Records:**

    a. **Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.**

    b. **Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.**

    c. **Maintain records for use in preparing Project documentation.**

11. **Reports:**

    a. **Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.**

    b. **Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.**

c. **Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.**

12. **Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.**

13. **Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.**

14. **Completion:**

    a. **Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.**

    b. **Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.**

    c. **Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.**

C. **The RPR shall not:**

1. **Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).**

2. **Exceed limitations of Engineer's authority as set forth in the Contract Documents.**

3. **Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.**

4. **Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.**

5. **Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.**

6. **Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.**

7. **Accept Shop Drawing or Sample submittals from anyone other than Contractor.**

8. **Authorize Owner to occupy the Project in whole or in part..**

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

SC-11.07 Execution of Change Orders

SC 11.07.C Add the following new Paragraph after Paragraph 11.07.B:

All Contract Change Orders must be concurred in by Agency before they are effective.

ARTICLE 12 – CLAIMS

NO CHANGE

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.02 Allowances

SC 13.02.C Delete Paragraph 13.02.C in its entirety and insert the following in its place:

[Deleted]

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

NO CHANGE

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

SC-15.01 Progress Payments

SC 15.01.B Amend the second sentence of Paragraph 15.01.B.1 by striking out the following text: "a bill of sale, invoice, or other."

SC 15.01.B.3 Add the following language at the end of paragraph 15.01.B.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 15.01.B.4 Add the following new Paragraph after Paragraph 15.01.B.3:

The Application for Payment form to be used on this Project is EJCDC C-620 unless another form is agreed upon by the Engineer, Owner, and Agency. The Agency must approve all Applications for Payment before payment is made.

SC 15.01.D.1 Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

The Application for Payment with Engineer's recommendations will be presented to the Owner and Agency for consideration. If both the Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become due twenty (20) days after the

Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

SC-15.02 *Contractor's Warranty of Title*

SC 15.02.A **Amend Paragraph 15.02.A by striking out the following text: "no later than seven days after the time of payment by Owner" and insert "no later than the time of payment by Owner."**

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

NO CHANGE

ARTICLE 18 – MISCELLANEOUS

SC 18.09 **Add the following new paragraph after Paragraph 18.08:**

Tribal Sovereignty. No provision of this Agreement will be construed by any of the signatories as abridging or debilitating any sovereign powers of the {insert name of Tribe} Tribe; affecting the trust-beneficiary relationship between the Secretary of the Interior, Tribe, and Indian landowner(s); or interfering with the government-to-government relationship between the United States and the Tribe.

ARTICLE 19 – FEDERAL REQUIREMENTS

SC 19 **Add Article 19 titled "FEDERAL REQUIREMENTS"**

SC 19.01 **Add the following language as Paragraph 19.01 with the title "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.

SC 19.02 **Add the following sections after Article 19.01 with the title "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 F) 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.

SC 19.03 **Add the following language after Article 19.02.B with the title "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. 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.

SC 19.04 Add the following language after Article 19.03.A with the title "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 19.04.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.

SC 19.05 Add the following language after Article 19.04.B with the title "Audit and Access to Records":

A. Owner, Agency, the Comptroller General of the United States, 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 Agreement, for the purpose of making audits, examinations, excerpts, and transcriptions. Engineer shall maintain all required records for three years after final payment is made and all other pending matters are closed.

SC 19.06 Add the following language after Article 19.05.A with the title "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.

SC 19.07 Add the following after Article 19.06.A with the title "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.

SC 19.08 Add the following after Article 19.07.A with the title "Clean Air and Pollution Control Acts":

A. If this Contract exceeds $100,000, compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h) and 42 USC 7401et. seq.), section 508 of the Clean Water Act (33 U.S.C. 1368) and Federal Water Pollution Control Act (33 USC 1251 et seq.), Executive Order 11738, and Environmental Protection Agency regulations is required. Contractor will report violations to the Agency and the Regional Office of the EPA.

SC 19.09 Add the following after Article 19.08 with the title "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.

SC 19.10 Add the following after Article 19.09 with the title "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.

SC 19.11 Add the following after Article 19.10.C with the title "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 U.S.C. 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.

SC 19.12 Add the following after Article 19.11.A with the title "Environmental Requirements":

When constructing a Project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental conditions:

A. Wetlands –When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.

B. 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 (Standard Flood Hazard Area) delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, e.g., alluvial soils on NRCS Soil Survey Maps.

C. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact or human remains 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).

D. 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.

E. Mitigation Measures – The following environmental mitigation measures are required on this Project: {Insert mitigation measures here}.

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Contractor's Application for Payment No.

	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

Application For Payment

Change Order Summary

Approved Change Orders

Number	Additions	Deductions
TOTALS		
NET CHANGE BY CHANGE ORDERS		

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

Contractor's Certification

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

Contractor Signature

By:	Date:

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

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

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

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

Approved by: _____ _____
Funding or Financing Entity (if applicable) (Date)

Progress Estimate - Unit Price Work

Contractor's Application

For (Contract):								Application Number:			
Application Period:								Application Date:			
A					B	C	D	E	F		
Item		Contract Information									
Bid Item No.	Description	Item Quantity	Units	Unit Price	Total Value of Item ($)	Estimated Quantity Installed	Value of Work Installed to Date	Materials Presently Stored (not in C)	Total Completed and Stored to Date (D + E)	% (F / B)	Balance to Finish (B - F)
	Totals										

Stored Material Summary

Contractor's Application

For (Contract):								Application Number:			
Application Period:								Application Date:			
A		B	C		D		E		F		G
Bid Item No.	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Storage Location	Description of Materials or Equipment Stored	Stored Previously		Amount Stored this Month ($)	Subtotal Amount Completed and Stored to Date (D + E)	Incorporated in Work		Materials Remaining in Storage ($) (D + E - F)
					Date Placed into Storage (Month/Year)	Amount ($)			Date (Month/ Year)	Amount ($)	
				Totals							

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SECTION 00941

Change Order No. _____

Date of Issuance: Effective Date:

Owner: Owner's Contract No.:

Contractor: Contractor's Project No.:

Engineer: Engineer's Project No.:

Project: Contract Name:

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

Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	**CHANGE IN CONTRACT TIMES** *[note changes in Milestones if applicable]*
Original Contract Price: $_____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: $_____	[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: $_____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: $_____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: $_____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (if required)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title _____	Title _____
Date: _____	Date _____	Date _____

Approved by Funding Agency (if applicable)

By: _____ Date:

Title: _____

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SECTION 00942

CERTIFICATE OF SUBSTANTIAL COMPLETION

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

This [preliminary] [final] Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

Date of Substantial Completion

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

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

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities: ☐ None ☐ As follows

Amendments to Contractor's responsibilities: ☐ None ☐ As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

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

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

TECHNICAL SPECIFICATIONS

Upper Pompey Water Supply Project
Contract 1 (AML) and Contract 2

April, 2016

Prepared for:

Mountain Water District
Pike County, Kentucky

Prepared by:

SUMMIT ENGINEERING INC.

131 Summit Drive, Pikeville, Kentucky 41501 Phone 606-432-1447

TECHNICAL SPECIFICATIONS

SECTION	DESCRIPTION	PAGE
I	Special Provisions	TS-I-1 through TS-I-2
II	General Provisions	TS-II-1 through TS-II-5
III	Submittals	TS-III-1 through TS-III-4
IV	Quality Control	TS-IV-1 through TS-IV-2
V	Temporary Facilities	TS-V-1 through TS-V-3
VI	Mobilization/Demobilization	TS-VI-1 through TS-VI-2
VII	Silt Control Structures	TS-VII-1 through TS-VII-5
VIII	Connections to Existing Water Lines	TS-VIII-1 through TS-VIII-2
IX	Water Lines and Fittings	TS-IX-1 through TS-IX-16
X	Gate Valves	TS-X-1 through TS-X-2
XI	Skid Mounted Water Storage Tank	TS-XI-1 through TS-XI-6
XII	Bore and or Encase	TS-XII-1 through TS-XII-3
XIII	Water Service Connections	TS-XIII-1 through TS-XIII-3
XIV	Fire Hydrants and Blow-Off Valves	TS-XIV-1 through TS-XIV-3
XV	Central Unit Based Supervisory Control and Data Acquisition (SCADA) System	TS-XV-1 through TS-XV-17
XVI	Pressure Reducing Station	TS-XVI-1 through TS-XVI-3
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XX	Pavement Replacement	TS-XX-1 through TS-XX-4
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XXII	Additional Pump Station Upgrades	TS-XXII-1 through TS-XXII-2
XXIII	Master Meter Station	TS-XXIII-1 through TS-XXIII-2
RS	AWWA Standard for Installation	
RS-MW	Mountain Water District Water Distribution Lines Technical Specifications	

SECTION I

TECHNICAL SPECIFICATIONS

SPECIAL PROVISIONS

1.1 SCOPE

This specification sets forth OWNER'S special project requirements which are UNIQUE to this project. All requirements of this section shall be considered as integral parts of the successful completion of the Project. All items discussed herein are considered incidental to the overall accomplishment of the Project and no separate payment shall be made for these items.

1.2 CONFLICTING ELEMENTS

The Mountain Water District has prepared a set of specifications entitled “Mountain Water District – Water Distribution Lines and Technical Specifications”. These specifications are reproduced herein as Supplemental Technical Specifications. In the event of a conflict between the elements of the Contract Documents, the MORE STRINGENT REQUIREMENT ON THE CONTRACTOR SHALL GOVERN.

1.3 COMMUNICATIONS

1.3.1 The CONTRACTOR shall coordinate all work through the ENGINEER.

1.3.2 The CONTRACTOR shall notify the OWNER and ENGINEER at least 10 calendar days prior to any construction activity at the site.

1.4 WORKING HOURS

Working hours are as follows:

1.4.1 Regular working hours are defined as up to 8 hours per day, Monday through Friday, beginning no earlier than 7:00 AM and ending no later than 7:00 PM, excluding holidays. Whenever the CONTRACTOR is performing any part of the Work, with the exception of equipment maintenance and clean-up, OWNER'S representation and/or inspection will be required.

1.4.2 Requests to work other than regular working hours must be submitted to the OWNER'S designated representative, at least 48 hours prior to any proposed weekend work or

scheduled extended work weeks, to give the OWNER ample time to arrange for representation and/or inspection during those periods. Periodic unscheduled overtime on weekdays will be permitted provided that two hours notice is provided to OWNER'S designated representative. Maintenance and clean-up may be performed during hours other than regular working hours.

1.4.3 The OWNER incurs additional expense when the CONTRACTOR exceeds regular working hours. Consequently, CONTRACTOR shall reimburse the OWNER for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated herein. These costs shall be a line item deduction from the CONTRACTOR'S monthly payment request. Overtime costs for OWNER'S personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the ENGINEER shall be calculated in accordance with the terms of the ENGINEER'S contract with the OWNER.

1.5 SERVICE CONNECTIONS

The OWNER will not allow dry tapping of water mains for residential service connections. New water mains must be pressurized to working pressure BEFORE service connections are made.

- THE END -

SECTION II

TECHNICAL SPECIFICATIONS

GENERAL PROVISIONS

2.1 SCOPE

This section of the technical specifications is prepared to establish general requirements applicable to the entire Project. All items discussed herein are considered incidental to the overall accomplishment of the Project and no separate payment shall be made for these items.

2.2 IDENTIFICATION OF PARTIES

OWNER - Mountain Water District. The OWNER owns and is responsible for the completed water facilities.

ENGINEER - Registered professional engineer designated by OWNER to provide design, construction inspection, and certification services.

CONTRACTOR- The entity(s) responsible under contract to OWNER to furnish labor, equipment, etc. to complete the work specified herein.

2.3 RECORD DRAWINGS

The CONTRACTOR shall furnish record drawings in accordance with the requirements of the 'Submittals' section of these specifications.

2.4 EXISTING UTILITIES AND UNDERGROUND FACILITIES

Attention is called to the presence of existing utilities and underground facilities. The CONTRACTOR is solely responsible to accurately locate, and avoid damage to, all existing utilities and underground facilities.

2.5 SCHEDULES

2.5.1 Progress and Payment Schedules. Within ten calendar days of Notice of Award prepare and submit to the ENGINEER a proposed construction progress schedule. The schedule shall be in the form of a bar chart addressing the major project activities. The bar chart shall provide for a comparison of the proposed schedule to actual completion.

2.5.2 Submittal Schedules. Within ten calendar days of Notice of Award no less than 10 calendar days after the effective date of the Agreement, prepare and submit to the ENGINEER a proposed submittal schedule.

2.5.3 Schedule Updates. All project schedules shall be updated for each CONTRACTOR pay request.

2.5.4 WARNING: NO CONTRACTOR PAYMENTS SHALL BE APPROVED BY THE ENGINEER UNTIL ACCEPTABLE PROJECT SCHEDULES HAVE BEEN PROVIDED BY THE CONTRACTOR. CONTRACTOR PAY REQUEST APPLICATIONS WILL BE IMMEDIATELY RETURNED IF THEY ARE NOT ACCOMPANIED BY THE REQUIRED SCHEDULE UPDATES.

2.6 CONSTRUCTION PHOTOGRAPHS

2.6.1 The term "photograph" as used herein refers to a photographic view, including similar exposures taken to assure the usefulness of the photographic record. All photographs shall be taken in color, not black and white.

2.6.2 The CONTRACTOR shall photograph the project limits prior to construction. The same views shall be re-photographed upon completion of all construction activities. In lieu of photography, CONTRACTOR may opt to video the project limits. The CONTRACTOR shall furnish the ENGINEER two digital copies for completeness review. NO WORK CAN BE PERFORMED UNTIL THE ENGINEER HAS BEEN FURNISHED THE PRE-CONSTRUCTION PHOTOGRAPHS AND/OR VIDEOS. SPECIAL ATTENTION SHOULD BE ADDRESSED TO DRIVEWAYS, FENCES, WALLS, ETC.

2.7 TESTING

The cost of all testing shall be borne by the CONTRACTOR unless directed otherwise.

2.8 INSTALLATION REQUIREMENTS

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as suggested by the respective manufacturers, unless otherwise specified herein.

2.9 PROOF OF COMPLIANCE

See Quality Control - Section IV

2.10 MAINTAINING DRAINAGE

At no time shall the flow of any existing streams or gullies be blocked. Ditches or culverts which become inoperable during the work effort shall be promptly cleaned out.

2.11 DUST AND LITTER CONTROL

All access roads, excavations, embankments, waste areas, etc. within the project boundaries shall be maintained free of dust and litter which could cause a nuisance to others. Dust control shall be performed as the work proceeds and whenever a dust nuisance occurs. From time to time, as the need arises, the construction area shall be policed to collect all scattered litter and debris.

2.12 CLEAN UP

After all construction work is complete, and prior to final inspection, all disturbed areas shall be cleaned and left in a sightly condition. All unused material shall be removed and disposed of properly.

2.13 REPAIR OF DAMAGE

Any damage done to structures, fills, roadways, or other areas shall be repaired at the CONTRACTOR'S expense before final payment is made.

2.14 PROJECT LIMTS

The CONTRACTOR shall be responsible for satisfying himself as to the construction limits for the project. The CONTRACTOR shall not establish work, storage, or staging areas outside the project limits, unless otherwise directed or approved by the ENGINEER.

2.15 BURNING

The CONTRACTOR shall strictly observe all applicable local, state, and federal laws and ordinances regarding burning. There shall be no burning on Kentucky Department of Transportation right of way. No burning shall be conducted

in close proximity to natural gas conveyance facilities or overhead utilities. All ash and partially burned debris shall be disposed of in a lawful manner approved by the ENGINEER.

2.16 MATERIALS SUITABLY STORED

Requests for payment for stored materials MUST be prepared in compliance with the following:

At least twenty days before each progress payment is scheduled (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, charges, security interests and encumbrances and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER’s interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

2.17 EXPLANATION OF MEASUREMENT AND PAYMENT TERMINOLOGY

The various items of work will be measured and paid for as "Lump Sum," "Each," or by "Unit Prices" as established in these specifications. These methods of payment are defined as follows:

a) Lump Sum: When this term is used as an item of payment, it shall be inferred that the complete structure, structural unit or element of work is specified as the unit measurement. As such, it will be construed to include all necessary materials and accessories required for installation. No final measurements will be made.

b) Each: The definition for Lump Sum applies to the term "each" except more than one may be included in the Project and the actual number installed will be the final measurement.

c) Unit Price Quantities: When unit price quantities for a specific portion of the project are designated in the Contract Documents as the pay quantity, actual quantities for such specified portion serve as the basis for payment. Actual quantities shall be determined by the differences in measurements taken before and after construction.

- **THE END** -

SECTION III

TECHNICAL SPECIFICATIONS

SUBMITTALS

3.1 SCOPE

This specification sets forth the procedure to be employed in submitting and processing all CONTRACTOR submittals.

3.2 SHOP DRAWINGS

3.2.1 The CONTRACTOR shall submit for the review of the ENGINEER Shop Drawings for all fabricated work and for all manufactured items required to be furnished in the Contract in accordance with the General Conditions and as specified herein. Shop Drawings shall be submitted in sufficient time to allow at least twenty-one (21) calendar days after receipt of the Shop Drawings from the CONTRACTOR for checking and processing by the ENGINEER.

3.2.2 ENGINEER's review of the CONTRACTOR's drawings shall be considered as a gratuitous service, given as assistance to the CONTRACTOR in interpreting the requirements of the Contract, and in no way shall it relieve the CONTRACTOR of any of his responsibilities under the Contract. Any fabrication, erection, setting or other Work done in advance of the receipt of Shop Drawings returned by the ENGINEER and noted as "No Exception Taken" or "Make Corrections as Noted" shall be entirely at the CONTRACTOR's risk. The ENGINEER's review will be confined to general arrangement and compliance with the design concept and Specifications only, and will not be for the purpose of checking dimensions, weights, clearances, fitting, tolerances, interferences, coordination of trades, etc.

3.2.3 Unless otherwise stated elsewhere in the Contract Drawings, a total of six 6) copies of all reviewed Shop Drawings shall be furnished to the ENGINEER for his use in accordance with the following sequence of operations:

A) Initially six copies and one (1) reproducible copy shall be submitted to the Engineer for review. The ENGINEER will return one (1) copy and the reproducible copy to the CONTRACTOR after review.

B) When Shop Drawings are returned for correction, they shall be immediately corrected and resubmitted for review as described above, and such procedures will not be considered as grounds for delay in completing the Work.

C) Shop Drawings submitted by subcontractors shall be sent directly to the CONTRACTOR for preliminary checking. The CONTRACTOR shall be responsible for their submission to the ENGINEER at the proper time so as to prevent delays in delivery of materials.

D) The CONTRACTOR shall thoroughly check all subcontractor's Shop Drawings as regards to measurements, sizes of members, materials and details to satisfy himself that they conform to the intent of the Specifications. Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors by the CONTRACTOR for correction before submitting them to the ENGINEER. Before submission, the CONTRACTOR shall mark (stamp) the drawings as being checked and approved by him, dated and signed. The CONTRACTOR's approval (stamp) shall constitute a representation that all quantities, dimensions, field construction criteria, materials, catalog numbers, performance criteria and similar data have been verified and that, in his opinion, the submittal fully meets the requirements of the Contract Documents and the scope of work involved. Shop Drawings that are not stamped will not be reviewed.

E) All details on Shop Drawings submitted for review shall clearly show the relation of the various parts and where the Work depends upon field measurements, such measurements shall be obtained by the CONTRACTOR and noted on the Shop Drawings before being submitted to the ENGINEER for review.

F) All submissions shall be properly referenced to indicate clearly the specification section, location, service and function of each particular item. All submissions for one item or group of related items shall be complete. The ENGINEER reserves the right to reject manufacturer's publications in the form of catalogues, pamphlets, or other data sheets when they are submitted in lieu of prepared Shop Drawings. Such submissions shall specifically indicate the item for which

approval is requested. Identification of items shall be made in ink, and submissions showing only general information are not acceptable.

G) If the Shop Drawings contain any departures from the Contract requirements, specific mention thereof shall be made in the CONTRACTOR's letter of transmittal. Where such departures require revisions to layouts or structural changes to the Work, the CONTRACTOR shall, at his own expense, prepare and submit for approval revised layout and structural drawings. Such drawings shall be of the size approved by the ENGINEER.

H) All shop drawings shall be in English.

3.2.4 The ENGINEER will review the first and second shop drawing submittals at no cost to the CONTRACTOR. Review of the third submittal and any subsequent submittal will be at the CONTRACTOR's expense. Payment will be deducted from the Contract amount at a rate of 3 times direct labor cost plus expense.

3.3 RECORD DRAWINGS

3.3.1 The Record Drawings shall consist of the Contract Drawings (3 mil mylar, updated to 'As Built' conditions) and the approved Shop Drawings in reproducible form (3 mil mylar) and shall be submitted to the ENGINEER at any time upon request during construction, but no later than the Final Inspection.

3.3.2 Contract Drawings shall be legibly marked to record actual construction including:

A) All deviations in location or elevation of any underground installation from that shown on the Contract Drawings.

B) Any significant changes in above ground installation from approved Shop Drawings or Contract Drawings.

C) No such deviations from the Contract Drawings or approved Shop Drawings shall be made without approval by the ENGINEER.

3.3.3 Specifications and addenda shall be legibly marked up to record:

A) Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually installed.

B) Changes made by Change Order or Field Order.

C) Other matters not originally specified.

3.3.4 Shop Drawings shall be legibly annotated to record changes made after review.

3.3.5 Reproducible Record Drawings shall be submitted in accordance with the General Conditions, Supplementary Conditions, and General Requirements.

3.4 MEASUREMENT AND PAYMENT

Submittals shall be considered a part of CONTRACTOR'S Lump Sum Bid for "Mobilization/DeMobilization" and shall not be measured for separate payment.

- THE END -

SECTION IV

TECHNICAL SPECIFICATIONS

QUALITY CONTROL

4.1 CODES, STANDARDS AND INDUSTRY SPECIFICATIONS

A) Material or operations specified by reference to published specifications of a manufacturer, testing agency, society, association or other published standards shall comply with requirements in latest revisions thereof and amendments or supplements thereto in effect on date of Advertisement for Bidders.

B) Discrepancies between referenced codes, standards, specifications and Contract Documents shall be governed by the latter unless written interpretation is obtained from ENGINEER.

C) Material or work specified by reference to conform to a standard, code, law, or regulation shall be governed by Contract Document when they exceed requirements of such references; referenced standards shall govern when they exceed Contract Documents.

D) Proof of Compliance:

Whenever Contract Documents require that a product be in accordance with Federal Specification, ASTM designation, ANSI specification, or other association standard, at ENGINEER'S request, CONTRACTOR shall present an affidavit from manufacturer certifying that product complies therewith. Where requested or specified, submit supporting test data to substantiate.

4.2 MANUFACTURER'S DIRECTIONS

Utilize manufactured articles, materials and equipment as directed by manufacturers unless herein specified to contrary. Discrepancy between an installation required by Contract Documents and manufacturer's instructions and recommendations shall be resolved by ENGINEER before work may proceed. In all cases, the more stringent requirements shall govern.

4.3 TESTING

A) All testing (when required) will be in accordance with the pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.

B) The OWNER will select the testing laboratories.

C) The CONTRACTOR will bear the cost of all testing unless directed otherwise.

- **THE END** -

SECTION V

TECHNICAL SPECIFICATIONS

TEMPORARY FACILITIES

5.1 SUBMITTALS

Submit six copies of the following:

A) A 'temporary facilities plan' illustrating the location of the field office (not required), sanitary facilities, layoff areas, and project signs.

B) The proposed layout/color scheme for the Project Sign.

5.2 FIELD OFFICE (NOT REQUIRED)

5.2.1. The CONTRACTOR shall furnish and maintain a field office on site. The office shall be established at a location approved by the ENGINEER. **AN AUTHORIZED REPRESENTATIVE OF THE CONTRACTOR SHALL BE IN THE FIELD OFFICE AT ALL TIMES WHILE WORK IS IN PROGRESS.**

5.2.2. The CONTRACTOR shall provide a field office for the duration of the Project. It shall be weathertight, have a tight floor, and suitable ventilation. The office shall have at least three screened windows capable of being opened, a screen door and a solid door provided with cylinder lock and three keys. The office shall be provided with heating equipment, electrical wiring, outlets and fixtures suitable to lighten the tables and desk adequately as directed. The CONTRACTOR shall furnish and equip the field office complete within five (5) days of Notice to Proceed.

5.2.3. The field office provided shall be furnished by the CONTRACTOR as follows:

1. One plan table, 3 ft. x 5 ft. and one stool
2. Three additional chairs
3. Four-drawer, filing cabinet with lock
4. Waste paper basket
5. Air Conditioner (12,000 BTU)

5.2.4. The CONTRACTOR shall supply all fuel for heating and pay all electrical bills. A watt-hour meter shall be installed for determination of electric consumption and appropriate charges for that consumption.

5.2.5. The CONTRACTOR shall furnish the field office with a private telephone for the ENGINEER's exclusive use. With the exception of charges for long distance and toll calls, the CONTRACTOR shall pay all bills charged against the ENGINEER's telephone, including installation charge and all monthly charges throughout the construction period.

5.3 MATERIAL STORAGE

The CONTRACTOR must make arrangements for his staging areas and areas of material storage.

5.4 SANITARY FACILITIES

The CONTRACTOR shall provide and maintain all necessary sanitary facilities at the site, in accordance with all applicable regulations, and shall properly remove same at completion of the project.

5.5 UTILITIES

The obtaining of all utilities which may be required for the construction shall be the responsibility of the CONTRACTOR.

5.6 PROJECT SIGN

The CONTRACTOR shall furnish and install two project signs. One sign shall be in reasonable conformance to the one included in the PROJECT FORMS. The second sign shall reasonably conform to the size and dimensions shown on Figure 1.

5.6 SAFETY

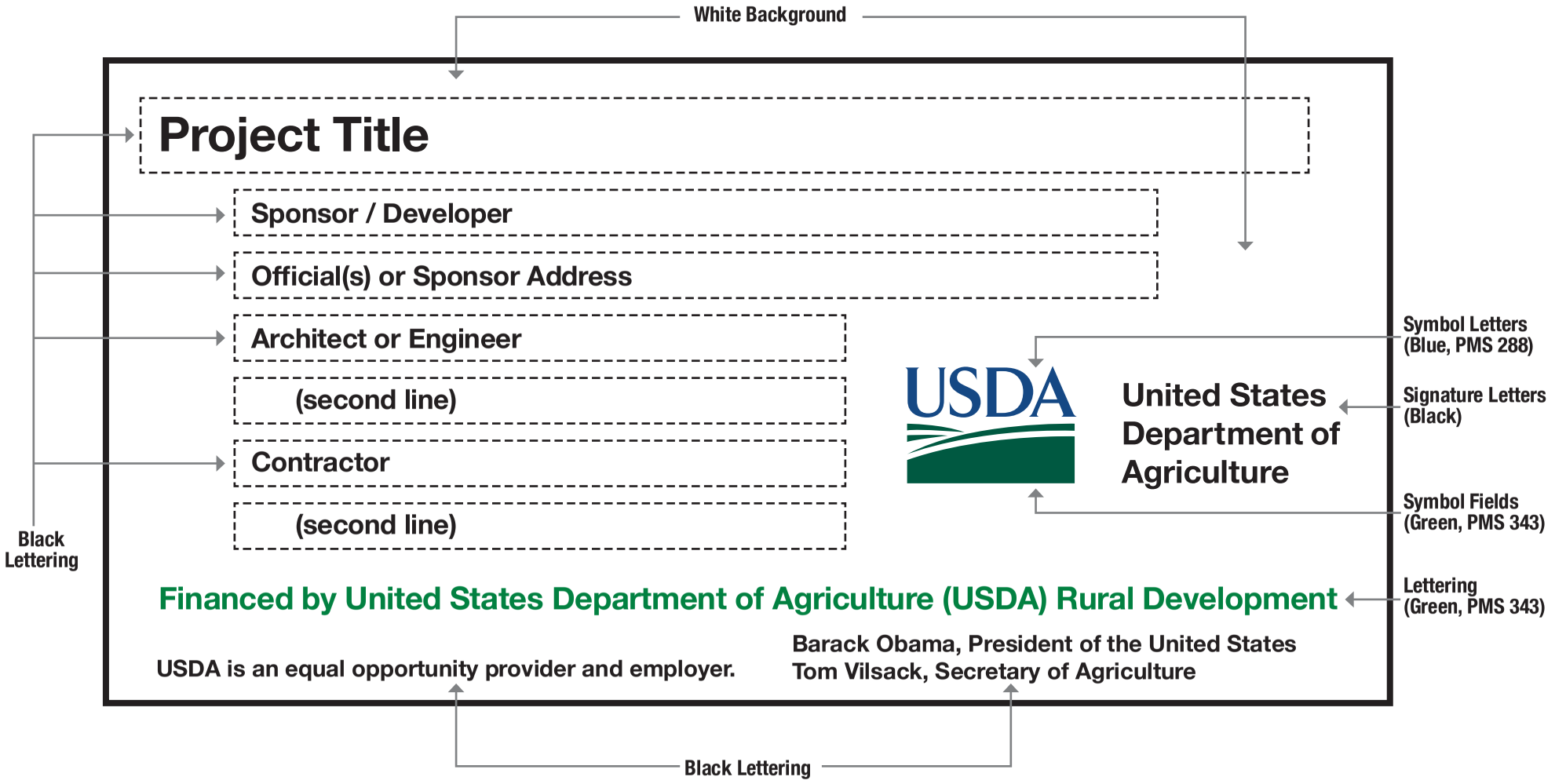
CONTRACTOR shall comply with all pertinent provisions of Kentucky Safety Standards of Division of Occupational Safety, Department of Labor, and Federal Occupational Safety and Health Construction Standards, that are in effect at time this Contract is entered into and during period in which Contract is to be performed.

5.7 MEASUREMENT AND PAYMENT

Provision of temporary facilities shall be considered a part of CONTRACTOR'S Lump Sum Bid for "Mobilization/DeMobilization" and shall not be measured for separate payment.

-- THE END --

TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT PROJECTS



SIGN DIMENSIONS: 1200 mm x 2400 mm x 19 mm (approx. 4' x 8' x ¾")
PLYWOOD PANEL (APA RATED A-B GRADE–EXTERIOR)

SECTION VI

TECHNICAL SPECIFICATIONS

MOBILIZATION/DEMOBILIZATION

6.1 SCOPE

This element of work shall consist of the mobilization of the CONTRACTOR'S forces and equipment necessary for performing the work required under the Contract.

It shall include the purchase of contract bonds (including KTC encroachment permit bond); transportation of personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other temporary facilities at the site; development of submittals and record drawings in accordance with Section III of these specifications; and other preparatory and incidental work.

This specification covers mobilization for work required by the Contract at the time of award. If additional mobilization costs are incurred during performance of the Contract as a result of changes or added items of adjustment in contract price, compensation for such costs will be included in the price adjustment for the items of work changed or added.

6.2 PAYMENT

THE CONTRACTOR'S LUMP SUM BID FOR MOBILIZATION/DEMOBILIZATION MAY NOT EXCEED THREE PERCENT (3%) OF THE TOTAL BASE BID FOR THIS CONTRACT. Payment of the total lump sum price for "Mobilization/ DeMobilization" will constitute full compensation for all labor, materials, equipment, and all other items necessary for and incidental to completion of the work. If the CONTRACTOR elects to demobilize and remobilize before completion of the work, no additional payment will be made.

Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

Fifty percent (50%) of the "Mobilization/Demobilization" price may be invoiced when the following conditions have been met:

1) the field office and sanitary facilities are in-place;

2) the CONTRACTOR has furnished the bond for the Kentucky Department of Highways Encroachment Permit in the name of the OWNER;

3) the CONTRACTOR's project schedules (construction, payment, and submittals) have been approved by the ENGINEER;

4) the CONTRACTOR has furnished a plan for disposal of waste materials;

5) the Project Sign has been erected; and

6) all project silt controls have been installed.

The remaining fifty percent of "Mobilization/DeMobilization may **not** be invoiced until the CONTRACTOR has submitted acceptable 'Record Drawings' (As-Built Plans and Shop Drawings) in accordance with the requirements of Section III of these specifications.

-- **THE END** --

SECTION VII

TECHNICAL SPECIFICATIONS

SILT CONTROL STRUCTURES

7.1 SCOPE

This work shall consist of furnishing all materials, equipment, labor, and incidentals necessary for the installation, maintenance, and removal of silt control facilities as directed by the ENGINEER.

7.2 GENERAL

The exact locations, configuration, and dimensions of the various types of silt control shall be directed by the ENGINEER at the time of construction. These structures shall be installed prior to any surface disturbance on the area for which they are necessary to control silt.

The CONTRACTOR shall schedule construction activities so that the amount of exposed soil is minimized. This is to be accomplished by disturbing only those areas which are to be worked immediately and by revegetating each area as soon as practical.

7.3 MATERIALS

Silt Control Hay Bales

7.3.1 Silt Control Bales shall consist of either straw or hay bales. All bales are to be firmly bound by twine, and are to be installed using wooden stakes or steel bars.

Silt Fence

7.3.2 Silt Fence filter fabric shall be specifically designed for this purpose by the manufacturer and shall meet or exceed the following specifications:

Bursting Strength	(ASTM D751)	150 psi
Grab Strength	(ASTM D1682)	100 psi
Permeability		0.02 to 0.03 cm/sec

Silt fence posts shall be either timber stakes (2" x 2" min) or pressed steel stakes set plumb and to sufficient depth to provide a sound anchor for the supporting wire fence and/or filter fabric.

Gabions

7.3.3 Wire: The wire incorporated in the lid and body of gabion units shall be constructed of galvanized steel. The mesh shall be constructed by double twisting the adjoining wire, i.e., both wires must be twisted in an interlocking, nonraveling fashion. All wire for corners, edges, selvedges, and binding in both types of units shall be heavily galvanized with a minimum zinc coating of 0.80 ounces per square foot of uncoated wire surface, as determined by tests conducted in accordance with ASTM A90. The tensile strength of the wire shall be at least 60,000 pounds per square inch, and the mesh must have sufficient elasticity to permit 10 percent elongation diameter of the individual wires. The following minimum wire diameters are required for non-PVC coated units only.

	--Minimum Diameters--
Type /Use of Wire	Gabion
Mesh wire	0.118
Selvedge/corner wire	0.150
Lacing/connecting wire	0.0866

7.3.4 Rock Fill: The baskets shall be filled with clean, hard, durable limestone from a source approved by the ENGINEER. The stone shall be well-graded, with sizes ranging from a minimum of 5 inches to a maximum of 8 inches for gabion baskets, as measured in the greatest dimension; and shall otherwise comply with the requirements of these Technical Specifications.

7.3.5 Anchors: Steel anchors shall be standard deformed type bars conforming to ASTM A-615. The bars shall be manufactured from new billet steel of American manufacture, and shall have a minimum yield strength of 60,000 psi (Grade 60).

7.4 FABRICATION OF GABIONS

7.4.1 General: The gabion units shall be fabricated in such a manner that the base, sides, ends, and lids can be assembled at the construction site into a rectangular unit of the specified sizes. The body of the units shall be of single unit construction, the base, ends, sides, and lids formed of a single woven mesh unit.

All perimeter edges of the mesh forming the unit shall be securely selvedged so that the joints formed by tying the selvedges have at least the same strength as the body of the mesh.

Lacing wire shall be supplied in sufficient quantity to permit all sides, ends, and diaphragms of the body to be securely fastened, as well as to fasten the top to all sides, ends, and diaphragms of the body.

Dimensions for height, length, and width are subject to a tolerance limit of +3% of the manufacturer's stated sizes.

7.4.2 Gabions: The gabions shall be constructed with a hexagonal weave having an opening of approximately 3 1/4 inches by 4 1/2 inches. When the gabion length exceeds its width, it shall be supplied with diaphragms to form individual cells of equal length and width. The gabion unit shall be furnished with the necessary diaphragms secured in proper position on the base in such a manner that no additional tying at this juncture will be necessary. The diaphragms shall be of the same material composition as the gabion.

7.4.3 Certification: Each shipment of gabions to a job site shall be accompanied by a certification from the manufacturer, which states that the material conforms to the requirements of this Specification. The certification shall be on the manufacturer's letterhead and shall be signed by an officer of that company.

7.5 INSTALLATION

7.5.1 Silt Control Bales: The general locations and typical configurations of the type of silt control is subject to adjustments based on individual site conditions. Installation is labor intensive in order to assure stable and durable usage; additional hand labor may be required to provide adequate footing for the bales.

7.5.2 Silt Fences: Silt fences shall be supported with vertical wood posts which are protected by means of a metal cap or other device to prevent damage when hammers are used to drive the posts into the ground.

7.5.3 Gabions: The foundation shall be accurately prepared to accept the gabions. The foundation shall be inspected and approved by the ENGINEER prior to placement of the units.

Empty units shall be assembled individually on a hard, flat surface -- generally at the installation site. Care must be exercised to assure that each basket is stretched or manipulated as necessary to achieve the proper rectangular shape. Sides, ends, and diaphragms must be erected (and laced) to ensure the correct orientation of all seams and creases. Once assembled,

empty units shall be set to the lines and grades directed by the ENGINEER.

All units shall be connected to the adjoining units, while empty, by lacing wire along the perimeters of their contact surfaces. Securing diaphragms, ends and sides, closure of units, and connecting adjoining units shall be accomplished by continuous stitching with alternating single and double loops at 4-inch intervals. All ends of lacing wire are to be securely fastened and not protruding.

Empty units are to be stretched, after being properly laced and connected to the adjoining unit(s), to obtain uniform alignment and to remove kinks. A standard fence stretcher, "come-along" or other means of tensioning the unit may be used. Adjacent rows of gabion units are to be placed such that the seams are offset.

The units shall be carefully filled with stone by hand and/or machine to maintain alignment; to avoid bulges, damage to coating, and/or separation of units; and to minimize voids. The maximum height from which stone may be dropped into gabion units shall not exceed 36 inches. In gabions over 2-foot high, the stone is to be placed in 12-inch lifts; adjusted by hand, if necessary, to form a reasonable smooth surface, and cross-ties (or bracing wires) installed. Cross-ties are to be looped through the mesh on opposing sides of the basket, and the wire tightened by twisting. The ENGINEER may require the CONTRACTOR to use hand labor to selectively place the layers of stone along exposed surfaces (i.e., top, front, and ends) to provide a uniform surface and an overall appearance suitable to the site-specific situation at each installation. After each unit has been filled, the lid shall be leveled as necessary and secured to the sides, ends, and diaphragms using the previously described lacing (or stitching) technique.

7.6 MAINTENANCE

During the course of the project, silt control structures shall be maintained in sound condition and accumulations of silt which may threaten their effectiveness shall be removed. Silt removed from silt control structures shall be spread in the general vicinity of the individual structures, except when such practices may be a detriment to the environment and/or the project.

Upon completion of the project, the ENGINEER may direct the CONTRACTOR to remove, clean, or replace silt control structures and revegetate such disturbances in accordance with the seeding section of these Technical Specifications.

7.7 MEASUREMENT AND PAYMENT

Silt control structures shall be considered incidental to water line and shall not be measured for separate payment.

-- THE END --

SECTION VIII

TECHNICAL SPECIFICATIONS

CONNECTIONS TO EXISTING WATER LINES

8.1 SCOPE

This work shall consist of furnishing and installing all necessary materials to connect new water mains to existing water lines.

8.2 SUBMITTALS

8.2.1 Submit five copies of documentation substantiating manufacturer's compliance with these specifications.

8.3 MATERIALS

8.3.1 Tapping Sleeves: The tapping sleeve shall be of full circle clamp type construction of the appropriate diameter and approved by the manufacturer for use with the existing pipe encountered. The tapping branch of the sleeve shall be mechanical joint. The CONTRACTOR shall verify that the rated pressure class of the tapping sleeve exceeds the working pressure of the water line. Valves used in tapping operations shall be as specified in the valve section of these specifications except that the seat rings shall be of large diameter to permit entry of the tapping machine cutters.

8.3.2 Bends and Fittings: Bends and fittings shall be ductile iron, mechanical joint conforming to the requirements of Section IX of these specifications.

8.4 INSTALLATION

Installation shall be made as directed in the Design Drawings or as indicated in the manufacturer's literature. The CONTRACTOR shall make every possible effort to minimize any interruption in water service for existing customers. The CONTRACTOR must satisfy the following conditions prior to proceeding with the connection:

a. The ENGINEER shall have accepted the new pipe line as in-place, suitably pressure tested, suitably disinfected, and ready for service.

b. All water outages must be approved by the OWNER. The CONTRACTOR shall have provided both the OWNER and the ENGINEER at least 72 hours advance written notice of the scheduled date for the water outage and connection. This notice should advise the OWNER to schedule personnel to terminate service in the affected pipe reach and to notify customers of the pending outage.

c. The CONTRACTOR shall have all necessary bends, fittings, glands, adapters, etc. on-site on the date notice of the impending connections is forwarded to the ENGINEER.

d. Connections to existing water lines may only be made on Monday, Tuesday, and Wednesday. No connections to existing water lines may be made on Thursday, Friday, Saturday, or Sunday.

All pipe bendings and fittings shall be restrained using a steel tiebolt joint restraint system (Star SuperStar system, or equal). The number of restraints employed per mechanical joint shall be based on the manufacturer’s load tables for the ambient system pressure. Installation shall be made as directed in the Design Drawings or as indicated in manufacturer's literature.

8.5 MEASUREMENT AND PAYMENT

8.5.1 Measurement: Connections to existing water lines shall be measured each.

8.5.2 Payment: "Connect to Existing Water Line" shall be paid for at the contract price "each" as set forth in the Bid Schedule. This payment shall constitute full compensation for all materials, labor, equipment and incidentals necessary for the completion of the work. Payment for the tapping valve will be made under the valve section of these specifications. There will be no separate payment for "hunt and search excavation", for restraint system, public notices, bends, fittings or other incidentals.

- THE END -

SECTION IX

TECHNICAL SPECIFICATIONS

WATER LINES AND FITTINGS

9.1 SCOPE

This work shall consist of furnishing, installing, testing, and disinfecting potable water line pipes of various diameters.

9.1.1. Quality Assurance/Submittals

9.1.1.1 Submit five copies of documentation to substantiate pipe material's compliance with these specifications.

9.1.1.2 Submit five copies of CONTRACTOR'S Bedding and Backfilling Plan. At a minimum the plan shall:

a. Identify/acknowledge the segments of pipe line to be backfilled using "open", "gravel", and "paved" criteria,

b. Include a representative Proctor Curve for the backfill material for all significant sections of pipe line to be backfilled using "paved" criteria (curve to be prepared and sealed by a geotechnical engineer registered in the State of Kentucky - curve not required if CONTRACTOR backfills entire trench with fine crushed stone),

c. Include quarry's material certification for all aggregates utilized for bedding, haunching, and initial protective backfill, and

d. Include name and qualifications of CONTRACTOR'S nuclear density technician (technician must be a full time employee of CONTRACTOR, spot checks by a sub-contracting testing firm are not acceptable).

9.1.1.3 Submit five copies of each pressure test performed within 48 hours of test completion. Documentation to include quantity of water used and pressure charts from recording pressure gage.

9.1.1.4 Submit five copies of documentation for each disinfection of each pipe reach within 7 days of collection of samples. Documentation to include form of chlorine applied, method of application, quantity of make-up water used, quantity of residual chlorine concentration one hour after dosing, residual chlorine concentration 24 hours after dosing, point of disposal of waters of chlorination, method of de-chlorination, quantity of flushing water supplied, and results of bacteriological examination of water samples.

9.2 MATERIALS

9.2.1 General: All pipe used for potable water service shall be as indicated in the plans.

9.2.2 Ductile Iron Pipe, Fittings, and Joints: Ductile iron pipe shall conform to the latest AWWA Specifications C151 (ANSI A21-51) with standard thickness as designated in AWWA C150. Thickness class shall be 350 unless noted otherwise on the plans by the ENGINEER.

The interior of the pipe shall be cement-mortar lined with bituminous seal coat in accordance with AWWA C104 (ANSI A21.4). Thickness of the lining shall be as set forth in Sec. 4-10-1 of the aforementioned specifications unless otherwise directed by the OWNER. The exterior of all pipe, unless otherwise specified, shall receive either a coal tar or asphalt base coating a minimum of one mil thick.

Where ductile iron pipe is to be installed in corrosive soil conditions, the pipe shall be protected by an eight mil thick polyethylene encasement meeting the requirements of ANSI A21.5. Such corrosive soils include but are not limited to salt marshes, saturated alkaline soils, cinder fills, areas of decaying vegetation, and waste dumps.

Bends and fittings shall be Mechanical Joint Compact Ductile Iron fittings, conforming to AWWA Specifications C153 for short body iron fittings. Fittings shall be tar-coated outside and shall receive the standard cement lining with bituminous seal coat on the inside as specified for the ductile iron pipe.

Joints shall be of the push-on (AWWA C111), mechanical joint (AWWA C111), restrained mechanical joint, or ball and socket type as called for in the Plans. Bells for push-on type

joints shall have an annular recess in the pipe socket to accommodate a single rubber gasket. Plain ends shall be suitably beveled to permit easy entry into the bell. The gasket is locked in place against displacement as the joint is assembled.

Mechanical joints shall be bolted and of the stuffing box type and shall consist of a bell with exterior flange and interior recess for the sealing gasket, a pipe or fitting plain end, a sealing gasket, a follower gland, tee-head bolts and hexagon nuts. A restrained mechanical joint is a mechanical joint with a ductile iron retainer gland equal to a Clow F-1058 retainer gland or the Megalug Series 1100 joint restraint.

Joints for all bends and fittings for buried service shall be restrained mechanical joint type only (AWWA C111). Flanged joint pipe shall be used in vaults, pits and above ground service installation. Flanged joint pipe may not be used for buried service.

9.2.3 Polyvinyl Chloride Pipe, Fittings and, Joints: PVC water pipe shall conform, at a minimum, to ASTM Specifications D-2241, and shall be pressure class 250. The pipe furnished under ASTM A-2241 shall have a standard dimension ratio not to exceed SDR 17, and shall be rated to a working pressure of at least 250 psi at 73.4^{o}F.

Fittings shall be cast iron Mechanical Joint Class 250 conforming to AWWA Specifications C110 for short body cast iron fittings. Fittings shall be tar-coated outside, and shall receive the standard cement lining with bituminous seal coal on the inside as specified for the ductile iron pipe.

Joints shall be of the push-on type conforming to ASTM D3139 and F477 requirements for elastometric-gasket joints. All jointing material and lubricants shall be non-toxic.

9.2.4 High Density Polyethylene Pipe and Fittings: HDPE shall be Blue Stripe Pipe. The Pipe shall be equal to Chevron Phillips Performance Pipe 4000 Series.

Pipe shall be manufactured from a PE 3408 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material shall meet the specifications of ASTM D3350-99 with a minimum cell classification of PE345464C. Pipe shall have a manufacturing standard of ASTM D3035 and be

manufactured by an ISO 9001 certified manufacturer. The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects. ASTM 2241 PVC shall not be used on this project.

Butt fusion fittings shall be in accordance with ASTM D3261 and shall be manufactured by injection molding, a combination of extrusion and machining, or fabricated from HDPE pipe conforming to this specification. All fittings shall be pressure rated to provide a working pressure rating no less than that of the pipe. Fabricated fittings shall be manufactured using a McElroy Datalogger to record fusion pressure and temperature. A graphic representation of the temperature and pressure data for all fusion joints made producing fittings shall be maintained as part of the quality control. The fitting shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects.

Electrofusion Fittings shall be PE3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99 and be the same base resin as the pipe. Electrofusion Fittings shall have a manufacturing standard of ASTM F1055.

Flanged and Mechanical Joint Adapters shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99 and be the same base resin as the pipe. Flanged and mechanical joint adapters shall have a manufacturing standard of ASTM D3216. All adapters shall be pressure rated to provide a working pressure rating no less than that of the pipe.

Mechanical restraint for HDPE may be provided by mechanical means separate from the mechanical joint gasket sealing gland. The restrainer shall provide wide, supportive contact around the full circumference of the pipe and be equal to the listed widths. Means of restraint shall be machined serrations on the inside surface of the restrainer equal to or greater than the listed serrations per inch and width. Loading of the restrainer shall be by a ductile iron follower that provides even circumferential loading over the entire restrainer. Design shall be such that restraint shall be increased with increases in line pressure.

Serrated restrainer shall be ductile iron ASTM A536-80 with a ductile iron follower; bolts and nuts shall be corrosive resistant, high strength alloy steel.

The restrainer shall have a pressure rating of, or equal to that of the pipe on which it is used. Restrainers shall be JCM Industries, Sur-Grip or pre-approved equal.

Nominal Size	Restraint Width	Serrations per inch
4″, 6″	1-1/2″	8
8″ 10 & 12″	1-3/4″	8

Pipe stiffeners shall be used in conjunction with restrainers. The pipe stiffeners shall be designed to support the interior wall of the HDPE. The stiffeners shall support the pipe's end and control the "necking down" reaction to the pressure applied during normal installation. The pipe stiffeners shall be formed of 304 or 316 stainless steel to the HDPE manufacturers published average inside diameter of the specific size and DR of the HDPE. Stiffeners shall be by JCM Industries or pre-approved equal.

9.2.5 Pipe Bedding: Pipe bedding stone shall be durable crushed limestone meeting the requirements of Section 805 of the Current Edition of the Kentucky Department of Highways publication "Standard Specifications for Road and Bridge Construction."

9.2.6 Geotextile Type III: Geotextiles shall be woven or non-woven geotextile fabrics meeting the material and strength requirements for Type III fabrics as set forth in Section 215 of the Current Edition of the Kentucky Department of Highways publication "Standard Specifications for Road and Bridge Construction."

9.3 INSTALLATION

9.3.1 Trench Excavation: Unless specifically directed otherwise by the ENGINEER, not more than 500 feet of trench shall be opened ahead of the pipe laying work of any crew and not more than 500 feet of open ditch shall be left behind the pipe laying work of any one crew.

All backfilled ditches shall be maintained in such a manner that they will offer no hazard to the passage of traffic.

The convenience of the traveling public and property owners abutting shall be taken into consideration. All public or private drives shall be taken into consideration and shall be promptly backfilled or bridged. Excavated materials shall be disposed of so as to cause the least interference.

Trenches in which pipes are to be laid shall be excavated in open cut to the depths shown on the approved plans. The minimum allowable trench width shall not be less than the outside diameter of the pipe plus eight inches. Where rock is encountered, it shall be removed to a minimum depth of six inches below the pipe bells.

Unless specifically authorized by the ENGINEER, trenches shall in no case be excavated or permitted to become wider than two feet six inches plus the nominal diameter of the pipe at the level of or below the top of the pipe. If the trench does become wider than two feet six inches at the level of or below the top of the pipe, special precautions may be necessary, such as providing compacted granular fill up to the top of the pipe or providing pipe with additional crushing strength as determined by the ENGINEER. This determination shall take into account the actual trench loads that may result and the strength of the pipe being used.

All excavated materials shall be placed a minimum of two feet back from the edge of the trench.

Where conditions exist that may be conducive to slides or cave-ins, proper and adequate sheeting, shoring and bracing shall be installed (See Section 9.3.1.2) to provide safe working conditions and to prevent damage of work.

Trenches shall be kept free of water during the laying of pipe and until the pipeline has been backfilled.

9.3.1.1 Obstructions: In cases where storm sewers, gas lines, water lines, telephone lines, and other utilities, or other underground structures are encountered, they shall not be displaced or molested unless necessary, in which case they shall be replaced in as good condition as found as quickly as possible.

The CONTRACTOR shall notify the utility companies 48 hours prior to excavation adjacent to their facilities.

9.3.1.2 Shoring, Sheeting and Bracing: Where unstable material is encountered or where the depth of excavation in earth exceeds six feet, the sides of the trench or excavation shall be supported by substantial sheeting, bracing and shoring, or the sides sloped to the angle of repose. Sloping the sides of the ditch to the angle of repose will not be permitted in streets, roads, narrow rights-of-way or other constructed areas unless otherwise specified. The design and installation of all sheetings, sheet piling, bracing and shoring shall be based on computations of pressure exerted by the materials to be retained under construction conditions. Adequate and proper shoring of all excavations shall be the entire responsibility of the CONTRACTOR; however, the ENGINEER may require the submission of shoring plans (accompanied by the supporting computations) for review prior to the CONTRACTOR undertaking any portion of the work.

Foundations adjacent to where the excavation is to be made below the depth of existing foundation, shall be supported by shoring, bracing or underpinning as long as the excavation shall remain open, or thereafter if required to insure the stability of the structure supported by the foundation, and the CONTRACTOR shall be held strictly responsible for any damage to said foundation.

Solid sheeting will be required for wet or unstable material. It shall consist of continuous vertical sheet piling of timber or steel with suitable walls and braces.

Care shall be taken to avoid excessive backfill loads on the completed pipelines, and the requirements that the width of the ditch at the level of the crown of the pipe be not more than two feet six inches plus the nominal diameters of the pipe shall, as set out in Section 9.3 hereinbefore, be strictly observed.

Trench sheeting shall not be removed until sufficient backfill has been placed to protect the pipe.

All sheeting, planking, timbering, bracing and bridging shall be placed, renewed and maintained as long as necessary.

9.3.1.3 Blasting: Blasting operations on this project are prohibited.

9.3.2 Pipe Bedding: In all cases the foundation for pipes shall be prepared so that the entire load of the backfill on top of the pipe will be carried on the barrel of the pipe and insofar as possible where bell and spigot pipe are involved so that none of the load will be carried on the bells.

Where undercutting and granular bedding are involved, the depth at the bottom of the bells of the pipe will be at least four inches above the bottom of the trench as excavated.

Supporting of pipe shall be as set out hereinbefore, and in no case shall the supporting of pipe on blocks be permitted. The Design Drawings present typical approved bedding methods.

9.3.2.1 Earth Foundation: All pipe shall be laid on a six inch bed of granular material to provide continuous support for the lower section of the pipe. Granular bedding shall be #9 crushed stone. Granular bedding shall be mechanically compacted prior to pipe placement.

9.3.2.2 Rock Foundation: If the trench bottom is in rock the excavation shall be undercut to a minimum depth of six inches below the bottom of the pipe. The pipe shall be laid on a bed of granular material to provide continuous support for the lower section of the pipe.

Granular bedding shall be #9 crushed stone. Granular bedding shall be mechanically compacted prior to pipe placement.

9.3.2.3 Special Bedding: In wet, yielding mucky locations where pipe is in danger of sinking below grade or floating out of line or grade, or where backfill materials are of such a fluid nature that such movements of the pipe might take place during the placing of the backfill, the ENGINEER may order “Special Pipe Bedding.” When the ENGINEER orders “Special Pipe Bedding” (in writing), the CONTRACTOR shall:

a. overexcavate the mucky subgrade to the depth directed,

b. install a Type III geotextile as illustrated in the detail drawings,

c. backfill the geotextile with bedding stone, and

d. overlap the geotextile envelope in accordance with the detail drawings.

It is to be expressly understood that “Special Pipe Bedding” may only be employed upon written order of the ENGINEER.

9.3.3 Laying Pipe: All pipe shall be laid with ends abutting and true to line and grade as shown on the plans. Supporting of pipe shall be as specified under "Pipe Bedding" hereinbefore and in no case will the supporting of pipes on blocks be permitted.

Fittings for the water mains shall be provided and placed as and where directed by the ENGINEER or shown on the plans. All open ends of pipes and of branches shall be sealed or plugged.

Before each piece of pipe is lowered into the trench, it shall be thoroughly inspected to insure its being clean. Any piece of pipe or fitting which is known to be defective shall not be laid or placed in the lines. Any defective pipe or fitting discovered after the pipe is laid shall be removed and replaced with a satisfactory pipe or fitting. In case a length of pipe is cut to fit in a line, it shall be so cut as

to leave a smooth end at right angles to the longitudinal axis of the pipe.

Granular bedding material as specified hereinbefore, shall be used to correct irregularities in the earth trench subgrade.

The interior of the pipe, as the work progresses, shall be clean. When laying of any pipe is stopped for any reason, the exposed end of such pipe shall be closed with a watertight plug fitted into the pipe bell, so as to exclude earth or other material.

No backfilling (except for securing pipe in place) over pipe will be allowed until the ENGINEER, or his representative has made an inspection of the joints, alignment and grade in the section laid, but such inspection shall not relieve the CONTRACTOR of further liability in case of defective joints, misalignment caused by backfilling and other such deficiencies that are noted later.

9.3.4 Jointing Pipe: The pipe joints described shall be installed in accordance with the manufacturer's recommendations.

9.3.5 Backfilling Pipeline Trenches: All backfilling shall be accomplished in accordance with the details of this section and the project plans. Any variances must be approved in writing by the ENGINEER.

Before final acceptance, the CONTRACTOR will be required to level off all trenches or to bring the trench up to the level of the surrounding terrain. The CONTRACTOR shall also remove from roadways, rights-of-way and/or private property all excess earth or other materials resulting from construction.

When the pipe trench crosses a street or roadway, the CONTRACTOR shall be responsible for maintaining the trench surface in a level condition at proper pavement grade at all times.

In all cases walking or working on the completed pipelines except as may be necessary in tamping or backfilling will not be permitted until the trench has been backfilled to a point one foot above the top of the pipe. The filling of the trench and the tamping of the backfill shall be carried on simultaneously on both sides of the pipe in such a manner that the completed pipeline will not be disturbed and injurious side pressures do not occur.

In all cases the pipe bedding and haunching shall be #9 crushed stone. The pipe bedding shall be mechanically tamped prior to placement of the pipe. The pipe bedding shall be thoroughly compacted taking care not to damage the pipe.

9.3.5.1 Method "A" Backfilling in Open Terrain: Backfilling of pipeline trenches in open terrain shall be accomplished in the following manner:

In all cases the lower portion of the trench, from the pipe bedding to the springline (centerline) of the pipe shall be backfilled with #9 crushed stone. This stone shall be carefully and thoroughly compacted.

The portion of the trench from the springline of the pipe to a point 6 inches above the pipe shall be backfilled in six inch lifts with #9 crushed stone. Each lift shall be hand tamped taking care not to damage the pipe.

The portion of the trench from a point 6 inches above the top of the pipe to the ground surface shall be backfilled in six (6) inch lifts with material which is free from ¾" or larger rock. Incorporation of rock having a volume exceeding one-half cubic foot is prohibited. The backfill shall be mechanically tamped in six inch lifts to 95 percent of standard Proctor Density (ASTM D-698).

9.3.5.2 Method "B" Backfilling Under Graveled Areas: Backfilling of pipeline trenches under existing and proposed graveled parking lots, driveways, etc. shall be accomplished in the following manner:

The pipe bedding and haunching shall be placed and compacted as described in Paragraph 9.3.5.1. The lower portion of the trench from the pipe springline to a

point 6 inches above the pipe, shall be backfilled and lightly tamped with #9 crushed stone as described in Paragraph 9.3.5.1. The portion of the trench from a point 6 inches above the pipe to a point 6 inches below the ground surface shall then be backfilled with available material in six (6) inch lifts. Each lift shall be compacted to 100 percent of Standard Proctor Density (ASTM D-698) at a moisture content within two percent of optimum. The final 6 inches of the trench backfill shall be thoroughly compacted dense graded aggregate.

9.3.5.3 Method "C" Backfilling Under Paved Areas: Backfilling of pipeline trenches under existing and proposed sidewalks, streets, proposed streets, and driveways shall be accomplished in the following manner:

The pipe bedding and haunching shall be placed and compacted as described in Paragraph 9.3.5.1. The lower portion of the trench from the pipe springline to a point 6 inches above the pipe, shall be backfilled and lightly tamped with #9 crushed stone as described in Paragraph 9.3.5.1. The portion of the trench from a point 6 inches above the pipe to a point 6 inches below the ground surface shall then be backfilled with #9 crushed stone in six inch (6) lifts. Each lift shall be compacted to 100 percent of Standard Proctor Density (ASTM D-698) at a moisture content within two percent of optimum.

The upper portion of the trench from a point six inches below the bottom of the existing or proposed pavement or concrete sub-slab may be backfilled with a base course of dense graded aggregate which shall be maintained flush with the pavement surface for at least 30 days prior to placement of the final surface. The excess dense graded aggregate shall be removed concurrently with the placement of the final pavement surface.

9.3.5.4 Settlement of Trenches: Wherever pipe lines are in, or across, driveways and streets, the CONTRACTOR shall be responsible for any trench settlement which occurs within these rights-of-way within one year from the time of final acceptance of the work. If paving shall require replacement because of trench settlement

within this time, it shall be replaced by the CONTRACTOR. Repair of settlement damage shall meet the approval of the appropriate governing body.

9.3.5.5 Pavement Replacement: Pavement replacement shall be performed in accordance with the applicable section of these Technical Specifications.

9.4 TESTING OF LINES

On all projects involving the installation of water pipeline, the finished work shall comply with the provisions listed below, or similar requirements which will ensure equal or better results:

a) All water mains shall be given a hydrostatic test. Test pressure shall be a minimum of 150 psi, 50 psi above the standard operating pressure (to be supplied by the ENGINEER), or 67% of the pipe rating, whichever is greater. Test pressure shall not vary by more than ±10 psi for the duration of the test. Leakage shall not be greater than that determined by the following formula: 1 gallon per inch of pipe diameter per mile per 24 hours.

b) All test waters shall be potable water obtained from the Mountain Water District distribution system. Withdrawals of water from the District system must be both authorized and metered. The District will bill the CONTRACTOR for all waters used in accordance with its current leak adjustment rate.

c) Where practicable, pipelines shall be tested between line valves or plugs in lengths of not more one mile. The OWNER may allow testing in longer sections on a case by case basis.

d) Duration of test shall be no less than twenty-four hours.

e) Where leaks are evident on the surface where joints are covered, the joints shall be recaulked, repoured, bolts retightened or relaid, and leakage minimized regardless of total leakage as shown by test.

f) All pipe fittings and other materials found to be defective under test shall be removed, repaired or replaced at the discretion of the OWNER.

g) Lines which fail to meet test requirements shall be repaired and retested as necessary until test requirements are complied with.

h) The CONTRACTOR shall furnish a recording pressure gauge for the pressure and leakage test. The device shall be a Dickson PR300 Pressure Logger with all appropriate cables and software. The device and software shall become the property of the OWNER at conclusion of test.

9.5 DISINFECTION OF WATER LINES

The new potable water lines shall not be placed in service, either temporarily or permanently, until they have been thoroughly disinfected by the Continuous Feed Method as set forth in the latest edition of AWWA Specification C-651. Specification C-651 is reproduced in the Reference Section of this Contract Document in its entirety.

The following requirements apply to the disinfection activity:

a) All flushing and test waters shall be potable water obtained from the Mountain Water District system. Withdrawals of water from the District system must be both authorized and metered. Mountain Water District will bill the CONTRACTOR for all waters used in accordance with its current leak adjustment rate.

b) The Tablet and Slug Method of disinfection may not be used.

c) The water lines shall be flushed prior to disinfection. Flush waters may be discharged to the nearest storm drain or surface water way in a controlled manner which will not result in environmental damage.

d) The CONTRACTOR shall have a chlorine test kit in his possession for purposes of monitoring the disinfection dose.

e) The free chlorine residual immediately after chlorine dosing shall be 50 mg/l. The free chlorine residual 24 hours after chlorine dosing shall not be less than 25 mg/l.

f) The heavily chlorinated waters of disinfection shall be neutralized with an approved neutralizing agent prior to discharge.

g) After disinfection and flushing, and before the water main is placed in service, bacteriological samples shall be collected and analyzed in accordance with the requirements of the Kentucky Department for Natural Resources and Environmental Protection. The new line may not be connected to the system until the samples have been approved.

9.6 MEASUREMENT AND PAYMENT

9.6.1 Measurement: Water pipe in place, complete, successfully tested and disinfected shall be measured in linear feet along the pipe centerline. Pipe fittings (tees, reducers, etc.) will be measured "each". The length of fittings measured for payment shall be deducted from the lineal feet of pipe laid to avoid "double" payment. Pipe bends will not be measured for separate payment. Bends shall be measured in linear feet. No allowance shall be made for laps or drops at connections.

“Special Pipe Bedding” - ordered in writing by the ENGINEER - in place and accepted shall be measured by the ton of bedding stone actually placed (to the top of the geotextile envelope). There will be no separate measurement of Geotextile Type III or other incidentals.

9.6.2 Payment: Payment for pipe will be made at the contract unit price per linear foot for each pipe class as set forth in the Bid Schedule. Payment for fittings will be made at the contract price "each" as set forth in the Bid Schedule. Such payment for pipe and fittings shall constitute full compensation for all materials, labor, equipment, and incidentals necessary for the completion of the work. Retainer glands for restrained mechanical joint pipe shall be considered incidental to the unit price for mechanical joint pipe.

Payment for “Special Pipe Bedding” - ordered in writing by the ENGINEER - shall be made at the contract unit price per ton for the actual quantity measured. There shall be no separate payment for Geotextile Type III or other incidentals.

-- THE END --

SECTION X

TECHNICAL SPECIFICATIONS

GATE VALVES

10.1 SCOPE

This work shall consist of furnishing and installing gate valves of various diameters for potable water lines.

10.1.A QUALITY ASSURANCE/SUBMITTALS

10.1.A.1 Submit five copies of manufacturer's certification of compliance with applicable AWWA specifications. Certificate to be signed by corporate officer having authority to legally bind the company.

10.2 MATERIALS

10.2.1 Gate Valves: All gate valves shall be iron body, nonrising stem, fully bronze mounted (Mueller or approved equal). VALVES INSTALLED IN PVC WATER LINES SHALL BE RATED FOR WORKING WATER PRESSURES OF 250 PSI. VALVES INSTALLED IN DUCTILE IRON WATER LINES SHALL BE RATED FOR WORKING WATER PRESSURES OF 250 PSI. Valves shall be of standard manufacture and of the highest quality both as to materials and workmanship.

Gate valves larger than 12" shall be of resilient, parallel seat construction conforming to AWWA C500-80. Gate valves 12" and smaller shall be of resilient seat construction conforming to AWWA C509-80.

All gate valves for "below ground" service shall be furnished with mechanical joint end connections. Gate valves for "above ground" (or pit) installations shall be furnished with flanged end connections.

All gate valves shall have the name or monogram of the manufacturer, the year the valve casting was made, the size of the valve, and the working water pressure cast on the body of the valve.

Each gate valve for "below ground" service shall be installed in a vertical position with a valve box, as shown in the Design Drawings. Gate valves set with boxes shall be provided with a two inch square operating nut and shall be

opened by turning to the left (counterclockwise). Each gate valve for "above ground" (or pit) installations shall be furnished with a hand wheel operator.

10.2.2 Valve Box and Cover: The valve box and cover shall be of cast iron construction (Clow F-2450, or equal) and shall be engraved with the word “water”.

10.2.3 Valve Marker: Each valve assembly shall be delineated by a valve marker as detailed in the Drawings. The marker shall consist of a 3” yellow PE pipe embedded vertically adjacent to the valve. The marker shall include a weatherproof label identifying the valve owner and provide an emergency phone number for the owner.

10.2.4 Plug: If the gate valve is to be installed at the end of a line the CONTRACTOR shall provide one full joint of ductile iron pipe with cap beyond the valve.

10.3 INSTALLATION

Trenching, bedding, and backfilling requirements for gate valves shall conform to the installation requirements for water lines and fittings. The base of the valve shall be anchored in concrete as shown in the Design Drawings. The valve box shall be installed vertically, centered over the stem of the operating nut. The valve box base shall be placed at least two inches above the flanged joint of the valve cover. The top of the operating nut should be no higher than the hub or upper part of the valve box base where it connects to the center section.

10.4 MEASUREMENT AND PAYMENT

10.4.1 Measurement: Gate valves for buried service in-place, tested, and accepted shall be measured each. Valves installed in vaults, pits, and pumping stations shall be considered incidental to the complete price for the vault, pit or pumping station and shall not be measured for separate payment.

10.4.2 Payment: Gate valves measured for payment shall be paid for at the contract price "each" as set forth in the Bid Schedule. Payment as specified shall be considered as full compensation for all labor, materials, equipment, and incidentals necessary to perform the work as required. The valve box and cover shall be considered incidental to the installation and shall not be measured for separate payment.

-- THE END --

SECTION XI

TECHNICAL SPECIFICATIONS

SKID MOUNTED WATER STORAGE TANK

11.1 SCOPE

This work shall consist of furnishing all labor and materials necessary for proper installation of skid mounted, potable water storage tank. This includes:

1) Site excavation, backfill, and spoil disposal.

2) Valve vault, supply line (vault to tank), and overflow line

3) Access road improvement and regrading.

4) Concrete foundation slab for tank support.

5) Tank installation complete with valve pit and accessories.

6) Tank test fill and disinfection.

7) 120 Volt AC power to valve vault.

8) Regrading, seeding and site cleanup.

11.2 SUBMITTALS

11.2.1 Submit six (6) complete sets of construction drawings and specifications for all work not shown in complete detail on the bidding drawings including detailed drawings of the foundation (skids). The drawings shall show the thickness of the plate and other data in connection with the work.

11.2.2 Submit five (5) copies of the manufacturer's guarantee. Manufacturer shall guarantee the structure against defective materials, including coatings, for a period of one year from the date of completion. If any materials prove to be defective within this time, they shall be replaced or repaired by the manufacturer.

11.2.3 Submit five (5) copies of CONTRACTOR'S guarantee. CONTRACTOR shall guarantee against defective workmanship for a period of one year from the date of completion. Any faulty workmanship found within one (1) year shall be repaired by the CONTRACTOR.

11.2.4 Submit five (5) copies of the documentation of test fill and disinfection. Documentation to include leaks repaired, quantity of test waters applied, chlorine concentrations achieved, method of dechlorination, point of disposal of waters of chlorination, and results of bacteriological examination of water samples.

11.2.5 Submit five (5) copies of proposed interior and exterior painting plan, complete with material safety data sheets, and documentation that paint systems meet the requirements of AWWA D-102, NSF 61, and the Kentucky Division of Water.

11.3 MATERIALS

11.3.1 Storage Tank Quality: The storage tank shall be shop fabricated in strict conformance with the current requirements of the AWWA "Standard Specifications for Steel Tanks, Stand Pipes, Reservoirs and Elevated Tanks for Water Storage" latest revision and shipped to the project as a complete unit ready for installation. All joints shall be welded. **The tank shall have a storage volume of 20,000 Gallons.**

11.3.2 Storage Tank Protective Coatings: The interior and exterior of the tank shall be painted in accordance with AWWA Standard D102 - Standard for Painting and Repainting Steel Tanks, Standpipes, Reservoirs, and Elevated Tanks for Water Storage - latest revision (Systems OCS-5-S and ICS-2-W). All paint that is used in contact with finished water must be approved by AWWA, NSF 61, and the Kentucky Department of Natural Resources and Environmental Protection, Division of Water. CONTRACTOR shall submit proposed paint systems for approval in accordance with the submittals requirements of this specification.

11.3.3 Accessories: The water tank shall be provided with the following accessories:

1) Openings: Provide two 24″ diameter manway openings in the top of each tank. One opening shall have a 24″ bolted sheet metal manhole lid. The other opening shall be equipped with a spring loaded, hinged cover for quick inspection of the tank interior.

2) Overflow: A steel overflow pipe shall be provided as shown on the Drawings. The overflow pipe shall be provided with a weir or funnel at the elevation of the high water line. The overflow shall extend down the outside of the tank and into the valve pit as detailed in the Drawings. The overflow discharge shall be supplied with a flap gate to restrict entry of rodents.

3) Outside Tank Access: Provide steel ladder rings on 15″ centers to allow maintenance personnel to access the spring loaded access hatch as detailed in the Drawings.

4) Vent: An aluminum roof vent capable of relieving dangerous air pressures created by water entering or leaving the tank shall be provided. The overflow pipe shall <u>not</u> be considered as a tank vent. The vent shall be designed so as to prevent the ingress of birds, insects, and animals.

5) Level indicator: A full travel, float type level indicator shall be provided.

6) Valve Pit: The valve pit shall include:

   a) Pre-Cast concrete manhole of the size and type as indicated on the drawings,

   b) Flat slab manhole top with 3′x3′ aluminum access hatch (Bilco Type K4, or equal),

   c) AWWA C509 flanged joint gate valves of the size indicated in the Drawings with hand wheel operators,

   d) Flanged joint, ductile iron tee of the size indicated in the Drawings,

   e) Flanged joint ductile iron pipe to plumb the pit and push joint ductile iron pipe for the oveflow drain,

   f) Flap gate for overflow discharge.

7) Frost Box: The CONTRACTOR shall provide a frost box to contain the exposed inlet/outlet pipe. The frost box shall extend six inches below the ground. It will be constructed of 1/4 inch steel with a hinged lid and painted the same as the tank. The frost box shall be made so that no leakage of water within the frost box will occur. The frost box will be completely filled with blown insulation.

8) Foundation Slab: Provide reinforced concrete foundation slab as detailed in the Drawings.

11.4 TESTING - HYDROSTATIC

11.4.1 Following tank installation and backfilling, the tank shall be cleaned. The tank shall then be tested for liquid tightness by filling to its overflow elevation.

11.4.2 Any leaks disclosed by this test shall be corrected by the CONTRACTOR in accordance with the manufacturer's recommendations at no additional cost to the OWNER.

11.4.3 All test and flushing waters shall be potable water obtained from the OWNER’S water distribution system. Withdrawals of water from the OWNER’S system must be both authorized and metered. The OWNER will bill the CONTRACTOR for all waters used in accordance with its current rate schedule.

11.4.4 Water from the hydrostatic test fill may be subsequently employed for disinfection. If the water from the test fill is not used in this manner, it shall be purged from the system in an approved manner.

11.5 DISINFECTION

11.5.1 The tank structure shall be disinfected at the time of testing by chlorination in accordance with AWWA specification C652-86, or latest revision, "Disinfection of Water Storage Facilities."

11.5.2 Disinfection shall not take place until the tank has been cleaned.

11.5.3 Acceptable forms of Chlorine for disinfection shall be:

a) Liquid chlorine (section 3.1 AWWA C652-86).

b) Sodium hypochlorite (section 3.2 AWWA C625-86).

11.5.4 Unacceptable methods of chlorination for disinfection are:

a) Calcium hypochlorite (HTH brand chlorine.)

11.5.5 Acceptable methods of chlorination per AWWA C652-86:

a) Section 4.1.1.

b) Section 4.1.2.1

c) Section 4.3

11.5.6 Unacceptable methods of chlorination per AWWA C625-86:

a) Section 4.2.

11.5.7 Waters used for chlorination shall be purged from the system. A neutralizing agent shall be added to the water to prevent chlorination by-products from harming aquatic life.

11.5.8 The tank shall be thoroughly flushed after disinfection.

11.5.9 Following disinfection of the tank, bacteriological samples shall be collected and analyzed in accordance with the requirements of the Kentucky Department for Natural Resources and Environmental Protection. The tank may not be placed into service until samples have been approved.

11.6 ELECTRICAL/TELEMETRY

11.6.1 General: The CONTRACTOR shall be responsible for obtaining and paying for a power supply to the tank site in the OWNER's name. The installation of all electrical components shall conform to the latest edition of the National Electric Code. All permits necessary for the complete installation of the electrical system shall be obtained by the CONTRACTOR from authorities governing such work. The costs of all permits shall be borne by the CONTRACTOR.

11.6.2 Service Pole and Telemetry Pole: Fully treated, southern yellow pine.

11.6.3 Service Entrance: Cast Aluminum - 1 phase.

11.6.4 Weatherproof Switch and Meter Socket: Band to pole with rust proof channels.

11.6.5 Wiring: All wiring shall be properly sized for the load as set forth in the latest edition of the National Electrical Code. Provide a minimum of two duplex, grounding type, three (3) wire, polarized convenience receptacles in the valve pit.

11.6.6 Conduit: All conduit shall meet the requirements of the latest edition of the National Electrical Code.

11.7 MEASUREMENT AND PAYMENT

11.7.1 Measurement: There shall be no measurement for payment as the work shall be Lump Sum.

11.7.2 Payment: Payment shall be made at the Lump Sum Contract Price for "Hurricane Creek Water Storage Tank, Complete, In-place" as set forth in the Bid Schedule. Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to complete the work.

-- THE END --

SECTION XII

TECHNICAL SPECIFICATIONS

BORE AND/OR ENCASE

12.1 SCOPE

This work shall consist of furnishing and installing steel encasement pipes for potable water and sanitary sewer lines by boring, jacking, or open cut methods.

12.1.A Quality Assurance/Submittals

12.1.A.1 Submit five copies of certified mill test report on steel encasement pipe.

12.2 GENERAL

The CONTRACTOR shall comply with the previously obtained permits and approvals for completion of this work. Copies of the permits and/or approvals are reproduced in the Permits section of this document.

12.3 MATERIALS

12.3.1 Encasement Pipe: Encasement pipe shall be steel, plain end, uncoated, unwrapped, have continuously welded joints and have a yield point strength of 35,000 psi and conform to AWWA Specifications C200. The minimum wall thickness of the pipe shall be as indicated in the Detail Drawings.

In general, the inside diameter of the encasement pipe shall be 4 inches greater than the largest outside diameter of the carrier pipe. The Detail Drawings provide a table from which required encasement pipe diameters may be derived.

Field welding of encasement pipe shall be performed by a certified welder in accordance with the requirements of AWWA Specification C206-82.

12.3.2 Grout: Grout used to seal the annulus between the excavation and the encasement pipe shall be a 1 to 2 Portland Cement Grout meeting the requirements of Section 601 of the publication Standard Specifications for Road and Bridge Construction (1983 Edition, Kentucky Transportation Cabinet, Department of Highways.

12.3.3 Casing Skids: Casing skids shall be equal to stainless steel casing spacers manufactured by Cascade

Waterworks Mfg. Co. of Yorkville, Illinois. Spacer shall consist of a bolt on T-304 stainless steel shell with runners of ultra high molecular weight polymer.

12.4 INSTALLATION - BORE AND JACK

No distinction shall be made between boring through earth or boring through rock. The CONTRACTOR shall conduct his own investigation of subsurface conditions and shall base his bid on his own findings.

The jacking will be allowed in one direction only. The installation procedure must provide for the placement of the encasement pipe concurrently with the removal of the soil.

Grouting between the excavation and the encasement pipe will be required if ordered by the ENGINEER or if, for any reason, the excavation exceeds one (1) inch larger than the outside diameter of the liner. Grout holes shall be provided in the tunnel lining with a spacing not to exceed four and one-half (4.5) feet measured longitudinally. The location of the holes shall be varied around the periphery of the encasement pipe to suit field conditions which will permit the proper grouting sequence to insure complete filling of void spaces outside the encasement pipe. The CONTRACTOR shall fill all the void space outside the encasement pipe with Portland Cement grout. The machine used for grouting shall permit the application of a pressure up to seventy-five (75) pounds per square inch in excess of any external water pressure. A gage shall be provided which will accurately indicate working pressure and this gage shall be carefully watched during grouting operations. The pressure shall at no time be allowed to exceed that considered safe or which would distort the encasement pipe. Grout pipes shall be one and one-half (1½) inches inside diameter.

The carrier pipe shall be installed after the encasement pipe is in place. The installation of the carrier pipe shall be in accordance with the manufacturer's specifications using casing skids as shown in the Detail Sheets of the Design Drawings. After the carrier pipe has been installed, inspected, and tested as specified, both ends of the encasement pipe shall be closed with a removable, water-tight "boot" in a manner acceptable to the OWNER.

12.5 INSTALLATION - OPEN CUT

Where the encasement pipe is placed in open cut, the encasement pipe trenching, bedding, laying, and backfilling shall conform to the requirements of the applicable sections of these Specifications. The carrier pipe shall be installed

after the encasement pipe is in place. The installation of the carrier pipe shall be in accordance with the manufacturer's specification using casing skids as shown in the Detail Sheets of the Design Drawings. After the carrier pipe has been installed, inspected, and tested as specified, both ends of the cover pipe shall be closed with a removable, watertight "boot" in a manner acceptable to the OWNER.

12.6 MEASUREMENT AND PAYMENT

12.6.1 Measurement: "Bore and Encase for 'X' inch Water Line" of the applicable diameter will be measured by the linear foot of steel encasement pipe furnished, installed, inspected and accepted. "Open Cut Encase for ‘X’ inch Water Line" of the applicable diameter will be measured by the linear foot of steel encasement pipe furnished, installed, inspected and accepted.

12.6.2 Payment: Payment for "Bore and Encase for 'X' inch Water Line" of the applicable diameter will be made at the contract unit price per linear foot as set forth in the Bid Schedule for the number of feet of encasement pipe measured. Payment for "Open Cut Encase for ‘X’ inch Water Line" of the applicable diameter will be made at the contract unit price per linear foot as set forth in the Bid Schedule for the number of feet of encasement pipe measured. Such payment shall constitute full compensation for all materials, labor, equipment and incidentals necessary for the completion of the work. Carrier pipe installed in the encasement pipe will be measured and paid for as indicated in the applicable sections of these Specifications.

- THE END -

SECTION XIII

TECHNICAL SPECIFICATIONS

WATER SERVICE CONNECTIONS

13.1 SCOPE

This specification governs the provision of water service connections.

13.2 GENERAL

The CONTRACTOR shall provide .75″ through 1″ water service connections in accordance with this specification. Water service connections for meters in excess of 1″ shall be provided by OWNER.

13.3 QUALITY ASSURANCE/SUBMITTALS

13.3.1 Submit five copies of itemized summary of source of manufacture of each item in water service connection. Provide manufacturer's certification of compliance with specification for each item.

13.4 MATERIALS

13.4.1 Service Pipe: Water service pipe shall be 0.75″ or 1″ seamless copper water tubing Type "K" complying with ASTM-B88 AWWA C800.

13.4.2 Tapping Saddle: Tapping saddles shall be brass band type saddles equal to Ford S70 series for PVC pipe and the Ford 202 series for ductile iron pipe. The saddles shall be threaded to receive the appropriate diameter AWWA corporation stop.

13.4.3 Corporation Stop: Corporation stops shall conform to AWWA C800-84. Corporation stops shall have AWWA CC tapered thread inlets and pack joint or compression outlets for use with copper service line. The stop connections shall be appropriate for the service pipe diameter employed.

13.4.4 Meter Setter: The meter coppersetter shall be equal to the Ford 70 series V172-7 with 7 inch rise. If a pressure reducing valve is specified, a tandem coppersetter equal to a Ford TV172-7 shall be employed.

13.4.5 Meter Box and Lid: The meter box for coppersetters shall be 18″ internal diameter High Density Polyethylene Pipe. The meter box and lid shall be equal to the Russco LC218 FB-18. The meter box for tandem coppersetters shall be 18″ internal diameter High Density Polyethylene Pipe. The meter box and lid shall be equal to the Russco LC218 FB-18.

13.4.6 Meter: The meters shall be Badger series Meters $^{5}/_{8}$″ x ¾″ or 1″ cold water type as indicated.

13.4.7. Pressure Regulating Valve: The pressure reducing valve shall be ¾″ or 1″ regulator equal to Mueller's H-9310 (No. 2).

13.4.8. Curb Stop: Curb stops shall be equal to a Mueller 110, compression coupling both ends. Curb stop shall be suitable for diameter of service pipe employed. Curb stop shall be furnished complete with curb box and cover.

13.4.9. Recordall Transmitter Register: Each meter shall be furnished with an ORION Integral or Remote for Recordall Transmitter Register as described in the

13.5 INSTALLATION

13.5.1. Taps: **AT THE REQUEST OF THE MOUNTAIN WATER DISTRICT, THERE SHALL BE NO DRY TAPS.** The taps shall be made in accordance with the manufacturer's directions. Service line shall be protected by 6″ of fine sand or gravel as indicated in the detail drawings.

13.5.2. Meter Setting: The meter settings shall be accomplished in a neat and workmanlike manner. The lid of the meter box shall be set:

1) flush with paved surfaces.
2) 0.5″ above grade in improved lawns, and
3) 2″ above grade in unimproved areas.

13.5.3. Meter Setting with Double Cut Regulation. Double

Cut Regulation Meter Sets shall be required on all services where line pressures exceed 220 psi. One pressure reducing valve shall be installed in a separate box (straight setter) in front of the box containing the meter. The meter and one regulator shall be installed in a second box (tandem setter) immediately beyond the first box. Boxes for the PRV's and the meter shall be constructed no further than three feet apart.

13.5.4 THE CONTRACTOR MAY NOT INSTALL THE METER! A dummy meter shall be used to verify that each setting is installed in the proper working manner. The CONTACTOR shall deliver the meters (suitably boxed) to the OWNER's public works director.

13.6 MEASUREMENT AND PAYMENT

13.6.1 Measurement: A water service shall be measured as three quantities. They are: (1) 'X' inch copper water service line, (2) 'X' inch meter set with/without PRV and (3)'X' inch meter set with double cut regulation. 'X' inch copper water service line in-place, tested and accepted shall be measured in linear feet along the pipe centerline. 'X' inch meter sets shall be measured each. A 'meter set' is defined to include the tapping saddle, corporation stop, meter box, coppersetter, meter, pressure reducing valve(s) (if applicable), meter box(s), lid and curb stop of the 'X' inch diameter.

13.6.2. Payment: Payment for "'X' inch Copper Water Service Line" will be made at the Contract Unit Price set forth in the Bid Schedule for the actual quantity measured. Payment for "'X' Inch Meter Sets", "'X' Inch Meter Set with PRV" or 'X' inch meter sets with double cut regulation will be made at the Contract Unit Price "Each" as set forth in the Bid Schedule. Payment for those items shall be considered full compensation for all materials, labor, equipment and incidentals necessary for the completion of the work.

- THE END -

SECTION XIV

TECHNICAL SPECIFICATIONS

FIRE HYDRANTS AND BLOW-OFF VALVES

14.1 SCOPE

Provide all labor, tools, materials, and equipment to furnish and install the fire hydrants and blow-off valves as shown on the plans.

14.2 QUALITY ASSURANCE/SUBMITTALS

14.2.1 All hydrants shall be Mueller Company Model A-423. No other hydrant may be used without consent of the OWNER.

14.3 MATERIALS

14.3.1 Hydrant: Hydrants shall conform in all respects to the latest edition of AWWA C502. Hydrant barrel shall have a safety breakage feature above the ground line. All hydrants shall have 6 inch mechanical joint shoe connections, two 2-1/2 inch discharge nozzles and one 4-1/2 inch pumper nozzle with caps fitted with cap chains. Connection threads and operating nuts shall conform to National Standard specifications as adopted by National Board of Fire Underwriters.

Operating nut shall be 1-1/2 inches, and shall open left (counterclockwise). Main valve shall have 5-1/4 inch full opening and be of the compression type opening against water pressure so that the valve remains closed should the barrel be broken off.

Hydrant shall be fully bronze mounted. Main valve shall have a threaded bronze seat ring assembly of such design that it is easily removable by unscrewing from a threaded bronze drain ring. Bronze drain ring shall have multiple ports providing positive automatic drainage as the main valve is opened or closed.

Drainage waterways shall be completely bronze to prevent rust or corrosion.

Operating stem shall be equipped with anti-friction thrust bearing to reduce operating torque and assure easy opening. Stop shall be provided to limit stem travel. Stem threads shall be enclosed in a permanently sealed lubricant reservoir protected from weather and waterway with O-ring seals.

Hydrants shall be designed for 250 psi working pressure and shop tested to 300 psi pressure with main valve both opened and closed. Under test the valve shall not leak, the automatic drains shall function and there shall be no leakage into the bonnet.

14.3.2 Blow-off: The blow off hydrant shall be equal to an Mueller or Kennedy post hydrant. A 4″ resilient wedge gate valve conforming to the requirements of the valving section of these Specifications shall be installed upstream of each post hydrant as illustrated in the detail drawings.

14.4 INSTALLATION

14.4.1 Hydrants shall have the interior cleaned of all foreign matter prior to installation.

14.4.2 Hydrants shall be set plumb with not less than three cubic feet of crushed stone and backed with at least one cubic foot of Class "C" concrete or equivalent. Additionally, ¾″ diameter stainless bridle rod collars or megalug restrained joint gland shall be employed for restraint. The hydrant drain holes shall be thoroughly inspected prior to placement of the crushed stone.

14.4.3 A gate valve must be installed in the service lateral of all hydrants and blowoffs.

14.4.4 The hydrants shall be installed with the pumper nozzle facing the main route of access. The vertical distance from the pumper nozzle to the ground shall be 18 inches.

14.4.5 All hydrant parts shall be inspected in open and closed position to verify working conditions prior to backfilling.

14.4.6 Hydrants and blow-offs shall not be set in the flow line of a ditch or drainage way.

14.4.7 Blow-offs shall be installed in accordance with the details presented in the Design Drawings.

14.5 MEASUREMENT AND PAYMENT

14.5.1 Measurement: "Fire Hydrants" in-place, tested and accepted shall be measured "each". "Blow-Offs" in place, tested and accepted shall be measured "each".

14.5.2 Payment: Payment for "Fire Hydrants" and "Blow-Offs" shall be made at the contract unit price "each" as set forth in the Bid Schedule for the actual number of hydrants and blow-offs measured. **The valve provided with a "Fire Hydrant" shall be measured and paid for under the valving section of these specifications. The valve provided with a "Blow-Off" shall be measured and paid for under the valving section of these specifications.** Payment as specified shall be considered full compensation for all labor, materials, equipment, and incidentals necessary to perform the work as required. Crushed stone backfill and concrete thrust backing are considered incidental to the hydrant installation.

- THE END -

SECTION XV

TECHNICAL SPECIFICATIONS

CENTRAL UNIT BASED
SUPERVISORY CONTROL AND DATA ACQUISITION SYSTEM

15.1 DESCRIPTION & SCOPE

A. Description of Work:
The work to be accomplished under this section shall consist of furnishing and installing the equipment necessary for a complete control system to function as specified herein and as shown on the drawings. The manufacturer shall furnish an RTU that is compatible with the existing all solid-state Radio Telemetry Supervisory Control and Data Acquisition (SCADA) system. The RTU shall be supplied, and warranted by the telemetry system manufacture to insure a single source of responsibility.

B. Scope of Project:
This section covers a Radio Telemetry SCADA and Instrumentation System to include the following:

(1) Water Tower Remote Units

Skid Tank (Lat 37 27′ 46″ Long 82 21′ 47″ Base 1770 Ft MSL)

(2) Booster Pump Remote Units,

Pump Station (Lat 37 27′ 56″ Long 82 21′ 28″ Base 1442 Ft MSL)

The existing Central Control unit software shall be modified to interrogate the remote units to send control data and receive level, pressure, flow, status and alarm data as required from the new remote units. If the Central Unit is ‘maxed out’ the new RTUs shall be set to operate in Peer to Peer mode.

C. Contractor shall supply:
1) Shop drawings prior to installation.
2) All the paper work and fees necessary to obtain a license for the Owner.
3) All equipment required by schedule.
4) All wiring and ancillary equipment, hardware, software, and appurtenances needed for proper installation and operation of equipment.
5) All labor for installation and start-up of the system including taps for pressure sensors.
6) Provide spare parts and maintenance tools as described below.

7) Operations and maintenance manuals as detailed below.

15.2 QUALITY ASSURANCE

A. Manufacturer's Qualifications:
The system specified herein shall be the product of a manufacturer who can demonstrate at least five (5) years of satisfactory experience in furnishing and installing comparable radio telemetry and control systems for water and wastewater installations.

The manufacturer of this system shall maintain a 24 hour available inventory of all replaceable modules to assure the Owner of prompt maintenance service and a single source of responsibility. The manufacture shall certify availability to the Engineer in writing at the time of bidder pre-qualification.

B. Codes & Standards:

The control system and its components shall comply will all applicable requirements of the following:

Electrical Code Compliance (National & Local)
NEMA Compliance
IEEE Compliance
EIA Compliance
FCC Compliance

C. Approved Manufactures
1) Micro-Comm, Inc. Overland Park, Kansas
2) Approved Equal

15.3 SUBMITTALS

Complete electrical and dimensional drawings shall be provided for approval by the consulting Engineer prior to equipment fabrication. If a Bid for Alternate equipment is submitted, all submittals must accompany the alternate bid. The submittal data shall include the following:

A. Product Data
Provide product data sheets for each instrument and component supplied in the system. The data sheets shall show the component name as used on reference drawings, manufacturer's model number or other product designator, input and output characteristics, scale or ranges selected, electrical or mechanical requirements, and materials compatibility.

B. Shop Drawings
Provide drawings for each panel showing the wiring diagrams for control circuits and interconnections of all components.

The drawings shall include wiring diagrams for all remote devices connected to the panel.

C. Panel Layout Drawings
A front panel and sub-panel layout shall be included as part of each control panel drawing. Components shall be clearly labeled on the drawing.

D. Installation Drawings
Typical installation drawings applicable to each site in the system shall be included.

E. Warranty
Provide manufacturer’s warranty.

15.4 DELIVERY, STORAGE, & HANDLING

All items shall be stored in a dry sheltered place, not exposed to the outside elements, until ready for installation. All items shall be handled with appropriate care to avoid damage during transport and installation.

15.5 SEQUENCING & SCHEDULING

A. Coordinate
Coordinate with other electrical and mechanical work including wires/cables, raceways, electrical boxes and fittings, controls supplied by others, and existing controls, to properly interface installation of the control system with other work.

B. Sequence
Sequence installation and start-up work with other trades to minimize downtime and to minimize the possibility of damage and soiling during the remainder of the construction period.

15.6 MAINTENANCE

A. Maintenance Data
Submit maintenance manuals and "as built" drawings on all items supplied with the system. The manuals and drawings are to be bound into one or more books as needed. In addition to "as built" engineering submittal data and drawings, the manual shall include:

a) Trouble Shooting Guides.
b) Maintenance and calibration data for all adjustable items.
c) Specific tuning instructions for Radio Transceivers as per FCC frequency restrictions.

15.7 JOB CONDITIONS

All instruments and equipment shall be designed to operate under the environmental conditions where they are to perform their service. The equipment shall be designed to handle lightning and transient voltages as normal environmental hazards. The environmental conditions are as follows:

A. Outdoor
The equipment will be exposed to direct sunlight, dust, rain, snow, ambient temperatures from -20 to +120 degrees F, relative humidity of 10 to 100 percent, and other natural outdoor conditions. The installations shall be hardened to with stand normal vandalism.

B. Indoor
The equipment will be capable of operating in ambient temperatures of +32 to +130 degrees F and relative humidity of 20 to 100 percent.

PRODUCTS

15.8 DISTRIBUTED CONTROL OPERATION

A. General
The control system uses "smart" Remote Terminal Units (RTUs) with micro-processors at all locations to provide a "distributed intelligence" type control system. The software programs used at all locations is stored in non-volatile "burned-in" type ROM memories. The system is "self-initializing" and does not require operator intervention after power interruptions, transients from lightning storms, or component changes. All microprocessors in the system shall include "watch-dog" circuitry to insure automatic restarts of the system. Each remote site in the system shall be assigned a unique digital address. **The new RTU will be compatible with the existing RTUs in supporting these functions.**

The system shall support both Programmed "Single Board Computer" RTUs (SBC-RTUs) and "Programmable Logic Controller" RTUs (PLC-RTUs). The SBC-RTUs shall use Single Board RTU type construction and be provided with software that is identical for all sites in the system. The SBC-RTUs shall "automatically" configure themselves, without operator intervention, from the site wiring and from commands down-loaded from the Central Unit. The SBC-RTUs shall be interchangeable without regard to station type (i.e. Water Towers, Booster Pump Stations, Sewage Lift Stations, etc.).

B. Central Unit & Programmable Remote Unit Control Software

The Central Unit control algorithms shall have the ability to integrate both hardware and software operator inputs at the Central Unit along hardware inputs at the remote sites in to a cohesive automatic operating control system. As data is received, changes, or lost (i.e. a loss of signal from a RTU or CTU), the software shall automatically adjust the controlling algorithm to the new situation. At a minimum the control logic shall provide the following features:

1) Fully automatic control of up to 8 pumps (at up to 8 separate locations) from up to 8 different levels. The Central Unit shall be able to automatically shift control from one level to another or one pump to another in the event of RTU failure.

2) Monitor input conditions at RTUs to determine the validity of the controlling input signals (i.e. altitude valves must be open before controlling pumps from that level) and to determine the correctness of generating pump call commands (i.e. monitoring high discharge and low suction cut-off controls at booster pump stations) before starting pumps.

3) Automatic pump staging operation of pump stations with pumps of different capacities. Integrating different combinations of pumps in to the operation of each stage and automatically choosing alternate combinations of pumps for each stage should a pump fail or otherwise not be available (i.e. HOA is off). Automatic alternation of like sized pumps and automatic transfer to the next available pumping stage in the event of pump failure.

4) Automatic pump staging operation of pumps of different sizes from local discharge pressure and discharge flow inputs in a closed-loop system. The pumps shall be up-staged on decreasing discharge pressure and down-staged on decreasing flow rate. The control shall include PID (Proportional Integral Derivative) loop control of variable speed pumps mixed with constant speed pumps for the various stages required.

5) Automatic transfer of pump call to the next available pump on pump failure with out waiting for the controlling level to degrade to the next start level.

6) Automatic alternation of pumps after each cycle of operation.

7) Integrated Pump HAND/OFF/AUTO (HOA) selector switch operation with CALL/RUN/FAIL indication for each pump. The Central Unit shall be capable of integrating software and hardware HOA selections at the Central Unit with the existing control panel HOA selector switches at remote

units (if specifically listed in the RTU input/output requirements).

8) Providing peak power load management by comparing current tank levels and tank fill rates for all tanks in the system to operator inputs for peak period inhibit/restore times and generating pump start commands to top-off tank levels prior to the beginning of the peak demand period.

9) Automatic staging of in-line pumping station operation including: starting of downstream pump stations on confirmation of upstream pumps running, implementing alternate course of action during pump failure, and monitoring station pressures to enable pump calls.

10) Provide "complementary" type control logic for pump stations with existing local pressure/flow control systems. The telemetry system shall monitor the pump run operation of the existing controls and utilize running pumps as its automatic lead and lag pump call functions.

15.9 VHF (154 - 173 MHz) RADIO CHANNEL DATA OPERATION

A. General

The control system shall be specifically designed for radio channel data communications. In addition to radio communications, the system shall be capable of simultaneous operation over hardwire, dedicated phone line, and radio communication channels. All of the equipment required for operation of the system shall be directly owned by the Owner and included as part of this contract. **Systems using third party repeaters, trunking masters, or leased equipment will not be allowed**.

B. Communications

The control system shall operate in a half-duplex mode over a single VHF (154.47125MHz) radio frequency using "point-to-point" communication techniques. The control system shall monitor for a clear channel to allow co-channel operation with other radio systems.

All data transmitted shall be in digital word form using FSK (frequency shift keying) transmission and the standard ASCII data format. All transmissions shall include the address of the sender and the receiver, and be subject to check sum, parity, and framing error checks, to insure a minimum data reliability of 1 error in 1,000,000,000 bits. Any transmissions that fail the data checking will be retried until correct. No data correction methods will be allowed. A plug-in RS232C data port shall be provided at all locations in the system to allow the use of a standard data terminal to view data exchanges between the remote sites and the central and to provide a means of extensive de-bugging.

The system shall provide a complete data update at least once every (3) minutes with some functions updating faster as required by local system conditions.

C. Radio Channel Operation

The system shall be capable of operation on the narrow band splinter frequencies of the Private Land Mobile Radio Services within the FCC's (Federal Communications Commission) rules and regulations regarding these telemetry channels. The manufacture shall guarantee operation under co-channel conditions with other radio systems without interference to this system. FSK tones, data baud rates, transmitter output power, transmitter deviation, antenna gain, and antenna height shall be chosen to comply with the FCC requirements Part 90 - Subpart B (90.17) for Local Government or Part 90 - Subpart D (90.63) for Power Radio Service. The radio system shall specifically meet the operating requirement that the sum of the highest FSK frequency and the amount of deviation shall not exceed 1.7 kHz for 3F2 emission (or 2.8 kHz for 6F2 emission) as detailed by the FCC for the specific frequency assigned.

The overall system design and operation shall provide a 20db pad over the minimum required for operation on all primary data paths (primary paths may include data relays) to insure a 98% reliability of communications. Remote sites required to support peer-to-peer back-up control shall provide 30db of pad to insure operation under all weather conditions and provide a 99.9% communications reliability. The 20db and 30db pad requirements and FCC rule compliance shall be demonstrated (at no additional cost) to the Engineer at his request. The testing shall be accomplished using an IFR AM/FM 1000S communications analyzer or equal equipment.

D. Remote Unit Data-Relay Operation

To facilitate system layout and future expansion all RTUs shall (under the direction of the CTU or CTUs) be able to relay data and commands to and from other RTUs as required to establish the desired path. Should the assigned relay site for a distant remote be inoperative, the Central Unit shall automatically choose another remote site to access the distant remote. All RTUs shall be able to include automatic antenna switching as part of their relaying operations.

E. FCC Licensing

The system supplier shall be responsible for collecting all information, generating all paper work, and paying all fees required to obtain a license on behalf of the Owner.

15.10 RADIO TRANSCEIVERS & ACCESSORIES (154 or 173 MHz)

A. General

The Radio Transceivers shall be standard business band units that can be tuned, aligned, and repaired at any two-way radio shop. The units shall be tuned to FCC specifications for the specific frequency assigned. The radio equipment shall be FCC type approved and the system capable of operation on the narrow band splinter frequencies (154 or 173 MHz) in the Power Radio or Local Government service.

B. Radio Transceiver

The system manufacturer shall supply a 25 watt VHF radio transceiver to insure a high level of quality and reliability. The radios shall be adjustable to 4 watts output power as may be required for the FCC requirement of 20 Watts ERP (Effective Radiated Power). Radio transceivers without a 25 watt maximum output power will not be accepted. All connections to the radio shall be plug-in. The VHF radio transceiver shall have the following specifications:

Transmitter:

RF output power	25 watts (adjustable to 10)
Spurious & Harmonics	–57db below carrier
Frequency Stability	±0.0005% (–30 to +60 degrees C)
Emission (VHF)	6F2 (with 1.2khz deviation max) or 3F2 (with 1.2khz deviation max)
FM hum and noise	–60db

Receiver:

Sensitivity	.30 microvolt (.5uV @ 20db quieting)
Selectivity	–75 db
Spurious image rejection	–75 db
Intermodulation	–75 db
Frequency stability	±0.0005% (-30 to +60 degrees C)
Receive bandwidth	*6kHz (or 3kHz) as req'd to match the transmitter

* The receiver bandwidth shall be reduced to match the transmit bandwidth of the transmitter and provide a minimum adjacent channel rejection of -50db. The radio transceivers shall be Motorola Radius M100 or approved equal.

C. Antenna & Coaxial Cable

The radio antennas at all locations shall be a five element Yagi, constructed with 3/8" diameter aluminum rod elements and 1-1/16" diameter aluminum pipe element support. The antenna shall have 8.0db forward gain with a 21.0db front-to-back ratio. The antenna shall be wind rated for a 100

MPH wind speed. The antennas shall be MC-Yagi, Decibel Products DB292, or Celwave PD390.

Antennas shall be cabled to the transmitter enclosure connection by a RG/8U low loss (less than 1.8db per 100ft @ 100MHz) coaxial cable with cellular polyethylene (foam) dielectric. The coaxial cable shall have a braided copper shield coverage of 97% and a long life weather resistant polyvinyl chloride jacket. The antenna coaxial cable connection shall be a constant impedance weatherproof Type N connector, taped with a weather resistant electrical tape, and coated with Scotchcote to insure a lifetime water tight assembly. The coaxial cable shall be Beldon 8214 type RG-8/U.

D. Antenna Lightning Protection

Coaxial connection to remote and central unit enclosures shall be by means of a coaxial type bulk-head lightning arrester. The units shall be rated at 1 kilowatt with a minimum 500V and maximum 2000V breakdown voltage. Coaxial lightning arrestors shall be a PD-593 or PolyPhaser IS-B50LU-CO.

E. Antenna Mounting Systems

Antennas shall be mounted at a height above ground that is consistent with FCC rules and regulations and provides adequate signal fade margin as described earlier. Antennas must be a minimum of 15 feet above ground and mounted as follows:

1) **Below Ground Structures:** The antenna shall be mounted on a 20' high Class II power pole with a 10' long X 1-1/2" galvanized mast secured to the side of the pole and extending 5' above the pole. A 3/4" rigid conduit with a weatherhead shall be provided from the below ground vault to a location 10 feet up the power pole for the coaxial cable.

15.11 INSTRUMENTATION & ACCESSORIES

A. General

All items in the control system (electronic cards, power supplies, radios, time delays, relays, etc.) shall be of plug- in construction or make use of a plug-in wiring harness and be interchangeable without recalibration. To insure field repair-ability by non-technical personnel, equipment that must be un-wired for replacement will not be accepted.

The following instrumentation devices and techniques shall be used as specifically called for in the RTU and CTU input/output sections of this specification.

B. Power Supplies

The common 12 VDC power supply shall provide ±0.1% line and load regulation with ±10% input variations. It shall have a temperature coefficient of ±0.02% per degree C. The input/output isolation shall be 100 Mohms DC (900Volts AC) with output transient response of 50 microseconds maximum. The power supply shall be sized to operate the remote unit equipment with or without the back-up battery in place. Power Supplies shall be an ELPAC Series OLV, Sola SLS, or approved equal.

C. Battery Back-up Operation

The remote units indicated shall be supplied with battery back-up operation. The rechargeable batteries shall be the sealed solid gelled electrolyte type, designed for float or standby service. Unless noted otherwise in the RTU descriptions, batteries shall be sized to maintain 24 hour service at water tower remotes and 3 hour service at booster pump stations and other remotes. The remote shall include a plug-in charging module to recharge the battery when power is resumed, maintain the charge between outages, and provide a low voltage cut-off to protect the battery from excessive discharge during prolonged outages. Pressure, level, and flow rate inputs shall continue to function on battery back-up. Batteries shall be Globe Gel/Cell or approved equal.

D. Single Phase 120VAC Power Line Lightning Protection

Every site in the system shall be equipped with a combination AC line filter and lightning arrester. The unit shall provide 3 stage lighting/transient protection including inductive and capacitive filtering, MOV overvoltage protection, and three terminal gas discharge tube lightning protection. The unit shall be a TT-LPU, TrippLite ISOBAR IB-2-0, or StediWatt Model 1120-3.

E. SBC-RTU, PLC-RTU, and Central Terminal Unit Inputs & Outputs

The RTU and CTU inputs and outputs shall share a common type of architecture and interface as follows:

1) **Discrete Inputs** - The RTU and CTU discrete inputs shall be 110 VAC with optically isolated couplers providing 1500 volts of isolation.

2) **Discrete Outputs** - The RTU and CTU discrete outputs shall be 400 VAC rated triac outputs providing 1500 volts of isolation. The output connections to other panels shall be further isolated by wiring to Time Delays or Relays as specified below.

3) **Analog Inputs** - Analog inputs shall be capable of processing a wide range of instrumentation signals (i.e.

4-20mA, 1-5VDC, 0-100mV, etc) from the various sensors required. The inputs shall have suppressed zero capability sufficient to suppress 85% of the incoming signal and transmit the remaining signal with a combined ±0.5% accuracy and resolution. The inputs must be implemented so that zero and span adjustments are a part of the remote site enclosure allowing the RTU & CTU cards, signal converters, and transducers to be changed without recalibration.

4) **Analog Outputs** - The analog outputs shall be 0-5 volt DC with ±0.3% accuracy. Analog signals that are provided to other control panels shall be optically isolated from the RTU/CTU signal with a universal wide-ranging signal converter. The isolated signal converter shall be capable of providing voltage or current signals with ±0.25% accuracy and 1000V of isolation. The signal isolator shall be Action Instruments model AP4380 or equal.

5) **Pulse Rate & Accumulator Inputs** - The pulse rate inputs shall be high speed TTL inputs capable of up to 50Hz signals. The flow rate signals shall be a dry switch closure (or open collector transistor) output from a propeller meter transmitter head. The pulse outputs shall be received directly by the remote unit and stored in a RAM memory register for report back to the Central Unit. The register shall be sized large enough to prohibit undetected register roll-over or over-flow. The remote unit shall provide the proper excitation voltage required by the propeller meter head transmitter.

6) The flow pulse data sent from remote units shall be analyzed and totalized by the central unit in 1000 gallon units. Pulse data shall be stored in non-volatile memory so that it is not lost during power outages or resets. Pulse rate and total data shall be displayed at the Central Unit in standard engineering units (i.e. gpm, cfm, gallons, cubic feet, etc).

7) Flow rate signals that originate as analog (i.e. 4-20mA) signals shall be converted to pulse frequency signals for presentation to the RTU and CTU inputs.

8) **Digital Displays** - Digital displays of data shall be by means of a 1/2" high LCD or LED readout. Data shall be displayed in standard engineering units (i.e. psi, gpm, ft, etc).

9) Digital Setpoint Assemblies - Digital Setpoints shall be by 1/8" high thumbwheel setpoint assemblies providing settings of 000 through 999 directly in standard engineering units (i.e. psi, gpm, ft, etc). The

thumbwheel assemblies shall have gold plated circuit board contacts and gold flashed wipers.

F. Time Delays & Relays

All control outputs from the telemetry system shall be via adjustable 0-5 minute electronic time delays with ±0.2% repeat accuracy. The time delays shall have both "timing" and "timed" LED indicators. All time delays and relays used in the system shall be of plug-in construction with rail or board mounted sockets and have pilot duty contacts rated for 3 amps resistive @ 240VAC (or 0.8 amps inductive) loads. Time delays and relays shall be IDEC series RTY-D, RY4S or approved equal.

G. Level Transducers (and submersible pressure transducers)

Level transducers shall be of the all solid-state two-wire transmitter type and be powered from the common 12VDC power supply with a 4-20mA output. The transducers shall have a combined error (linearity and hysteresis) of ±0.2% full scale and be temperature compensated to ±2.5% per 100 degrees Fahrenheit. RFI (Radio Frequency Interference) effects shall be less than 1.0% from 27 to 500MHz for 5 V/m field intensity 1 meter from the device. Zero and span adjustments shall be standardized so that transducers are interchangeable without recalibration.

The transducers shall be mounted at the sensing point and wired to the enclosure. Transducers for above ground mounting shall have a 1/2" conduit connection for cable entry. Transducers at water towers (and other outside locations) shall be mounted below grade. Below grade mounted units shall have cabling connections and suitable for a minimum of 100' submerged duty. All exposed parts shall be series 304 stainless steel and wetted parts shall be 316 stainless steel. The units shall be capable of two times full scale over pressure with out damage or change of calibration. Pressure/Level transducers shall be Foxboro Model 1125 or approved equal.

H. System Pressure Transducers (panel mounted)

Suction & Discharge pressure transducers shall be combination Bourdon tube and Linear Differential Transformer (LVDT) type solid-state transmitters. The units be powered from the common 12VDC power supply and provide a 1-5VDC output. The transducers shall have a combined error (linearity and hysteresis) of ±1.0% full scale. The units shall be constructed of a beryllium-copper Bourdon tube with a 1/4" NPT brass pressure inlet. Zero and span adjustments shall be standardized so that transducers are interchangeable without recalibration.

The transducers shall be mounted on brass bulkhead connections that extend through the bottom of the enclosure.

No tubing connections shall be allowed inside the RTU enclosure.

I. Station Flooding Float Switches

The station flooding sensors shall be wall bracket mounted float switches capable of sensing less that 1-1/2" of water on the floor. The units shall be constructed with a Buna N float, 304 stainless steel float guide, a clear plastic protective shield, and a sealed neoprene cable connection. The float switch shall be Omega LV-70 or approved equal.

15.12 CENTRAL UNIT EQUIPMENT

The existing Central Unit shall be programmed to receive the inputs from the new RTUs.

15.13 SINGLE BOARD COMPUTER REMOTE TERMINAL UNITS (SBC-RTUs)

A. General

The Single Board Computer Remote Terminal Units (SBC-RTU) shall use micro-processors at all locations. The software programs used at all locations shall be stored in non-volatile "burned-in" type ROM memories. The system shall be "self-initializing" and include "watch-dog" circuitry. The software used shall be identical for all sites and interchangeable without regard to station type (i.e. Water Towers, Booster Pump Stations, Sewage Lift Stations, etc.). The SBC-RTUs shall support Mode 1, 2, and 3 type distributed control operations as described previously.

B. Construction

The remote units shall contain three major components: a Radio Transceiver, a SBC-RTU, and a single (common) 12VDC power supply. Each SBC-RTU shall be capable of controlling a local LCD display, reading BCD thumbwheel assemblies, inputting and outputting analog data (with zero and span adjustments to be part of the remote unit enclosure), and have 110 VAC inputs and outputs with 1000 volts of optical isolation. The SBC-RTU module shall have a plastic shroud to provide complete protection of all components and internal adjustments during handling. All connections to the SBC-RTU module shall be via gold flashed plug-in connectors. The remote station addressing shall be accomplished via this end mounted connector and not be affected by changing of SBC-RTU modules. LCD displays and thumbwheel assemblies shall be identical to those used at the Central Unit.

The SBC-RTU shall plug to a "passive" wiring interface board. The wiring interface board shall have plug-in connectors for the radio and power supply. All external input and output wiring connections to the RTU panel shall

be by barrier type terminal strips. LED lamps shall indicated the status of all discrete inputs and outputs.

C. Enclosures

The remote unit enclosures for indoor mounting shall meet all the requirements for NEMA Type 4X enclosures. The enclosures shall be made of molded fiberglass polyester with a seamless foam-in-place gasket around the door. Subpanels shall be 14 gauge steel for 16x14 enclosures and 12 gauge for larger enclosures. Enclosures larger than 16x14 shall have a rolled lip on 3 sides of the door for added strength. Nema 4X enclosures shall be Hoffman Bulletin A-48 or A-17.

Remote site installations requiring equipment to be mounted outside shall have the remote unit NEMA 4X enclosure described above mounted inside a vented (and screened), lockable NEMA 3R enclosure. The double enclosure shall be required to control vandalism, provide complete weather protection, reduce the heating effects of the sun, and prolong the life of the equipment. The NEMA 3R enclosure shall be constructed of 14 gauge galvanized steel, with a drip shield top and seem free sides front and back. The NEMA 3R enclosures shall be finished with a dark gray enamel inside and out. The NEMA 3R enclosure shall be Hoffman Bulletin A-3.

15.13.1 WATER TOWER REMOTE UNITS

A. General

The Water Tower Remote Units shall use a Single Board Computer RTU. The water Tower remotes shall transmit a suppressed head type signal representing only the upper usable range of the storage tank. The remote shall include a battery for 24 hour back-up operation as specified.

B. Construction

The tower transceiver shall be mounted in a NEMA 4X enclosure as specified. The tower remote equipment shall include an internal power switch, bulk-head coaxial cable lightning arrester, and a power line lightning arrester as specified earlier.

The level transducer shall be a two-wire transmitter suitable for below ground mounting as specified earlier.

C. Installation

The level transducer shall be installed at a point below freezing in the altitude vault (if available) or in a 24" fiber meter vault with a freeze proof lid. The pressure connection shall be equipped with a corporation stop providing a 1/4" NPT female connection for the transducer. The contractor shall run 3/4" rigid conduit from the vault

or meter box to the transceiver enclosure for the transducer signal cable.

The antenna shall be as specified and mounted on the water tower at a height consistent with FCC requirements. The contractor shall provide a 3/4" rigid conduit with a weatherhead from the transmitter to the ladder on the tower.

D. Water Tower Remote Unit Input/Output Requirements
The Water Tower remotes shall send and receive the following information:

DISCRETE INPUTS:	DISCRETE OUTPUTS:
DI- 1) Power Failure	DO- 1) Telemetry Control Active

ANALOG INPUTS:
AI- 1) Water Level 0-12.0ft (upper usable range)

15.13.2 BOOSTER PUMP STATION REMOTE UNITS

A. General
The Booster Pump Station Remote Units shall use a Single Board Computer RTU module. The booster pump station remotes shall receive Pump stop/start commands from the Central Unit (or its respective tower in back-up control). When the pump station is not being controlled by another site or its respective water tower, it shall turn off its "Telemetry Control" output causing pump control to revert to any existing back-up controls. The remote shall include a battery for 3 hour back-up operation as specified above.

B. Construction
Telemetry Control and Pump Command outputs to other panels shall be dry isolated contacts on plug-in 0-3 minute delays as specified. Indicating lamps shall display the status of these outputs on the front of the enclosure.

Local pressure inputs shall be by two-wire transducers as specified with the transducer located at the sensing point. Flow rate and totalizing shall be as specified above.

The booster pump station equipment shall be housed in a NEMA 12 enclosure. The booster station equipment shall include an internal power switch, bulk-head coaxial cable lightning arrester, and a power line lightning arrester as specified earlier.

C. Installation
The pressure sensors shall be mounted at the sensing point with 1/2" conduit run to the remote unit enclosure.

The antenna shall be mounted on a 10' long X 1-1/2" diameter mast secured to the side of the structure for an above

ground pump stations or on a 20' power pole with 3/4" rigid conduit and a weatherhead run to the station for a below ground pump stations as previously specified.

D. Booster Pump Station Remote Unit Input/Output Requirements

The Booster Pump Station remotes shall send and receive the following data:

DISCRETE INPUTS:

DI- 1) Pump #1 RUNNING
2) Pump #2 RUNNING
3) Power Failure
4) Phase Failure
5) Station Flooding
6) Low Suction Cut-off

ANALOG INPUTS:

AI- 1) Future Use
2) Future Use

PULSE INPUT:

PI- 1) Flow Rate 0-100gpm (Future)

DISCRETE OUTPUTS:

DO- 1) Pump #1 CALL
2) Pump #2 CALL
3) Central Control
4) Telemetry Control Active

EXECUTION

15.14 EXAMINATION

The control system shall be completely tested prior to shipment. The entire control system shall be "Burned In" at the factory for a period of at least 20 days. The component equipment shall be computer tested and temperature cycled at zero degrees and at fifty degrees centigrade.

15.15 FCC LICENSING

The system manufacturer/supplier shall be responsible for collecting all information, generating all paper work, and paying all fees required to obtain a license on behalf of the Owner.

If the system supplier can demonstrate to the satisfaction of the Engineer that no VHF (154-173 MHz) frequency can be obtained, he may apply for a UHF (450-470 MHz) frequency for operation under Part 90.267 for 12.5 kHz offset channels or Part 90.261 for secondary basis channels. The system will still be required to operate with point-to-point operation within the FCC rules and regulations and provide the same rf path margins as detailed the specifications.

The UHF radios must meet or exceed the requirements set forth in these specifications for VHF radios, except that

the radio output power may be 10 watts adjustable to 2 watts to meet FCC requirements. Antennas shall be constructed as previously specified and provide 10db of gain. No changes to the contract amount will be made for a change to UHF operation.

15.16 START-UP

The manufacturer shall supply "Factory" personnel for start-up service as needed to insure satisfactory operation. Subsequent trips to the job site to correct defects shall be made at no charge to the Owner during the warranty period.

15.17 WARRANTY

The RTU manufacturer shall supply a five (5) year parts and labor warranty for the new RTU supplied under this section (except as noted below). Power surges and lightning damage shall be included as part of the warranty.

The warranty shall begin from the time of "shipment". The manufacturer shall provide a 24 hour response to calls from the Owner. The manufacturer, at his discretion, may dispatch replacement parts to the Owner by next-day delivery service for field replacement by the Owner. Any damage to the control system caused by the actions of the Owner in attempting these field replacements shall be the sole responsibility of the manufacturer. If, during the warranty period, satisfactory field repair can not be attained by field replacement of parts by the Owner, the manufacturer shall dispatch "factory" personnel to the job site to complete repairs at no cost to the Owner.

15.18 MEASUREMENT AND PAYMENT

15.18.1 Measurement: The installation of the solid state Radio Telemetry Supervisory Control and Data Acquisition system shall be measured by EACH RTU unit furnished, installed, tested, and accepted.

15.18.2 Payment: Payment shall be made at the contract unit price EACH for RTU units measured for payment as follows:

a) RTU Water Booster Pumping Station
b) RTU Water Storage Tank

Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to complete the work. Since the SCADA project is organized as an independent contract this means that the CONTRACTOR must include his mobilization, insurance, bonding, and clean-up costs in his bid for the designated RTUs.

- THE END -

SECTION XVI

TECHNICAL SPECIFICATIONS

PRESSURE REDUCING STATION

16.1 SCOPE

This work shall consist of furnishing and installing all materials and equipment necessary to place a pressure reducing station in service. The work includes site preparation; excavation; installation of a pre-cast concrete pit; furnishing and installing the pressure reducing valves, gate valves, strainers and associated pipe and fittings as shown in the drawings; and backfilling and grading.

16.2 QUALITY ASSURANCE/SUBMITTALS

16.2.1 Submit five copies of itemized summary of source of manufacture of each item in pressure reducing station. Provide manufacturer's certification of compliance with specifications for each item.

16.3 MATERIALS

16.3.1 Pre-Cast Concrete Pit: The valve pit shall consist of a pre-cast 10'x5'x7' utility manhole as manufactured by Cloud (or equal)modified as shown on the Drawings. The pre-cast pit shall be furnished with a 10’ x 4’ Halliday aluminum access hatch (Series S2R). Manhole steps shall be cast integrally with the pit to permit entry via the access door. The floor of the pit shall be sloped to a 12" square sump.

16.3.2 Pipe: Pipe three inches in diameter, and larger, shall be Class 350, flanged joint ductile iron pipe meeting the materials requirements of Section IX. Pipe less than 3" in diameter shall be SCH 40 steel or approved equal.

16.3.3 Pressure Reducing Valve - 4": The 4" pressure reducing valves shall be a flanged, iron bodied, bronze mounted pressure reducing valves as manufactured by OCV. The valves used in the PRV shall have a suitable working pressure of 300 psi.

16.3.4 Bypass Pressure Reducing Valve - 2": The 2" pressure reducing valve used in the PRV shall be rated for

an inlet pressure of 300 psi and shall have an adjustable range of at least 100 psi (centered on the downstream set point).

16.3.5 Strainer - 4": The strainer furnished to protect the 6" pressure reducing valve shall be a Mueller, Badger or approved equal.

16.3.6 Gate Valves: Gate valves for use in the pressure reducing station shall have working water pressures of 250 psi, flanged joints and hand wheel operators. The gate valves shall conform to the materials requirements of the valving section of these specifications.

16.3.7 Pressure Gauges: The pressure gauges shall be Helicoid, or equal. The gauges shall have a stainless steel roller and cam movement with a 4" dial. The upstream gauge shall have a scale range of 0 to 300 psi. The downstream gauge shall have a range of 0 to 200 psi. All gauges shall be accurate to ½ percent of scale.

16.4 INSTALLATION

16.4.1 Pre-Cast Pit: The excavation for the valve pit shall permit placement of the pit floor slab with a full horizontal bed. A 6" (loose depth) bed of crushed stone shall be provided to insure uniform foundation support.

Before backfilling is started, the excavated pit shall be cleared of all rubbish and debris and shall be de-watered. The backfill shall be free of frozen lumps, vegetation, and debris. Backfill material shall be placed in uniform horizontal layers not exceeding 12 inches in thickness by loose measurement. Each layer shall be compacted by means of an approved tamper. As a precaution against the development of unbalanced stress, the backfill shall be compacted to the same elevation all the way around the excavation before the next layer may be placed.

The completed backfill surface shall be graded smooth and all areas disturbed by the pit installation shall be seeded in accordance with the applicable sections herein.

16.4.2 Valves & Piping: The pipe shall be handled and joints connected per Section IX of these specifications. Pipe shall be provided with appropriate supports.

The lines should be flushed before the pressure reducing valves are installed. This will prevent clogging of the pilot lines.

The flow arrow on the valve must match the actual flow direction. All valves must be installed in an upright position, plumb and true.

16.4.3 Calibration: The CONTRACTOR shall set the pressure reducing valves as follows:

Station I.D.	INLET PRESSURE UPSTREAM OF FIRST PRV (PSI)	OUTLET PRESSURE DOWNSTREAM OF SECOND PRV (PSI)
Jonican	190	40
Upper Pompey	210	40

NOTES

1. The upstream 4” PRV shall be set 5 psi higher than the downstream 4” PRV.
2. The downstream “bypass” PRV shall be set 2-3 psi higher than the downstream 4” PRV! The upstream “bypass” PRV shall be set 5 psi higher than the downstream “bypass” PRV.

16.5 MEASUREMENT AND PAYMENT

16.5.1 Measurement: There shall be no measurement for payment as the Work shall be lump sum.

16.5.2 Payment: Payment shall be made for "’X’ Inch Pressure Reducing Stations" at the Lump Sum Contract Price as set forth in the Bid Schedule. Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to construct the station as shown in the Drawings. No separate payment shall be made for valves, strainers, gauges or other accessories.

- THE END -

SECTION XVII

TECHNICAL SPECIFICATIONS

WATER BOOSTER PUMPING STATION

17.1 SCOPE

Furnish all labor and materials for proper installation of water booster pumping station(s) as shown on the Drawings and as called for herein. This includes:

1) Coordinate station location with OWNER;

2) Provision of service pole complete with service entrance, meter base, etc.;

3) Site preparation including any grading, excavation, or fill;

4) Erection of pump house or enclosure;

5) Installation of pumps, pipe, valving, etc.;

6) Provision of a hypochlorination unit;

7) Electrical work including control panel, lights, and heat;

8) Coordinate electrical controls and installation with OWNER'S telemetry contractor;

9) Pave access drive to pump station.

17.2 QUALITY ASSURANCE/SUBMITTALS

17.2.1 CONTRACTOR shall provide his experience record. CONTRACTOR shall have successfully constructed five (5) similar booster pumping station facilities. Experience statement shall include project name, size of station, owner name, owner phone number, engineer name and engineer phone number.

17.2.2 Submit six (6) bound copies of pump station shop drawings. Submittal to include station drawing, electrical schematic, and all accessories.

17.2.3 Submit six (6) copies of manufacturer's **certified** pump performance curves and pump warranties.

17.2.4 Submit six (6) bound O & M manuals for pump station. Manuals to provide basic instructions for routine maintenance, sources of spare parts, etc.

17.3 MATERIALS - PUMP ENCLOSURE

17.3.1 General: The pump house shall be of masonry block construction with a concrete floor slab and roof as shown on the plans.

17.4 MATERIALS - MULTI-STAGE CENTRIFUGAL PUMP

17.4.1 See Table XVIII-A

17.5 MATERIALS - MOTOR CONTROLS

a. General: The motor control centers shall be completely self-contained. Each center shall provide:

1. A combination circuit breaker/overload unit providing overload protection, short circuit protection, reset and disconnect for all phases.

2. Across the line magnetic contactor. **Per Mountain Water District, all contactors and breakers shall be NEMA rated Square D – no equal. IEEE contactors shall not be accepted.**

3. Hand/off/automatic pump operations selector switch.

4. 120 volt control panel pilot circuitry.

5. Automatic alternator which will permit alternate operation of pumps under normal conditions.

6. Control panel to allow operator to manually select both units to operate in parallel. This feature must only be available in a hand mode.

7. Local Pressure Control: Pump operation shall be controlled by remote unit based radio supervisory control system (SCADA system, see applicable specification).

Adjustable timers shall be provided as a back-up control system. Pump station to revert to timer control on failure of SCADA system.

b. Construction: Panel to be NEMA 3R.

c. Accessories: The panel shall be equipped with the following accessories:

1. Low Suction Cut-Out, 0 to 100 psi control range. Time delay relay, 0 to 10 minute control. Field set low suction cut-out to insure the pump is not operated against a shut-off head.

2. Condensation protection.

3. Running time meters.

4. Lightning arrestors.

17.6 MATERIALS - ACCESSORIES

a. Pipe: All pipe for the suction side of the station shall be Class 53, Flanged Joint ductile iron pipe conforming to AWWA, cement mortar lined, of sizes shown on Design Drawings.

b. Valves:

Valves for the suction side of the station shall meet the following criteria:

1. Construction: Resilient wedge gate valves meeting AWWA C509.

2. Pressure: Minimum working pressure 250 psi.

3. Joints: Flanged.

4. Size: As shown on Drawings.

5. Operator: Hand wheel with rising stem.

c. Electric Check Valves:

1. Electronic check valves not required.

d. Silent Check Valves:

1. Silent Check Valve not required.

e. Turbo Water Meter:

1. A turbine type water meter shall be provided with sealed housing, flanged for 150 pound working pressure and sized as shown on the plans. The meter shall comply with the applicable provisions of AWWA standard C701. The meter shall be with a sealed indicator having a range of 0 to 250 GPM and shall be equipped with a six digit straight reading type totalizer with a center sweep hand to permit timing for accurate determination of flow rates. The meters accuracy shall be within (+/-) 1½% of the true flow within the specified range.

2. The meter housing and measuring chamber shall be of all bronze with stainless steel trim. The measuring chamber shall include a polypropylene rotor with graphite radical bearings and a ceramic ring magnet embedded in the rear face of the rotor.

3. Meter shall incorporate an integral strainer built into the body of the meter and shall be as manufacturered by Badger, Recordall Turbo 200, or approved equal.

f. Air Release Valve:

1. Construction: Simple lever type air release valve of cast iron construction with stainless steel trim. Valmatic Model #15 or approved equal. Valve shall be capable of automatically releasing accumulated air from a fluid system while that system is in operation and under pressure.

2. Pressure: Valve must withstand pressure of 200 psi.

3. Joints: Screwed.

4. Size: Inlet 3/4" NPT, Outlet 3/8" HPT.

g. Strainer:

1. Strainer shall be included as an integral part of the turbo meter.

2. Size: As indicated on Drawings.

h. Pressure Gages:

1. Construction: Stainless steel roller and cam movement. Minimum face diameter of 4 1/2". Helicoid or approved equal.

2. Number: 2

3. Pressure Range: 0-100 psi Pump Suction
0-300 psi Pump Discharge

4. Accuracy: 1/2 percent of scale.

5. Size: Gauge connection 1/4" NPT.

i. Portable Floor Crane:

1. Not required.

j. Surge Relief Valve

1. Not required.

k. Dehumidifier

1. Construction: Oasis brand by EBCO (or equal) Model DC-45 (W.W. Grainger Stock 5E821)

17.7 MATERIALS - HYPOCHLORINATOR

17.7.1 The CONTRACTOR shall furnish and install a Liquid Metronic Incorporated Model A32 single head metering pump hypochlorinator (or approved equal) in accordance with the manufacturer's guidelines. The hypochlorinator injector shall be installed on the suction side of the pump. A 30 gallon polyethylene container shall be provided for a hypochlorite solution supply. The hypochlorinator shall be equipped with an anti-siphon device. The hypochlorinator shall be inter-locked with the pump run circuit so that hypochlorite solution is only injected when the pumps are in service.

17.8 MATERIALS - ELECTRICAL

a. General: The installation of the electrical system shall conform to the latest edition of the National Electrical Code. All permits necessary for the complete installation of the electrical systems shall be obtained by the CONTRACTOR from authorities governing such work. The CONTRACTOR shall be responsible for obtaining and paying for the power supply from the local power company in the OWNER'S name. The costs of all permits shall be borne by the CONTRACTOR.

b. Service Pole: Fully treated, southern yellow pine.

c. Service Entrance:

   Cast Aluminum, 120/240 volt, 1 phase, 60 cycle system.

d. Weatherproof Switch and Meter Socket: Band to pole with rust proof channels.

e. Wiring: All wiring shall be properly sized for the load as set forth in the latest edition of the National Electrical Code. Provide a minimum of two duplex, grounding type, three (3) wire, polarized convenience receptacles in the pump house.

f. Conduit: All conduit shall meet the requirements of the latest edition of the National Electrical Code.

g. Lighting: Two-(2) two tube, 40 watt per tube, rapid start, "OSHA" approved enclosed and gasketed fluorescent light fixture.

h. Heat: Wall mounted, fan forced electric heater, 5000 BTU/H Dayton 2E434, Bracket 23433, or equal. Two-(2) required.

i. Exhaust Fan/ Intake: Furnish and install a thermostatically controlled, wall mounted, exhaust fan with backdraft damper and an automatic louvered intake vent (cold air return) to exhaust excessive heat generated by pump motors. All vents to be equipped with pest screens. System to be capable of 300 CFM.

17.9 PAINTING

17.9.1 All plumbing on the interior of the pump station shall be painted. Color to be Sherwin Williams dark blue SW 4086. Paint system as follows:

1. Surface prep – SSPC-SP6 Commercial Blast Cleaning
2. Primer – Macropoxy B58, 1 coat at 4 to 6 dry mils
3. Finish – Macropoxy B58, 2 coats at 4 to 6 dry mils per coat.

17.10 EXECUTION

17.10.1 Installation: Erect pump house in accordance with plans and applicable local building codes. Install pumps and controls in accordance with the pump manufacturer's instructions, these specifications and as shown on the Plans.

17.10.2 Electrical Inspection: All electrical work shall be inspected and approved by an electrical inspector. Two copies of the Certificates of Approval shall be provided to the ENGINEER before final acceptance. After installation, the pumping station shall be given a running test of all equipment.

17.10.3 Acceptance Testing: While the pump is running, all piping and seals shall be checked to insure that no leaks occur. All controls and warning indicators shall be checked for proper operation.

Any defects in the equipment or failure to meet the requirements of these specifcations shall be promptly corrected by the CONTRACTOR by replacement. The decision of the OWNER as to whether or not the CONTRACTOR has fulfilled his obligation shall be final and binding on all parties.

17.10.4 Factory Start-Up Service: A factory trained service representative shall provide at least one(1) full day of start-up and training services after each water booster pump station is placed in service. The factory representative shall trouble shoot operational problems, provide bound copies of the pump station operations and maintenance manuals, and train the OWNER’S personnel in the operation and maintenance of the facility.

The factory representative shall provide a formal written report of start-up and training to the OWNER, ENGINEER, and CONTRACTOR.

17.11 MEASUREMENT AND PAYMENT

17.11.1 Measurement: There shall be no measurement for payment as the work shall be Lump Sum.

17.11.2 Payment: Payment shall be made at the Lump Sum Contract Price for “Water Booster Pumping Station” as set forth in the Bid Schedule. Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to complete the work.

- THE END -

TABLE XVII-A
TECHNICAL SPECIFICATIONS SECTION XVII
MATERIALS - WATER BOOSTER PUMPS

BOOSTER PUMP STATION

QUALITY CONTROL	
Style	Multi-stage centrifugal pump
Make & Model	Grundfos CR 20-06
PERFORMANCE DATA	
Quantity	2
Operating Curve (GPM @ FT TDH)	
Shut Off Head	0 GPM @ 412 FT
Operating Point	95 GPM @ 350 FT
Run-Out Point	152 GPM @ 200 FT
Efficiency @ Operating Point	71.9%
Speed	3444
Power Service	Three Phase
Horsepower	15
Suction	2" ANSI 250# R.F.
Discharge	2" ANSI 250# R.F.

SECTION XVIII

TECHNICAL SPECIFICATIONS

CHAIN LINK FENCING AND GATES

18.1 SCOPE

This work shall consist of furnishing all labor and materials necessary for proper installation of 6′-0″ galvanized steel chain link fence and gates. Extents of chain link fencing and gates are indicated on the drawings.

18.2 QUALITY ASSURANCE

Provide chain link fence and gate as a complete unit, controlled by a single source, including necessary erection accessories, fittings and fastenings.

18.3 SUBMITTALS

18.3.1 Product Data: Submit manufacturer's technical data and installation instructions for metal fencing, gate and accessories.

18.3.2 Shop Drawings: Submit shop drawings showing location of fence, gate, each post and details of post installation, extension arms, gate swing, hardware and accessories.

18.4 MATERIALS

18.4.1 Selvage: Fabric 72" high and over, with 2" mesh, shall be knuckled at one selvage and twisted at the other. All mesh 60" high and under, shall be knuckled at both selvages.

18.4.2 Steel Fabric: Comply with Chain Link Fence Manufacturers Institute (CLFMI) Product Manual. Furnish one-piece fabric widths for fencing up to 12' high. Wire size includes zinc coating. Provide fencing in the following sizes:

Size: 2" mesh, 9 gauge (0.148" diam.) wire.
Galvanized Finish: ASTM A 392, Class 2, with not less than 1.2 oz. Zinc per square foot of surface.

~~18.4.3 Visual Screen Slatting: Fence slatting is to be of extruded high density polyethylene, containing color pigmentation and o.v. inhibitors to resist the effects of UV radiation for a minimum 15 years service without visible degradation.~~

~~a. **Size**: Slats are to be of flat tubular shape with a profile depth of .312" and a wall thickness of .020".~~

~~b. All slats shall be 1.062" wide.~~

~~c. Slats are to be fabricated 3 1/2" shorter than the overall height of the gate which shall be 8'-0".~~

~~d. Gate slats will be installed using a self-locking horizontal bottom channel or a pre-approved equal.~~

18.4.4 Swing Gates: Comply with ASTM F 900. Provide hardware and accessories for each gate, galvanized per ASTM A 153, and in accordance with the following:

a. **Hinges**: Non-lift-off type, offset to permit 180° gate opening.

b. **Latch**: Forked type or plunger bar type to permit operation from either side of gate, with padlock eye as integral part of latch.

c. **Keeper**: Provide keeper for vehicle gates, which automatically engages gate leaf and holds it in open position until manually released.

d. **Gate Stops**: Provide gate stops for double gates, consisting of mushroom type flush plate with anchors, set in concrete and designed to engage center drop rod or plunger bar. Include locking device and padlock eyes as integral part of latch, permitting both gate leaves to be locked with single padlock.

NOTE: For gates larger than 8' wide, provide and install rolling wheel and accessories.

18.4.5 Post Brace Assembly: Manufacturer's standard adjustable brace at end and gate posts and at both sides of corner and pull posts, with horizontal brace located at mid-height of fabric. Use same material as top rail for brace and truss to line posts with 0.375" diameter rod and adjustable tightener.

18.4.6 Post Tops: Provide weathertight closure cap with loop to receive tension wire or top rail; one cap for each post.

18.4.7 Stretcher Bars: One piece lengths equal to full height of fabric, with minimum cross section of 3/16" x 3/4". Provide one stretcher bar for each gate and end post and 2 for each corner and pull post, except where fabric is integrally woven into post.

18.5 INSTALLATION

Do not begin installation and erection before final grading is completed, unless otherwise permitted by the Architect.

18.5.1 Excavation: Drill or hand excavate (using post hole digger) holes for posts to diameter and spacings indicated, in firm undisturbed or compacted soil.

If not indicated on drawings, excavate holes for each post to minimum diameter recommended by fence manufacturer, but not less than 4 times largest cross section of post.

Unless otherwise indicated, excavate hole depths approximately 6" lower than post bottom, with bottom of posts set not less than 36" below finish grade surface.

18.5.2 Setting Posts: Center and align posts in holes 6" above bottom of excavation.

Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment and hold in position during placement and finishing operations.

Unless otherwise indicated, extend concrete footing 2" above grade and trowel to a crown to shed water.

18.5.3 Top Rails: Run rail continuously through post caps, bending to radius for curved runs. Provide expansion couplings as recommended by fencing manufacturer.

18.5.4 Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.

18.5.5 Fabric: Leave approximately 2" between finish grade and bottom selvage, unless otherwise indicated. Pull fabric taught and tie to posts, rails and tension wires. Install fabric on security side of fence and anchor to framework so that fabric remains in tension after pulling force is released.

18.5.6 Stretcher Bars: Thread through or clamp to fabric 4" o.c., and secure to posts with metal bands spaced 15" o.c.

18.5.7 Tie Wires: Use U-shaped wire, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing.

Tie fabric to line posts with wire ties spaced 12" o.c. Tie fabric to rails and braces, with wire ties spaced 24" o.c.

18.5.8 Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Pen ends of bolts or score thread to prevent removal of nuts.

18.5.9 Gates: Install gates plumb, level and secure for full opening without interference. Install ground set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

18.6 MEASUREMENT AND PAYMENT

Measurement and payment for this item shall be included within the contractors Lump Sum Bids for “Johns Creek Water Booster Pumping Station, Complete, In-Service” and “Kimper Water Booster Pumping Station, Complete, In-Service” as described in the Bid Schedule. This payment shall constitute full compensation for all materials, labor, equipment and incidentals necessary for completion of the work.

- THE END -

SECTION XIX

TECHNICAL SPECIFICATIONS

AIR RELIEF

19.1 SCOPE

The CONTRACTOR shall provide all labor, tools, materials and equipment necessary to furnish and install air release valves and boxes as shown on the Plans and as directed.

19.2 QUALITY ASSURANCE/SUBMITTALS

19.2.1 Submit five copies of itemized summary of source of manufacture of each item in air relief assembly. Provide manufacturer's certification of compliance with specifications for each item.

19.3 MATERIALS

19.3.1 Tapping Saddle, Corporation Stop: The tapping saddle and corporation stop shall meet the material requirements of the water service connection section of these specifications.

19.3.2 Pipe: All pipe shall be rated for a working water pressure of 300 psi. Pipe diameter shall conform to the detail drawings.

19.3.3 Air Release Valve: The air release valve shall be a simple lever type with cast iron body and stainless steel trim rated for a working pressure of 300 psi. A Valvmatic Model #22 or approved equal shall be employed. Valve inlet shall conform to the detail drawings.

19.3.4 Valve Box and Lid: The valve box and lid shall consist of a polyethylene box and cast iron lid meeting the material requirements of the water service connection section herein.

19.4 INSTALLATION

Installation shall include the complete assembly with box and top, shut-off valve, blow-off, air valve, and piping, fittings and union, all complete and ready for operation in general conformance with the Drawings. Work in and around the box will be done in a workmanlike manner leaving the top of the box one inch above the original ground surface.

19.5 MEASUREMENT AND PAYMENT

19.5.1 Measurement: "Air Relief" assemblies in-place, tested and accepted shall be measured "each."

19.5.2 Payment: Payment for "Air Relief" shall be made at the contract unit price "each" as set forth in the Bid Schedule for the actual number of assemblies measured. Payment as specified shall be considered full compensation for all labor, materials, equipment and incidentals necessary to perform the work as required.

- THE END -

SECTION XX

TECHNICAL SPECIFICATIONS

PAVEMENT REPLACEMENT

20.1 PURPOSE

The purpose of this section is to outline requirements for the proper replacement of roadway and parking lot surfaces damaged through installation of utilities and the construction of new surfaces to serve the completed facilities.

20.2 QUALITY ASSURANCE/SUBMITTALS

A) All standards, material, methods of installation, equipment and construction shall be in accordance with the current edition of the Kentucky Department of Highways (KYDOH) publication "Standard Specifications for Road and Bridge Construction," except as modified herein.

B) Submit five copies of the following:

1) Documentation to substantiate compliance with the materials section of this specification.

20.2 GENERAL

Existing paving in roadways, entrances, parking lots, etc. shall be restored to a condition equal to that which existed before the work began and to the satisfaction of the OWNER. In restoring improved surfaces new pavement is required. No permanent surface shall be placed within thirty (30) days after backfilling shall have been completed, except by order of the ENGINEER!

It is a project requirement that the CONTRACTOR furnish a temporary pavement equal in character to the existing pavement damaged by the construction within thirty (30) days of the completion of the trench backfilling. The CONTRACTOR shall maintain this temporary pavement until such time as the CONTRACTOR effects the permanent pavement replacement as set forth herein. CONTRACTOR'S INSTALLATION AND MAINTENANCE OF TEMPORARY PAVEMENT REPLACEMENT SHALL BE AT CONTRACTOR'S SOLE EXPENSE. This project requirement is established to encourage CONTRACTOR to complete permanent pavement replacements at the earliest possible date following backfilling.

20.3 PAVEMENT REPLACEMENT CLASSES

Pavement replacement includes the following types or classes:

1) Full Width Bituminous Replacement/Construction.

2) Bituminous Pavement Replacement with Concrete Sub-Slab.

3) Concrete Pavement Replacement.

4) Gravel Surface Replacement.

20.4 MATERIALS

20.4.1 Bituminous Concrete Surface: Bituminous concrete conforming to Sections 401 and 402 of the current edition of the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction shall be used for replacement of all existing bituminous surfaces. All bituminous material aggregates, mineral fillers, tack and seal coats shall meet the appropriate materials specifications of the aforementioned Department of Highways publication. Before placing any bituminous surface, the CONTRACTOR shall submit the design plant mix for the ENGINEER'S approval. This submittal shall address both the last date the mix was approved by the Department of Highways and the location where the mix was most recently used.

20.4.2 Concrete Surface: Concrete for pavement replacement shall be a mixture of Portland Cement, fine aggregate, coarse aggregate, with or without air entrainment, as required, combined in the proportions, mixed, and placed as specified for Class "A" concrete in Sections 501 and 601 of the publication Standard Specifications for Road and Bridge Construction, (1983 Edition, Kentucky Transportation Cabinet, Department of Highways).

20.4.3 Dense Graded Aggregate: Dense graded aggregate used for a base shall be a durable, crushed limestone meeting the requirements of Section 805 of the publication Standard Specifications for Road and Bridge Construction, (1983 Edition, Kentucky Transportation Cabinet, Department of Highways).

20.5 INSTALLATION OF BITUMINOUS SURFACES

20.5.1 General: The two classes of bituminous surface are Full Width Bituminous Pavement Replacement/Construction, and Bituminous Pavement Replacement with Concrete Sub-Slab. The main differences between these classes are as follows:

a) "Full Width Bituminous Pavement Replacement/ Construction" shall be the complete replacement of an existing pavement. The pavement thickness for "Full Width" replacement or construction shall be three (3) inches. The pavement width is subject to the width of the existing paved surface or as specified in the plans.

b) "Bituminous Pavement Replacement with Concrete Sub-Slab" shall require a 6" concrete sub-slab. The pavement thickness shall be no less than 3 inches. The pavement width shall not exceed the maximum widths as specified in the Detail Drawings.

20.5.2 Base Preparation: The pipe trench shall be backfilled as indicated on the Detail Drawings. This backfill shall be cut back, shaped, graded, and compacted. A base course of 6" of dense graded aggregate shall then be placed and compacted.

For Full Width Pavement Replacement/Construction the base course shall be prepared as follows:

a. ALL PAVEMENT WHICH HAS BEEN DAMAGED MUST BE REMOVED PRIOR TO PAVEMENT REPLACEMENT OR CONSTRUCTION.

b. Compact 6" of DGA in pipe trench per the Detail Drawings.

c. Clean the existing pavement of construction debris (mud, gravel, etc.) This requires brooming!

d. Potholes, ruts, and other severely deteriorated portions of existing pavement shall be patched with bituminous base.

e. The cleaned and patched surface shall be jointly inspected by the CONTRACTOR and the ENGINEER. The surface must be accepted in writing by the ENGINEER before tacking operations begin.

f. The cleaned and patched surface shall be shot with 0.4 lb/sy of RS-2 tack.

20.5.3 Surface Course: If the pavement replacement is "With Concrete Sub-Slab" then the subgrade shall be cut back to accommodate a 6" thick Class "A" concrete sub-slab (concrete shall conform to the applicable specifications herein).

The prepared pipe trench shall be paved with bituminous concrete Class I per the Detail Drawings. For full width construction, the full surface width shall receive a 2" base course and 1" surface course of bituminous concrete Class I per the Detail Drawings.

20.6 INSTALLATION OF CONCRETE SURFACES

20.6.1 Base Course: The pipe trench shall be backfilled as indicated on the Design Drawings. This backfill shall be cut-back, shaped, graded and compacted. A base course of 6" of dense graded aggregate shall then be placed and compacted.

20.6.2 Surface Course: The existing concrete pavement shall be cut-back with a concrete saw the distance as specified on the Design Drawings so that the final surface can be placed in a strip of uniform width. The subgrade shall be shaped, graded and compacted as directed by the ENGINEER. Class "A" concrete as described herein shall be placed to the greater of the existing pavement thickness or 6". The concrete slab shall be reinforced with 6" x 6" No. 4 wire mesh.

20.7 INSTALLATION OF GRAVEL SURFACES

20.7.1 Gravel Pavement Replacement: The pipe trench shall be backfilled as indicated on the Design Drawings. The trench backfill shall be cut-back, shaped, graded and compacted. A 6" course of dense graded aggregate shall then be placed and compacted.

20.8 MEASUREMENT AND PAYMENT

20.8.1 Measurement: There shall be no measurement for payment as the work shall be Lump Sum.

20.8.2 Payment: Payment shall be made at the Lump Sum contract Price as set forth in the Bid Schedule. Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to complete the work.

- THE END -

SECTION XXI

TECHNICAL SPECIFICATIONS

SEEDING

21.1 SCOPE

The purpose of this section is to outline the requirements for proper seeding of all areas disturbed by construction.

21.2 SUBMITTALS

Submit six copies of documentation demonstrating compliance with the materials requirements of this specification.

21.3 SEEDING AND LANDSCAPING

21.3.1 General: All areas disturbed by construction shall be seeded in accordance with this specification.

21.3.2 Requirements: Seeding shall be accomplished as described hereinafter. Unless otherwise specified by the OWNER, all areas to be seeded shall be left smooth and thickly sown with a mixture of grasses at a rate of not less than 87 pounds per acre. Unless otherwise specified, the mixture shall consist of 60 percent Kentucky Fescue #31, 30 percent Creeping Red Fescue, and 10 percent White Clover. After completion of rough grading in seeding areas, the CONTRACTOR shall apply agricultural limestone at a rate of 4 tons/ac and then re-distribute previously stockpiled site topsoils to a loose depth of 6 inches. The topsoil shall then be fertilized with number 12-12-12 fertilizer at a rate of 1000 pounds per acre. After fertilizer has been distributed, the CONTRACTOR shall disc or harrow the ground to thoroughly work the fertilizer into the soil. The seed shall then be broadcast either by hand or by approved sowing equipment at the rate specified. The CONTRACTOR shall protect the seeded area with straw mulch or hay mulch at a rate of two tons per acre. Plastic netting shall be used to anchor the mulch on all slopes steeper than 3:1. All seed shall be certified. Any necessary reseeding or repairing shall be accomplished by the CONTRACTOR prior to final acceptance. If the construction work is brought to completion when, in the opinion of the ENGINEER, the season is not favorable for the seeding of grounds, then the CONTRACTOR shall delay this item of work until the proper season for such seeding as directed by the ENGINEER.

21.3.3 Success and Maintenance: All areas seeded shall have a ninety (90) percent vegetative cover of lawn grasses, free of noxious weeds, at the end of the first growing season. Additionally, no individual area of bare ground, where seeding has been unsuccessful, shall exceed one square yard

in surface area. CONTRACTOR shall be responsible for full expense of corrective seeding necessary to meet this performance criterion. OWNER shall incur no expense for remedial seeding.

21.3.4 Equivalency: The CONTRACTOR may submit an alternate plan for establishment of vegetative cover. However, no alternative revegetation methodology shall be employed without the express written approval of the ENGINEER.

If the CONTRACTOR employs an alternative revegetation methodology, he is still bound by the Success and Maintenance requirements of this specification.

21.4 MEASUREMENT AND PAYMENT

Seeding shall be compensated as a Lump Sum payment item. No measurements will be made for this work. The CONTRACTOR may invoice for seventy five percent (75%) of the Lump Sum amount upon CONTRACTOR'S completion of seeding activities and ENGINEER'S acceptance of same. The CONTRACTOR may not invoice for the remaining twenty-five percent (25%) of the Lump Sum amount until the Success and Maintenance requirements of this specification have been met. Payment in full for "Seeding" shall be considered full compensation for all topsoil redistribution, seedbed preparation, seed, lime, fertilizer, corrective seeding, labor and incidentals furnished pursuant to this section.

- THE END -

SECTION XXII

TECHNICAL SPECIFICATIONS

ADDITIONAL PUMP STATION UPGRADES

22.1 SCOPE

Furnish all labor and materials for proper installation of mobile and stationary generator(s) and replacement pumps as shown on the Drawings and as called for herein. This includes:

1) Coordinate station entry / work / location with OWNER;

2) Provision of mobile generator (Generac MMG 120) or approved equal.

3) Electrical work necessary to facilitate quick connection (Permanent Docking Station) of mobile generator unit at Anderson Br. and Hunts Br. Pump Stations.

4) Provision and installation of new Grundfos CR 120-5-2, 700 gpm, 445ft. TDH at 3567 RPM (Three Phase) pumps with Variable Frequency Drives at the existing Ferrells Creek BPS, fittings, pipe; etc. Removal of existing pumps, pipe, fittings, etc.

5) Provision and installation of stationary generator unit (Generac SD200) or approved equal with 230kw alternator, and automatic transfer switch.

6) Electrical work necessary for the installation of stationary Ferrells Creek Pump Station Generator and Automatic Transfer Switch.

7) Coordinate all electrical work and installation with OWNER;

22.2 QUALITY ASSURANCE/SUBMITTALS

22.2.1 Submit six (6) bound copies of pump and VFD shop drawings. Submittal to include station drawing, electrical schematic, and all accessories.

22.2.2 Submit six (6) copies of manufacturer's **certified** pump performance curves and pump warranties.

22.2.3 Submit six (6) bound copies of mobile and stationary generator drawings. Submittal to include generator drawing, electrical schematic, and all accessories.

22.2.4 Submit six (6) copies of manufacturer's **certified** generator performance and warranties.

22.2.5 Submit six (6) bound O & M manuals for pumps and generators. Manuals to provide basic instructions for routine maintenance, sources of spare parts, etc.

22.3 MATERIALS - PUMPS

22.3.1 General: The pumps shall be Grundfos CR 120-5-2, 700 gpm, 445ft. TDH at 3567 RPM (Three Phase) or approved equal. The Variable Frequency Drives shall be as recommended by pump Manufacturer. The VFDs shall be compatible with the District's existing Telemetry System.

22.4 MATERIALS – Mobile Generator

22.4.1 Generac MMG 120 or approved equal.

22.5 MATERIALS – Stationary Generator

22.5.1 Generac SD200 or approved equal with 230kw alternator, and automatic transfer switch as specified by manufacturer.

22.6 EXECUTION

22.6.1 Installation: Install pumps , generators, and controls, etc. shall be in accordance with the manufacturer's instructions, these specifications and as shown on the Plans.

22.6.2 Electrical Inspection: All electrical work shall be inspected and approved by an electrical inspector. Two copies of the Certificates of Approval shall be provided to the ENGINEER before final acceptance. After installation, the pumping station shall be given a running test of all equipment.

22.6.3 Acceptance Testing: While the pump is running, all piping and seals shall be checked to insure that no leaks occur. All controls and warning indicators shall be checked for proper operation.

Any defects in the equipment or failure to meet the requirements of these specifcations shall be promptly corrected by the CONTRACTOR by replacement. The decision of the OWNER as to whether or not the CONTRACTOR has fulfilled his obligation shall be final and binding on all parties.

22.6.4 Factory Start-Up Service: A factory trained service representative shall provide at least one(1) full day of start-up and training services after each generator and / or pump station is placed in service. The factory representative shall trouble shoot operational problems, provide bound copies of the operations and maintenance manuals, and train the OWNER'S personnel in the operation and maintenance of the facility.

The factory representative shall provide a formal written report of start-up and training to the OWNER, ENGINEER, and CONTRACTOR.

22.7 MEASUREMENT AND PAYMENT

22.7.1 Measurement: There shall be no measurement for payment as the work shall be Lump Sum.

22.7.2 Payment: Payment shall be made at the Lump Sum Contract Price for "Hunts Br. / Anderson Br. Mobile Generator", "Ferrells Creek Stationary Generator", and "Ferrells Creek Pump Replacement" as set forth in the Bid Schedule. Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to complete the work.

- THE END -

SECTION XXVI

TECHNICAL SPECIFICATIONS

MASTER METER STATIONS

23.1 – GENERAL

23.1.1 SCOPE

This work shall consist of furnishing and installing all materials and equipment necessary to place a master meter station in service. The work includes site preparation; excavation; installation of vault; furnishing and installing master meter, strainers and associated pipe and fittings as shown in the drawings; and backfilling and grading.

23.1.2 QUALITY ASSURANCE / SUBMITTALS

Submit five copies of itemized summary of source of manufacture of each item in the master meter station. Provide manufacturer's certification of compliance with specification for each item. Contractor shall be responsible for proper sizing of the concrete pit and shall submit shop drawings showing all proposed piping layout.

23.2 – PRODUCTS

23.2.1 Pre-Cast Concrete Pit:

The valve pit shall consist of a pre-cast utility manhole as manufactured by Cloud (or equal) modified as shown on the Drawings. The pre-cast pit shall be furnished with a removable aluminum access panel. Manhole steps shall be cast integrally with the pit to permit entry via the access door. The floor of the pit shall be sloped to a 12" square sump.

23.2.2 PIPE

Pipe: Pipe three inches in diameter, and larger, shall be Class 350, flanged joint ductile iron pipe meeting the materials requirements of Section IX. Pipe less than 3" in diameter shall be SCH 40 steel or approved equal.

23.2.5 METER

The Master Meter shall be a Sensus 4" Floating Ball Meter or equal.

23.2.6 RECORDALL TRANSMITTER REGISTER

Each meter shall be furnished with an ORION Integral or Remote for Recordall Transmitter Register.

23.3 – EXECUTION

23.3.1 Pre-Cast Pit

The excavation for the valve pit shall permit placement of the pit floor slab with a full horizontal bed. A 6" (loose depth) bed of crushed stone shall be provided to insure uniform foundation support.

Before backfilling is started, the excavated pit shall be cleared of all rubbish and debris and shall be de-watered. The backfill shall be free of frozen lumps, vegetation, and debris. Backfill material shall be placed in uniform horizontal layers not exceeding 12 inches in thickness by loose measurement. Each layer shall be compacted by means of an approved tamper. As a precaution against the development of unbalanced stress, the backfill shall be compacted to the same elevation all the way around the excavation before the next layer may be placed.

The completed backfill surface shall be graded smooth and all areas disturbed by the pit installation shall be seeded in accordance with the applicable sections herein.

23.3.2 Valves and Piping

The pipe shall be handled and joints connected per these specifications. Pipe shall be provided with appropriate supports.

All valves must be installed in an upright position, plumb and true.

23.4 – MEASUREMENT AND PAYMENT

23.4.1 Measurement:

There shall be no measurement for payment as the Work shall be lump sum.

23.4.2 Payment:

Payment shall be made for Master Meter Station at the Lump Sum Contract Price as set forth in the Bid Schedule as applicable. Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to construct the station as shown in the Drawings. No separate payment shall be made for valves, strainers, gauges or other accessories.

END OF SECTION

SECTION REF

REFERENCE SPECIFICATIONS

CONTENTS **PAGE**

AWWA Standard for Disinfecting Water Mains 1 to 15

Mountain Water District Water Distribution Lines
Technical Specifications I-1 to III-5

American Water Works Association
ANSI/AWWA C600-93
(Revision of ANSI/AWWA C600-87)

AWWA STANDARD

FOR

INSTALLATION OF DUCTILE-IRON WATER MAINS AND THEIR APPURTENANCES

Effective date: Apr. 1, 1994.
First edition approved by AWWA Board of Directors May 8, 1977.
This edition approved June 6, 1993.
Approved by American National Standards Institute Feb. 8, 1994.

AMERICAN WATER WORKS ASSOCIATION

6666 West Quincy Avenue, Denver, Colorado 80235

SECTION 4: HYDROSTATIC TESTING

WARNING: The testing methods described in this section are specific for water-pressure testing. These procedures should not be applied for air-pressure testing because of the serious safety hazards involved.

Sec. 4.1 Pressure and Leakage Test

4.1.1 *Test restrictions.*

Test pressure shall not be less than 1.25 times the working pressure at the highest point along the test section.

Test pressure shall not exceed pipe or thrust-restraint design pressures.

The hydrostatic test shall be of at least a 2-h duration.

Test pressure shall not vary by more than ±5 psi (34.5 kPa) for the duration of the test.

Valves shall not be operated in either direction at a differential pressure exceeding the rated valve working pressure. Use of a test pressure greater than the

rated valve pressure can result in trapped test pressure between the gates of a double-disc gate valve. For tests at these pressures, the test setup should include a provision, independent of the valve, to reduce the line pressure to the rated valve pressure on completion of the test. The valve can then be opened enough to equalize the trapped pressure with the line pressure, or fully opened if desired.

The test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

4.1.2 *Pressurization.* After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing. Each valved section of pipe shall be slowly filled with water, and the specified test 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) shall be applied by means of a pump connected to the pipe. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. It is good practice to allow the system to stabilize at the test pressure before conducting the leakage test.

4.1.3 *Air removal.* Before applying the specified test pressure, air shall be expelled completely from the section of piping under test. If permanent air vents are not located at all high points, corporation cocks shall be installed at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place as required by the specifications.

4.1.4 *Examination.* All exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damage 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 satisfactory results are obtained.

4.1.5 *Leakage defined.* Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe or any valved section thereof to maintain pressure within 5 psi (34.5 kPa) of the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

4.1.6 *Allowable leakage.* No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

In inch-pound units,

$$L = \frac{SD\sqrt{P}}{133{,}200} \qquad \text{(Eq 1)}$$

Where:

L = allowable leakage, in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of the pipe, in inches
P = average test pressure during the leakage test, in pounds per square inch (gauge)

In metric units,

$$L_m = \frac{SD\sqrt{P}}{715{,}317} \qquad \text{(Eq 2)}$$

Where:

L_m = allowable leakage, in litres per hour
S = length of pipe tested, in metres
D = nominal diameter of the pipe, in millimetres
P = average test pressure during the leakage test, in kPa

These formulas are based on an allowable leakage of 11.65 gpd/mi/in. (1.079 L/day/km/mm) of nominal diameter at a pressure of 150 psi (1034 kPa).

4.1.6.1 Allowable leakage at various pressures is shown in Tables 6A and 6B.

4.1.6.2 When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/h/in. (1.2 mL/h/mm) of nominal valve size shall be allowed.

4.1.6.3 When hydrants are in the test section, the test shall be made against the main valve in the hydrant.

4.1.7 *Acceptance of installation.* Acceptance shall be determined on the basis of allowable leakage. If any test of laid pipe discloses leakage greater than that specified in Sec. 4.1.6, repairs or replacements shall be accomplished in accordance with the specifications.

4.1.7.1 All visible leaks are to be repaired regardless of the amount of leakage.

Table 6A Allowable leakage per 1000 ft of pipeline* — *gph*†

Avg. Test Pressure *psi*	Nominal Pipe Diameter—*in.*																	
	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	54	60	64
450	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.82	4.78	5.73	6.69	7.64	8.60	9.56	10.19
400	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41	6.31	7.21	8.11	9.01	9.61
350	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37	4.21	5.06	5.90	6.74	7.58	8.43	8.99
300	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68	5.46	6.24	7.02	7.80	8.32
275	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.73	4.48	5.23	5.98	6.72	7.47	7.97
250	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27	4.99	5.70	6.41	7.12	7.60
225	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05	4.73	5.41	6.08	6.76	7.21
200	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73	6.37	6.80
175	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.98	3.58	4.17	4.77	5.36	5.96	6.36
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31	3.86	4.41	4.97	5.52	5.88
125	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53	5.04	5.37
100	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05	4.50	4.80

*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.
†Calculated on the basis of Eq. 1.

Table 6B Allowable leakage per 300 m of pipeline* — *L/h*†

Avg. Test Pressure *KPa*	Nominal Pipe Diameter—*mm*																	
	76	102	152	203	254	305	356	406	457	508	610	762	914	1067	1219	1400	1500	1600
3000	1.84	2.30	3.45	4.59	5.74	6.89	8.04	9.19	10.34	11.49	13.78	17.23	20.67	22.97	27.57	32.16	34.46	36.75
2800	1.78	2.22	3.33	4.44	5.55	6.66	7.77	8.88	9.99	11.10	13.32	16.64	19.97	22.19	26.63	31.07	33.29	35.51
2600	1.71	2.14	3.21	4.28	5.35	6.42	7.48	8.55	9.62	10.69	12.83	16.04	19.25	21.39	25.66	29.94	32.08	34.22
2400	1.64	2.05	3.08	4.11	5.14	6.16	7.19	8.22	9.25	10.27	12.33	15.41	18.49	20.55	24.66	28.76	30.82	32.87
2200	1.57	1.97	2.95	3.93	4.92	5.90	6.88	7.87	8.85	9.84	11.80	14.75	17.70	19.67	23.61	27.54	29.51	31.47
2000	1.50	1.88	2.81	3.75	4.69	5.63	6.56	7.50	8.44	9.38	11.25	14.07	16.88	18.76	22.51	26.26	28.13	30.01
1800	1.42	1.78	2.67	3.56	4.45	5.34	6.23	7.12	8.01	8.90	10.68	13.35	16.01	17.79	21.35	24.91	26.69	28.47
1600	1.34	1.68	2.52	3.36	4.19	5.03	5.87	6.71	7.55	8.39	10.07	12.58	15.10	16.78	20.13	23.49	25.16	26.84
1400	1.26	1.57	2.35	3.14	3.92	4.71	5.49	6.28	7.06	7.85	9.42	11.77	14.12	15.69	18.83	21.97	23.54	25.11
1200	1.16	1.45	2.18	2.91	3.63	4.36	5.08	5.81	6.54	7.26	8.72	10.90	13.08	14.53	17.43	20.34	21.79	23.25
1000	1.06	1.33	1.99	2.65	3.32	3.98	4.64	5.30	5.97	6.63	7.96	9.95	11.94	13.26	15.91	18.57	19.89	21.22
800	0.95	1.19	1.78	2.37	2.97	3.56	4.15	4.74	5.34	5.93	7.12	8.90	10.68	11.86	14.23	16.61	17.79	18.98
600	0.82	1.03	1.54	2.05	2.57	3.08	3.60	4.11	4.62	5.14	6.16	7.70	9.25	10.27	12.33	14.38	15.41	16.44

*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.
†Calculated on the basis of Eq. 2.

American Water Works Association
ANSI/AWWA C651-92
(Revision of ANSI/AWWA C651-86)

AWWA STANDARD

FOR

DISINFECTING WATER MAINS

AMERICAN NATIONAL STANDARD

Effective date: Feb. 1, 1993.
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AMERICAN WATER WORKS ASSOCIATION

6666 West Quincy Avenue, Denver, Colorado 80235

American Water Works Association

ANSI/AWWA C651-92
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AWWA STANDARD FOR

DISINFECTING WATER MAINS

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard presents essential procedures for disinfecting new and repaired water mains. All new water mains shall be disinfected before they are placed in service. All water mains taken out of service for inspection, repair, or other activities that might lead to contamination of water shall be disinfected before they are returned to service.

Sec. 1.2 References

This standard references the following documents. The latest current edition of each forms a part of this standard where and to the extent specified herein. In case of any conflict, the requirements of this standard shall prevail.

ANSI*/AWWA B300—Standard for Hypochlorites.

ANSI/AWWA B301—Standard for Liquid Chlorine.

Simplified Procedures for Water Examination. AWWA Manual M12. AWWA, Denver (1978).

Standard Methods for the Examination of Water and Wastewater. APHA,† AWWA, and WEF.‡ Washington, D.C. (18th ed., 1992).

Additional materials relating to activity under this standard include the following:

Chlorine Manual—Chlorine Institute Inc.§

Introduction to Water Treatment. WSO Series, Vol. 2. AWWA, Denver (1984).

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*American National Standards Institute Inc., 11 W. 42nd St., New York, NY 10036.

†American Public Health Association, 1015 15th St. N.W., Washington, DC 20005.

‡Water Environment Federation, 601 Wythe St., Alexandria, VA 22314.

§Chlorine Institute Inc., 2001 L St. N.W., Washington, DC 20036.

Material Safety Data Sheets for forms of chlorine used (provided by suppliers).

Safety Practice for Water Utilities. AWWA Manual M3. AWWA, Denver (1990).

Water Chlorination Principles and Practices. AWWA Manual M20. AWWA, Denver (1973).

Water Quality and Treatment. AWWA, Denver (4th ed., 1990).

Sec. 1.3 Record of Compliance

The record of compliance shall be the bacteriological test results certifying the water sampled from the new water main to be free of coliform bacteria contamination, and to be equal to or better than the bacteriologic water quality in the distribution system.

SECTION 2: FORMS OF CHLORINE FOR DISINFECTION

The forms of chlorine that may be used in the disinfection operations are liquid chlorine, sodium hypochlorite solution, and calcium hypochlorite granules or tablets.

Sec. 2.1 Liquid Chlorine

Liquid chlorine conforming to ANSI/AWWA B301 contains 100 percent available chlorine and is packaged in steel containers usually of 100-lb, 150-lb, or 1-ton (45.4-kg, 68.0-kg, or 907.2-kg) net chlorine weight. Liquid chlorine shall be used only (1) in combination with appropriate gas-flow chlorinators and ejectors to provide a controlled high-concentration solution feed to the water to be chlorinated; (2) under the direct supervision of a person who is familiar with the physiological, chemical, and physical properties of liquid chlorine, and who is trained and equipped to handle any emergency that may arise; and (3) when appropriate safety practices are observed to protect working personnel and the public.

Sec. 2.2 Sodium Hypochlorite

Sodium hypochlorite conforming to ANSI/AWWA B300 is available in liquid form in glass, rubber-lined, or plastic containers typically ranging in size from 1 qt (0.95 L) to 5 gal (18.92 L). Containers of 30 gal (113.6 L) or larger may be available in some areas. Sodium hypochlorite contains approximately 5 percent to 15 percent available chlorine, and care must be taken to control conditions and length of storage to minimize its deterioration. (Available chlorine is expressed as a percent of weight when the concentration is 5 percent or less, and usually as a percent of volume for higher concentrations. Percent × 10 = grams of available chlorine per litre of hypochlorite.)

Sec. 2.3 Calcium Hypochlorite

Calcium hypochlorite conforming to ANSI/AWWA B300 is available in granular form or in 5-g tablets, and contains approximately 65 percent available chlorine by weight. The material should be stored in a cool, dry, and dark environment to minimize its deterioration.

SECTION 3: BASIC DISINFECTION PROCEDURE

The basic disinfection procedure consists of

1. Preventing contaminating materials from entering the water main during storage, construction, or repair.
2. Removing, by flushing or other means, those materials that may have entered the water main.
3. Chlorinating any residual contamination that may remain, and flushing the chlorinated water from the main.
4. Protecting the existing distribution system from backflow due to hydrostatic pressure test and disinfection procedures.
5. Determining the bacteriological quality by laboratory test after disinfection.
6. Final connection of the approved new water main to the active distribution system.

SECTION 4: PREVENTIVE AND CORRECTIVE MEASURES DURING CONSTRUCTION

Heavy particulates generally contain bacteria and prevent even very high chlorine concentrations from contacting and killing such organisms. It is, therefore, essential that the procedures of this section be observed to assure that a water main and its appurtenances are thoroughly clean for the final disinfection by chlorination. Also, any connection of new water main to the active distribution system prior to receipt of satisfactory bacteriological samples may constitute a cross-connection. Therefore, the new main must be isolated until bacteriological tests described in Sec. 7 of this standard are satisfactorily completed.

Sec. 4.1 Keeping Pipe Clean and Dry

Precautions shall be taken to protect the interiors of pipes, fittings, and valves against contamination. Pipe delivered for construction shall be strung so as to minimize the entrance of foreign material. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Rodent-proof plugs may be used when it is determined that watertight plugs are not practicable and when thorough cleaning will be performed by flushing or other means.

Delay in placement of delivered pipe invites contamination. The more closely the rate of delivery is correlated to the rate of pipe laying, the lower the risk of contamination.

Sec. 4.2 Joints

Joints of all pipe in the trench shall be completed before work is stopped. If water accumulates in the trench, the plugs shall remain in place until the trench is dry.

Sec. 4.3 Packing Materials

Yarning or packing material shall consist of molded or tubular rubber rings, rope of treated paper, or other approved materials. Materials such as jute or hemp shall not be used. Packing material shall be handled in a manner that avoids contamination. If asbestos rope is used, it shall be handled in a manner that prevents asbestos from being introduced into the water-carrying portion of the pipe.

Sec. 4.4 Sealing Materials

No contaminated material or any material capable of supporting prolific growth of microorganisms shall be used for sealing joints. Sealing material or gaskets shall be handled in a manner that avoids contamination. The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water. It shall be delivered to the job in closed containers and shall be kept clean.

Sec. 4.5 Cleaning and Swabbing

If dirt enters the pipe, it shall be removed and the interior pipe surface swabbed with a 1 percent hypochlorite disinfecting solution. If, in the opinion of the purchaser (or the purchaser's representative), the dirt remaining in the pipe will not be removed by the flushing operation, then the interior of the pipe shall be cleaned by mechanical means such as a hydraulically propelled foam pig (or other suitable device acceptable to the purchaser) in conjunction with the application of a 1 percent hypochlorite disinfecting solution to the interior pipe surface. The cleaning method used shall not force mud or debris into the interior pipe-joint spaces and shall be acceptable to the purchaser.

Sec. 4.6 Wet-Trench Construction

If it is not possible to keep the pipe and fittings dry during installation, every effort shall be made to ensure that any of the water that may enter the pipe-joint spaces contains an available-chlorine concentration of approximately 25 mg/L. This may be accomplished by adding calcium hypochlorite granules or tablets to each length of pipe before it is lowered into a wet trench, or by treating the trench water with hypochlorite tablets.

Sec. 4.7 Flooding by Storm or Accident During Construction

If the main is flooded during construction, it shall be cleared of the floodwater by draining and flushing with potable water until the main is clean. The section exposed to the floodwater shall then be filled with a chlorinated potable water that, at the end of a 24-h holding period, will have a free chlorine residual of not less than 25 mg/L. The chlorinated water may then be drained or flushed from the main. After construction is completed, the main shall be disinfected using the continuous-feed or slug method.

Sec. 4.8 Backflow Protection (Optional)*

As an optional procedure (if specified by the purchaser), the new water main shall be kept isolated from the active distribution system by physical separation (see Figure 1) until satisfactory bacteriological testing has been completed and the

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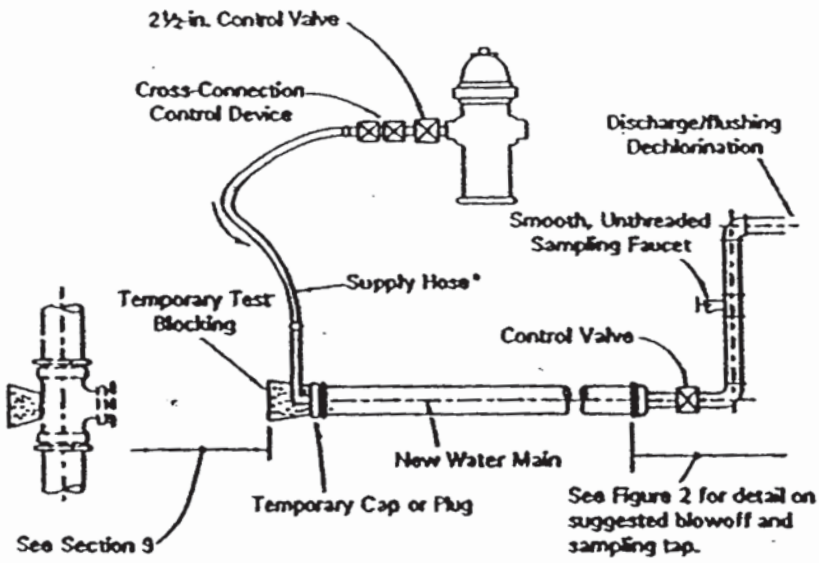
*Optional Sec. 4.8 is not included as part of the standard unless specifically identified in the purchaser's specifications.



*Clean potable-water hose only. Size and number of taps per Table 3 (page 8). This hose must be removed during the hydrostatic pressure test.

NOTE: Figure 1 applies to pipe with diameters 4 in. (100 mm) through 12 in. (300 mm). All larger sizes must be handled on a case-by-case basis.

Figure 1 Suggested temporary flushing/testing connection

disinfectant water flushed out. Water required to fill the new main for hydrostatic pressure testing, disinfection, and flushing shall be supplied through a temporary connection between the distribution system and the new main. The temporary connection shall include an appropriate cross-connection control device consistent with the degree of hazard, and shall be disconnected (physically separated) from the new main during the hydrostatic pressure test. It will be necessary to reestablish the temporary connection after completion of the hydrostatic pressure test to flush out the disinfectant water prior to final connection of the new main to the distribution system.

SECTION 5: METHODS OF CHLORINATION

Three methods of chlorination are explained in this section: tablet, continuous feed, and slug. Information in the foreword will be helpful in determining the method to be used. The tablet method gives an average chlorine dose of approximately 25 mg/L; the continuous-feed method gives a 24-h chlorine residual of not less than 10 mg/L; and the slug method gives a 3-h exposure of not less than 50 mg/L free chlorine.

Table 1 Ounces of calcium hypochlorite granules to be placed at beginning of main and at each 500-ft interval

Pipe Diameter		Calcium Hypochlorite Granules	
in.	(mm)	oz	(g)
4	(100)	0.5	(14)
6	(150)	1.0	(28)
8	(200)	2.0	(57)
12	(250)	4.0	(113)
16 and larger	(400 and larger)	8.0	(227)

Sec. 5.1 Tablet Method

The tablet method consists of placing calcium hypochlorite granules or tablets in the water main as it is being installed and then filling the main with potable water when installation is completed.

This method may be used only if the pipes and appurtenances are kept clean and dry during construction.

5.1.1 *Placing of calcium hypochlorite granules.* 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.

WARNING: This procedure must not be used on solvent-welded plastic or on screwed-joint steel pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite.

5.1.2 *Placing of calcium hypochlorite tablets.* During construction, 5-g calcium hypochlorite tablets shall be placed in each section of pipe. Also, one such tablet shall be placed in each hydrant, hydrant branch, and other appurtenance. The number of 5-g tablets required for each pipe section shall be $0.0012\ d^2L$ rounded to the next higher integer, where d is the inside pipe diameter, in inches, and L is the length of the pipe section, in feet. Table 2 shows the number of tablets required for commonly used sizes of pipe. The tablets shall be attached by a food-grade adhesive.* There shall be no adhesive on the tablet except on the broadside attached to the surface of the pipe. Attach all the tablets inside and at the top of the main, with approximately equal numbers of tablets at each end of a given pipe length. If the tablets are attached before the pipe section is placed in the trench, their position shall be marked on the section so it can be readily determined that the pipe is installed with the tablets at the top.

5.1.3 *Filling and contact.* When installation has been completed, the main shall be filled with water at a rate such that water within the main will flow at a

*Examples of food-grade adhesives are Permatex Form-A-Gasket No. 2 and Permatex Clear RTV Silicone Adhesive Sealant, which are manufactured by Loctite Corporation, Kansas City, KS 66115. These products have both been approved by the US Drug Administration (USDA) for uses that may involve contact with edible products. Neither product has been approved in accordance with NSF 61. Other company products, such as Permatex Form-A-Gasket No. 1, have not received FDA approval.

Table 2 Number of 5-g calcium hypochlorite tablets required for dose of 25 mg/L*

Pipe Diameter		Length of Pipe Section, ft (m)				
		13 (4.0) or less	18 (5.5)	20 (6.1)	30 (9.1)	40 (12.2)
in.	(mm)	Number of 5-g Calcium Hypochlorite Tablets				
4	(100)	1	1	1	1	1
6	(150)	1	1	1	2	2
8	(200)	1	2	2	3	4
10	(250)	2	3	3	4	5
12	(300)	3	4	4	6	7
16	(400)	4	6	7	10	13

*Based on 3.25-g available chlorine per tablet; any portion of tablet rounded to next higher integer.

velocity no greater than 1 ft/s (0.3 m/s). Precautions shall be taken to ensure that air pockets are eliminated. This water shall remain in the pipe for at least 24 h. If the water temperature is less than 41°F (5°C), the water shall remain in the pipe for at least 48 h. As an optional procedure (if specified by the purchaser), water used to fill the new main shall be supplied through a temporary connection that shall include an appropriate cross-connection control device, consistent with the degree of hazard, for backflow protection of the active distribution system (see Figure 1).

Sec. 5.2 Continuous-Feed Method

The continuous-feed method consists of placing calcium hypochlorite granules in the main during construction (optional), completely filling the main to remove all air pockets, flushing the completed main to remove particulates, and filling the main with potable water. The potable water shall be chlorinated so that after a 24-h holding period in the main there will be a free chlorine residual of not less than 10 mg/L.

5.2.1 *Placing of calcium hypochlorite granules.* At the option of the purchaser, calcium hypochlorite granules shall be placed in pipe sections as specified in Sec. 5.1.1. The purpose of this procedure is to provide a strong chlorine concentration in the first flow of flushing water that flows down the main. In particular, this procedure is recommended when the type of pipe is such that this first flow of water will flow into annular spaces at pipe joints.

5.2.2 *Preliminary flushing.* Before being chlorinated, the main shall be filled to eliminate air pockets and shall be flushed to remove particulates. The flushing velocity in the main shall not be less than 2.5 ft/s (0.76 m/s) unless the purchaser (or purchaser's representative) determines that conditions do not permit the required flow to be discharged to waste. Table 3 shows the rates of flow required to produce a velocity of 2.5 ft/s (0.76 m/s) in commonly used sizes of pipe. Note that flushing is no substitute for preventive measures during construction. Certain contaminants, such as caked deposits, resist flushing at any feasible velocity.

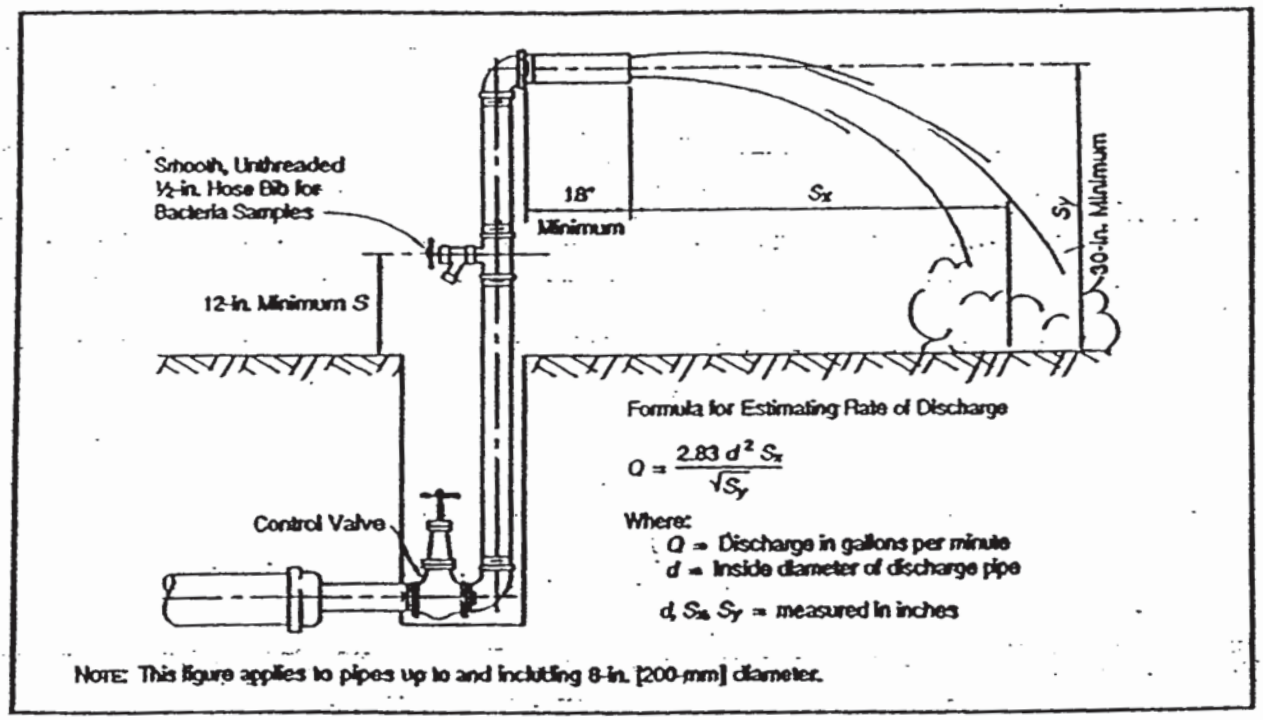
For 24-in. (600-mm) or larger diameter mains, an acceptable alternative to flushing is to broom-sweep the main, carefully removing all sweepings prior to chlorinating the main.

Table 3 Required flow and openings to flush pipelines (40 psi [276 kPa] residual pressure in water main)*

Pipe Diameter in.	(mm)	Flow Required to Produce 2.5 ft/s (approx.) Velocity in Main gpm	(L/s)	Size of Tap, in. (mm) 1 (25)	1½ (38)	2 (51 mm)	Number of 2½-in. (64-mm) Hydrant Outlets
				Number of Taps on Pipe†			
4	(100)	100	(6.3)	1	—	—	1
6	(150)	200	(12.6)	—	1	—	1
8	(200)	400	(25.2)	—	2	1	1
10	(250)	600	(37.9)	—	3	2	1
12	(300)	900	(56.8)	—	—	2	2
16	(400)	1600	(100.9)	—	—	4	2

*With a 40-psi (276-kPa) pressure in the main and the hydrant flowing to atmosphere, a 2½-in. (64-mm) hydrant outlet will discharge approximately 1000 gpm (63.1 L/s); and a 4½-in. (114-mm) hydrant outlet will discharge approximately 2500 gpm (160 L/s).

†Number of taps on pipe based on discharge through 5 ft (1.5 m) of galvanized iron (GI) pipe with one 90° elbow.



NOTE: This figure applies to pipes up to and including 8-in. [200-mm] diameter.

Figure 2 Suggested combination blowoff and sampling tap

5.2.3 *Procedure for chlorinating the main.*

1. Water supplied from a temporary, backflow-protected 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. In the absence of a meter, the rate may be approximated by methods such as placing a

pressures that may be created by the pumps. All connections shall be checked for tightness before the solution is applied to the main.

Sec. 5.3 Slug Method

The slug method consists of placing calcium hypochlorite granules in the main during construction, completely filling the main to eliminate all air pockets, flushing the main to remove particulates, and slowly flowing through the main a slug of water dosed with chlorine to a concentration of 100 mg/L. The slow rate of flow ensures that all parts of the main and its appurtenances will be exposed to the highly chlorinated water for a period of not less than 3 h.

5.3.1 *Placing calcium hypochlorite granules.* Same as Sec. 5.2.1.

5.3.2 *Preliminary flushing.* Same as Sec. 5.2.2.

5.3.3 *Chlorinating the main.*

1. Same as Sec. 5.2.3(1).

2. At a point not more than 10 ft (3 m) 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. To ensure that this concentration is achieved, the chlorine concentration should be measured at regular intervals. The chlorine shall be applied continuously and for a sufficient period to develop a solid column, or "slug," of chlorinated water that will, as it moves through the main, expose all interior surfaces to a concentration of approximately 100 mg/L for at least 3 h.

3. The free chlorine residual shall be measured in the slug as it moves through the main. If at any time it drops below 50 mg/L, the flow shall be stopped, chlorination equipment shall be relocated at the head of the slug, and, as flow is resumed, chlorine shall be applied to restore the free chlorine in the slug to not less than 100 mg/L.

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

SECTION 6: FINAL FLUSHING

Sec. 6.1 Clearing the Main of Heavily Chlorinated Water

After the applicable retention period, heavily chlorinated water should not remain in prolonged contact with pipe. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the distribution system or is acceptable for domestic use.

Sec. 6.2 Disposing of Heavily Chlorinated Water

The environment into which the chlorinated water is to be discharged shall be inspected. If there is any possibility that the chlorinated discharge will cause damage to the environment, then a neutralizing chemical shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water. (See appendix B for neutralizing chemicals.) Where necessary, federal, state, provincial, and local regulatory agencies should be contacted to determine special provisions for the disposal of heavily chlorinated water.

Table 4 Chlorine required to produce 25-mg/L concentration in 100 ft (30.5 m) of pipe—by diameter

Pipe Diameter		100 percent Chlorine		1 percent Chlorine Solution	
in.	*(mm)*	*lb*	*(g)*	*gal*	*(L)*
4	(100)	.013	(5.9)	.16	(0.6)
6	(150)	.030	(13.6)	.36	(1.4)
8	(200)	.054	(24.5)	.65	(2.5)
10	(250)	.085	(38.6)	1.02	(3.9)
12	(300)	.120	(54.4)	1.44	(5.4)
16	(400)	.217	(98.4)	2.60	(9.8)

Pitot gauge in the discharge, measuring the time to fill a container of known volume, or measuring the trajectory of the discharge and using the formula shown in Figure 2.

2. At a point not more than 10 ft (3 m) 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 25 mg/L free chlorine. To ensure that this concentration is provided, measure the chlorine concentration at regular intervals in accordance with the procedures described in the current edition of *Standard Methods for the Examination of Water and Wastewater* or AWWA Manual M12, or using appropriate chlorine test kits (see appendix A).

Table 4 gives the amount of chlorine required for each 100 ft (30.5 m) of pipe of various diameters. Solutions of 1 percent chlorine may be prepared with sodium hypochlorite or calcium hypochlorite. The latter solution requires 1 lb (454 g) of calcium hypochlorite in 8 gal (30.3 L) of water.

3. As an optional procedure (if specified by the purchaser), water used to fill the new main during the application of chlorine shall be supplied through a temporary connection. This temporary connection shall be installed with an appropriate cross-connection control device, consistent with the degree of hazard, for backflow protection of the active distribution system (see Figure 1). Chlorine application shall not cease until the entire main is filled with heavily chlorinated water. The chlorinated water shall be retained in the main for at least 24 h, during which time all valves and hydrants in the treated section shall be operated to ensure disinfection of the appurtenances. At the end of this 24-h period, the treated water in all portions of the main shall have a residual of not less than 10 mg/L free chlorine.

4. Direct-feed chlorinators, which operate solely from gas pressure in the chlorine cylinder, shall not be used for the application of liquid chlorine. (The danger of using direct-feed chlorinators is that water pressure in the main can exceed gas pressure in the chlorine cylinder. This allows a backflow of water into the cylinder, resulting in severe cylinder corrosion and escape of chlorine gas.) The preferred equipment for applying liquid chlorine is a solution-feed, vacuum-operated chlorinator and a booster pump. The vacuum-operated chlorinator mixes the chlorine gas in solution water; the booster pump injects the chlorine-gas solution into the main to be disinfected. Hypochlorite solutions may be applied to the water main with a gasoline or electrically powered chemical-feed pump designed for feeding chlorine solutions. Feed lines shall be of such material and strength as to safely withstand the corrosion caused by the concentrated chlorine solutions and the maximum

SECTION 7: BACTERIOLOGICAL TESTS

Sec. 7.1 Standard Conditions

After final flushing and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples, taken at least 24 h apart, shall be collected from the new main. At least one set of samples shall be collected from every 1200 ft (366 m) of the new water main, plus one set from the end of the line and at least one set from each branch. All samples shall be tested for bacteriological quality in accordance with *Standard Methods for the Examination of Water and Wastewater*, and shall show the absence of coliform organisms. A standard heterotrophic plate count may be required at the option of the purchaser (or purchaser's representative).

Sec. 7.2 Special Conditions

If trench water has entered the new main during construction or, if in the opinion of the purchaser (or purchaser's representative), excessive quantities of dirt or debris have entered the new main, bacteriological samples shall be taken at intervals of approximately 200 ft (61 m) and shall be identified by location. Samples shall be taken of water that has stood in the new main for at least 16 h after final flushing has been completed.

Sec. 7.3 Sampling Procedure

Samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate as required by *Standard Methods for the Examination of Water and Wastewater*. No hose or fire hydrant shall be used in the collection of samples. A suggested combination blowoff and sampling tap useful for mains up to and including 8-in. (200-mm) diameter is shown in Figure 2. A corporation cock may be installed in the main with a copper-tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use.

SECTION 8: REDISINFECTION

If the initial disinfection fails to produce satisfactory bacteriological results, the new main may be reflushed and shall be resampled. If check samples also fail to produce acceptable results, the main shall be rechlorinated by the continuous-feed or slug method of chlorination until satisfactory results are obtained.

NOTE: High velocities in the existing system, resulting from flushing the new main, may disturb sediment that has accumulated in the existing mains. When check samples are taken, it is advisable to sample water entering the new main.

SECTION 9: FINAL CONNECTIONS TO EXISTING MAINS (OPTIONAL)*

As an optional procedure (if specified by the purchaser), water mains and appurtenances must be completely installed, flushed, disinfected, and satisfactory

*Optional Sec. 9 is not included as part of the standard unless specifically identified in the purchaser's specifications.

bacteriological sample results received prior to permanent connections being made to the active distribution system. Sanitary construction practices must be followed during installation of the final connection, so that there is no contamination of the new or existing water main with foreign material or groundwater.

Sec. 9.1 Connections Equal To or Less Than One Pipe Length (≤ 18 ft [5.5 m])

As an optional procedure (if specified by the purchaser), the new pipe, fittings, and valve(s) required for the connection may be spray-disinfected or swabbed with a minimum 1 percent solution of chlorine just prior to being installed, if the total length of connection from the end of a new main to the existing main is equal to or less than 18 ft (5.5 m).

Sec. 9.2 Connections Greater Than One Pipe Length (>18 ft [5.5 m])

As an optional procedure (if specified by the purchaser), the pipe required for the connection must be set up aboveground, disinfected, and bacteriological samples taken, as described in Sec. 5 through Sec. 8, if the total length of connection from the end of a new main to the existing main is greater than 18 ft (5.5 m). After satisfactory bacteriological sample results have been received for this "pre-disinfected" pipe, the pipe can be used in connecting the new main to the active distribution system. Between the time that satisfactory bacteriological sample results are received and the time that the connection piping is installed, the ends of this piping must be sealed with plastic wraps or watertight plugs or caps.

SECTION 10: DISINFECTION PROCEDURES WHEN CUTTING INTO OR REPAIRING EXISTING MAINS

The following procedures apply primarily when existing mains are wholly or partially dewatered. After the appropriate procedures have been completed, the existing main may be returned to service prior to completion of bacteriological testing in order to minimize the time customers are out of water. Leaks or breaks that are repaired with clamping devices while the mains remain full of pressurized water present little danger of contamination and require no disinfection.

Sec. 10.1 Trench Treatment

When an existing main is opened, either by accident or by design, the excavation will likely be wet and may be badly contaminated from nearby sewers. Liberal quantities of hypochlorite applied to open trench areas will lessen the danger from such pollution. Tablets have the advantage in such a situation because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation.

Sec. 10.2 Swabbing With Hypochlorite Solution

The interior of all pipe and fittings (particularly couplings and sleeves) used in making the repair shall be swabbed or sprayed with a 1 percent hypochlorite solution before they are installed.

Sec. 10.3 Flushing

Thorough flushing is the most practical means of removing contamination introduced during repairs. If valve and hydrant locations permit, flushing toward

the work location from both directions is recommended. Flushing shall be started as soon as the repairs are completed and shall be continued until discolored water is eliminated.

Sec. 10.4 Slug Chlorination

When practical, in addition to the procedures above, the section of main in which the break is located shall be isolated, all service connections shut off, and the section flushed and chlorinated as described in Sec. 5.3, except that the dose may be increased to as much as 300 mg/L and the contact time reduced to as little as 15 min. After chlorination, flushing shall be resumed and continued until discolored water is eliminated, and the water is free of noticeable chlorine odor.

Sec. 10.5 Sampling

Bacteriological samples shall be taken after repairs are completed to provide a record for determining the procedure's effectiveness. If the direction of flow is unknown, then samples shall be taken on each side of the main break. If positive bacteriological samples are recorded, then the situation shall be evaluated by the purchaser (or purchaser's representative) who can determine corrective action, and daily sampling shall be continued until two consecutive negative samples are recorded.

SECTION 11: SPECIAL PROCEDURE FOR CAULKED TAPPING SLEEVES

Before a tapping sleeve is installed, the exterior of the main to be tapped shall be thoroughly cleaned, and the interior surface of the sleeve shall be lightly dusted with calcium hypochlorite powder.

Tapping sleeves are used to avoid shutting down the main to be tapped. After the tap is made, it is impossible to disinfect the annulus without shutting down the main and removing the sleeve. The space between the tapping sleeve and the tapped pipe is normally ½ in. (13 mm), more or less, so that as little as 100 mg/ft^2 of calcium hypochlorite powder will provide a chlorine concentration of over 50 mg/L.

APPENDIX A
Chlorine Residual Testing

This appendix is for information only and is not a part of AWWA C651.

SECTION A.1: DPD DROP DILUTION METHOD (FOR FIELD TEST)

The DPD drop dilution method of approximating total residual chlorine is suitable for concentrations above 10 mg/L, such as are applied in the disinfection of water mains or tanks.

Sec. A.1.1 Apparatus

1. A graduated cylinder for measuring distilled water.
2. An automatic or safety pipette.
3. Two dropping pipettes that deliver a 1-mL sample in 20 drops. One pipette is for dispensing the water sample, and the other is for dispensing the DPD and buffer solutions. The pipettes should not be interchanged.
4. A comparator kit containing a suitable range of standards.

Sec. A.1.2 Reagents

1. DPD indicator solution. Prepare as prescribed in *Standard Methods for the Examination of Water and Wastewater* (18th ed.), Section 4500-Cl G, p. 4-62.

Sec. A.1.3 Procedure

1. Add 10 drops of DPD solution and 10 drops of buffer solution (or 20 drops of combined DPD–buffer solution) to a comparator cell.
2. Fill the comparator cell to the 10-mL mark with distilled water.
3. With a dropping pipette, add the water sample one drop at a time, allowing mixing, until a red color is formed that matches one of the color standards.
4. Record the total number of drops used and the final chlorine reading obtained (that is, the chlorine reading of the matched standard).
5. Calculate the milligrams per litre of free residual chlorine as follows:

$$\text{mg/L chlorine} = \frac{\text{reading} \times 200}{\text{drops of sample}}$$

SECTION A.2: HIGH-RANGE CHLORINE TEST KITS

Several manufacturers produce high-range chlorine test kits that are inexpensive, easy to use, and satisfactory for the precision required.

APPENDIX B

Disposal of Heavily Chlorinated Water

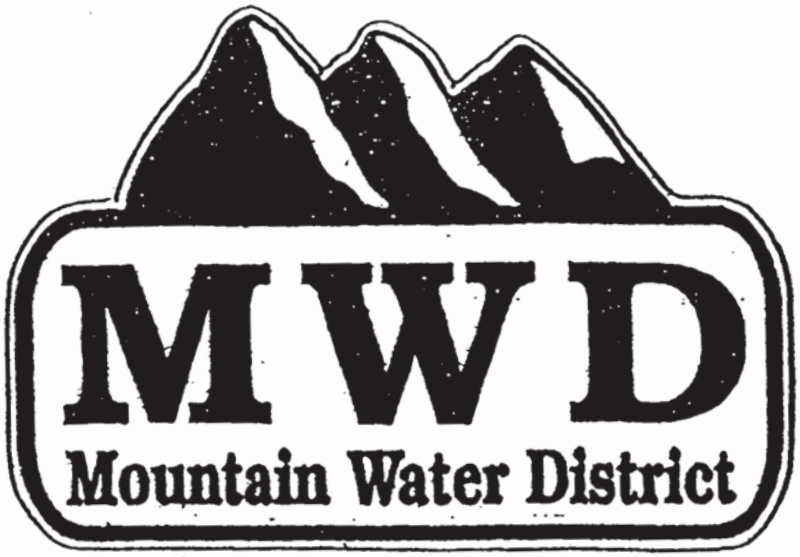
This appendix is for information only and is not a part of AWWA C651.

1. Check with the local sewer department for conditions of disposal to sanitary sewer.

2. Chlorine residual of water being disposed will be neutralized by treating with one of the chemicals listed in Table B.1.

Table B.1 Amounts of chemicals required to neutralize various residual chlorine concentrations in 100,000 gal (378.5 m^3) of water

Residual Chlorine Concentration	Chemical Required							
	Sulfur Dioxide (SO_2)		Sodium Bisulfite ($NaHSO_3$)		Sodium Sulfite (Na_2SO_3)		Sodium Thiosulfate ($Na_2S_2O_3 \cdot 5H_2O$)	
mg/L	*lb*	*(kg)*	*lb*	*(kg)*	*lb*	*(kg)*	*lb*	*(kg)*
1	0.8	(.36)	1.2	(.54)	1.4	(.64)	1.2	(.54)
2	1.7	(.77)	2.5	(1.13)	2.9	(1.32)	2.4	(1.09)
10	8.3	(3.76)	12.5	(5.67)	14.6	(6.62)	12.0	(5.44)
50	41.7	(18.91)	62.6	(28.39)	73.0	(33.11)	60.0	(27.22)



WATER DISTRIBUTION LINES
TECHNICAL SPECIFICATIONS

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WATER DISTRIBUTION LINES

TECHNICAL SPECIFICATIONS

SECTION I

GENERAL REQUIREMENTS

1.1 Statement of Work

The requirements herein are intended to apply to those items of labor, tools, materials and equipment necessary for the construction of the water distribution lines and appurtenances as shown on the plans and described in the specifications. These requirements will apply to both new and replacement projects.

1.2 Preconstruction Conference

Prior to the start of any construction, the Contractor (and Developer if the project is in a subdivision and the work is being done for the DEVELOPER to be turned over to the District at completion of construction) shall attend a conference at the project site with the District Inspector and the Design Engineer. At this meeting, a general construction schedule will be developed so that the District inspection and testing services can be planned. The CONTRACTOR'S Job Foreman will be designated at this meeting, and communication at the job site between the District representative and the CONTRACTOR shall be through this individual.

1.3 Inspection

All construction work for the Utility or work done for or by a DEVELOPER that will connect to the District water system shall be subject to inspection and approval by the District Inspector. No water line shall be installed and covered without approval of the District Inspector. Sufficient notice (Preferably 3 District working days) shall be given prior to the requirement for inspection by the District Inspector. The District Inspector shall also make periodic inspections throughout the project.

1.4 Plans, Construction Staking and Cut-Sheets

The CONTRACTOR shall have on the job site at all times at least one individual who is competent to read and understand the plans.

1.5 Safety

The CONTRACTOR will provide adequate protection to safeguard and protect the public and workmen when working on public right-of-ways and property.

The CONTRACTOR shall be subject to inspection by the designated Safety Inspector, and will be required to abide by the Safety Inspector's recommendations and will be subject to work stoppage if compliance is not made.

1.6 Caution in Excavation

The CONTRACTOR shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground structures, both known and unknown, may be determined. The location of existing underground structures should be determined by the CONTRACTOR enough in advance of the pipe-laying to provide for a change of design alignment by the Design Engineer, if required. Any loss or damage to the site or to the underground or surface utility within the site are due to construction activities shall be borne by the CONTRACTOR.

1.7 Approved Plans

No work shall commence on any water system until the CONTRACTOR has in this possession a complete set of approved plans prepared by a professional Engineer, registered in Kentucky, whose signed seal shall appear on each plan sheet. Each set of plans shall also be approved and signed by the Superintendent of the Mountain Water District. Any significant change from the original approved plans shall require an additional approval from the Superintendent. Verbal approval from the District Inspector shall decide whether a change is a minor change or a significant change.

1.8 Separation of Water Lines and Sanitary Sewers

1.8.1 General

The following factors shall be considered in providing adequate separation:

a. Materials and types of joints for water and sewer pipes,

b. Soil conditions,

c. Service branch connections into the water line and sewer lines,

d. Compensating variations in the horizontal and vertical separations.

e. Space for repairs and alterations of water and sewer pipe,

f. Offsetting of pipes around manholes.

1.8.2 Parallel Installation

a. Normal Conditions - Water lines shall be laid at least ten feet horizontally from a sewer or sewer manhole whenever possible, the distance shall be measured edge-to-edge.

b. Unusual Conditions - When local conditions prevent a horizontal separation of ten feet, the water line may be laid closer to a sewer or sewer manhole provided that:

1. The bottom of the water line is at least 18 inches above the top of the sewer.

2. Where this vertical separation cannot be obtained, the sewer shall be constructed of AWWA approved ductile iron water pipe, pressure-tested in place to 50 psi without leakage prior to backfilling.

3. The sewer manhole shall be of watertight construction tested in place.

1.8.3 Crossing

a. Normal Conditions - Water lines crossing sewers shall be laid to provide a separation of at least 18 inches between the bottom of water line and the top of the sewer whenever possible.

b. Unusual Conditions - When local conditions prevent a vertical separation described in 1.8.3a, the following construction shall be used:

1. Sewers passing over or under water lines shall be constructed of the materials described in 1.8.2.b2.

2. Water lines passing under sewers shall, in addition, be protected by providing:

a. A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water line.

b. Adequate structural support for the sewers to prevent excessive deflection of the joints and settling on and breaking water line.

c. That a joint 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 sewer.

1.8.4 Sanitary Sewers or Sewer Manholes

No water pipes shall pass through or come in contact with any part of a sewer or sewer manhole.

1.8.5 Surface Water Crossing

Surface water crossings, both over and under water, shall be discussed with the Design Engineer before final plans are prepared.

1.8.5.1 Above Water Crossing

There shall be no above-water crossings allowed.

1.8.5.2 Under Water Crossing

a. The pipe shall be of a special construction, having flexible watertight joints.

b. Valves shall be provided at both ends of the water crossing so that the section can be isolated for tests or repair; the valves shall be easily accessible and not subject to flooding.

c. All water pipe and flexible watertight joints lying below the water table shall be concrete encased.

d. Permanent taps shall be made for testing and locating leaks. For stream crossings, a standard meter box, cover and copper setter shall be installed on the stream side nearest the source of supply.

1.9 Bored and Cased Crossings

When casing pipe is required for highways, railroad or other crossings, the project shall be completed in accordance with all applicable federal, state, and local regulations. In the case of railroad crossings, the project shall comply further with regulations established by the specific railroad company. In general, boring will be permitted for casing diameters through 36 inches with maximum length of about 175 feet, jacking for diameters 30 inches through 60 inches with lengths of about 200 feet; and tunneling for pipes 48 inches and larger for longer lengths. Spacers shall be used, as shown on drawing MW-11, and rubber boots to seal each end of casings.

1.10 Plans Required on the Job Site

The CONTRACTOR shall keep at the job site at all times two sets of approved plans and one set of project specifications shall be required.

1.11 Exceptions

Exceptions may be made to these specifications in cases where engineering data is presented to the District by a registered Engineer which show the suitability of some alternate method or material. Such a request for approval of an exception shall be made in writing, properly documented, to the District. The responsibility and authority for granting an exception to these specifications shall rest with the District.

1.12 Future Location of Water Mains

In order that PVC water mains may be located in the future and that all mains be protected from excavating equipment damaging the line, a metallic tape and locator wire shall be laid on top of the first lift being 12 inches over the crown of the pipe. The tape shall be continuous for the entire length of the pipe laid including all branches and junctions. This tape shall have a printed warning indicating the utility located beneath it. In addition to warning tape, there shall be installed a 14 gage locator wire continuous throughout the project. The wire shall be pulled in all valve boxes and hydrant areas.

1.13 Maintenance Period

After acceptance of the constructed water facilities and a complete set of as-built plans have been received by the District, the water facilities may be placed into service. The contractor shall be

responsible for the maintenance of the facilities for a period of not less than twelve (12) months. This period shall commence after formal acceptance of the water facilities by the District. The contractor shall repair any and all defects as determined by the District in the facilities that occur during the prescribed period prior to final acceptance of the new facilities into the District water system and maintenance responsibilities by the District. If such repairs are made the warranty shall extend to a period of one (1) year from the date of repair on said area.

The District may, at its option, make repairs during the warranty period of an emergency exists, i.e., loss of service to customers, or, if in the opinion of the Superintendent of Operations Manager, contractor could not begin repairs within 2 (two) hours. Contractor will reimburse the District for all costs associated with said repairs and overhead and administrative costs.

TECHNICAL SPECIFICATIONS

SECTION II

EXCAVATION, INSTALLATION AND BACKFILLING

2.1 Classification

Excavation shall be unclassified regardless of material encountered.

2.2 Clearing

Only that portion of the right-of-way easement actually needed for construction shall be cleared, unless directed otherwise by the INSPECTOR. In no case shall clearing of debris from clearing operations be taken past right-of-way easement lines into private property. Areas disturbed by construction operations shall be protected from erosion by suitable methods outlined by the Utility.

2.3 Excavation and Preparation of Trench

2.3.1 Cover

Pipe shall have a minimum cover of 36", unless otherwise shown on the plans and approved.

2.3.2 Bedding

Generally bedding will be Type 1 as depicted on Detail Sheet MW-5 for All Water Mains. Alternate types of bedding may be required due to special soil or load conditions and shall be specified by the Design Engineer or District.

2.3.3 Width

Width shall be sufficient to allow laying without walking or standing on the pipe and shall not be less than 6" on each side of the pipes largest diameter.

2.3.4 Bell Holes

Bell holes shall be excavated to accommodate each bell.

2.3.5 Rock Excavation

Ledge rock, boulders, and large stones shall be removed to provide a clearance of at least 6" below and on each side of all pipe valves and fittings. Before the pipe is laid, the subgrade shall be made by backfilling with approved material and shall be tamped and graded as specified in Section 2.3. No blasting shall be permitted.

2.3.6 Excavation to Grade

The trench shall be excavated so as to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between bell holes, except that it will be permissible to disturb and otherwise damage the finished surface over a maximum length of 18 inches near the middle of each length of pipe by the withdrawal of pipe slings or other lifting tackle. Any specified grade shall be corrected with approved material, thoroughly compacted as directed by the INSPECTOR. The finished subgrade shall be prepared accurately by means of hand tools.

The subgrade beneath the centerline of the pipe shall be finished to within 0.03 feet of a straight line between pipe joints or batter boards, and all tolerances shall be above the specified grade.

2.3.7 Unsuitable Material

Wet or otherwise unsuitable soil at the subgrade shall be removed and replaced with approved sound materials. Excess or unsuitable material shall be disposed of by the CONTRACTOR.

2.3.8 Topsoil Storage

Topsoil to be used in backfilling shall be stockpiles separately from other backfill materials.

2.3.9 Trench Protection

The CONTRACTOR shall furnish and erect such sheathing, bracing and shoring, and shall furnish necessary signs, barricades and temporary lighting as may be pertinent for the protection of his work, employees, the public, adjacent structures and to guard against contingencies which might give rise to delays in the work. Sheathing left in place shall be at the CONTRACTOR'S expense. Responsibility for preservation of trench banks and other excavated spaces and the prevention of injury to any persons or property shall rest entirely with the CONTRACTOR.

2.3.10 Pumping, Bailing & Drainage

The CONTRACTOR shall remove by pumping, bailing, or other appropriate means any damaging water which may accumulate or be found in the trenches or other excavations and shall form dams, flumes or effect other means to keep the excavations clear of water while work is in progress.

2.3.11 Blasting

No Blasting shall be permitted.

2.3.12 Excavation in Pavement

When pavement must be cut, the cut shall be made in a straight line, parallel to the pipe and 6 inches wider than the trench, on each side, so that an undisturbed shoulder will be provided under the new work. Sidewalks or curb and gutter disturbed by construction shall be removed and replaced at existing joints. Cutting shall be done neatly so that a uniform, straight joint will result to provide a bond with the original concrete or pavement.

Where trenches cross streets, not more than one-half of the street width shall be disturbed at one time, and the first trench opening shall be restored to satisfactory travelable condition before the second half is excavated. Placement of excavated material on existing pavement shall be avoided wherever possible, and when so placed, the pavement shall be satisfactorily cleaned by an approved method. No cleated equipment shall be used on pavements. Street drainage shall not be clogged and shoulders and ditches affected by trenching operations shall be maintained in satisfactory condition. Entrances shall not be blocked except for short periods, and ingress and egress to adjacent property shall be maintained at all times.

Traffic shall not be blocked or re-routed without permission from the Kentucky Department of Transportation, County, or other governing agencies.

Detail Sheet MW-10 exhibits acceptable method of pavement replacing methods.

2.4 Installation of Pipe, Fittings and Accessories

2.4.1 Placement

Pipe shall be placed in the trench in such a manner as to prevent damage to pipe end protective coatings and linings. Under no circumstances shall pipe be dropped or dumped into the trench.

2.4.2 Cleaning

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in line. Spigot and bell ends of pipe and gaskets shall be cleaned and lubricated according to the manufacturer's instructions. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug.

2.4.3 Direction of Laying

Pipe shall be laid with bell ends facing in the direction of laying, unless directed otherwise by the DESIGN ENGINEER. Where pipe is laid on grade of 10 percent or greater, the laying shall start at the bottom and shall proceed upward with the bell ends of the pipe upgrade.

2.4.4 Deflection at Joints

Maximum deflection for mechanical joints and push-on joints shall be as follows:

	Mechanical Joint Allowable Deflection in Inches		Push-On Allowable Deflection in Inches	
Pipe Size	Lengths 18'	20'	Lengths 18'	20'
4"	31	35	19	21
6"	27	30	19	21
8"	20	22	19	21
10"	20	22	19	21
12"	20	22	19	21

2.4.5 Setting of Valves, Hydrants, and Fittings

A valve box and marker 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 pavement or such other level as may be directed. Hydrants shall be set so that the center of the outlet is 16 to 18 inches above finished grade when connected to the main and shall be tied to main or anchored to control thrust. Provide at least 3 C.F. of crushed stone or gravel under base to allow drainage from the hydrant drain valve. Fire hydrants shall not be set where seasonal groundwater table or surface flooding, as determined by the District, will prevent drainage from the hydrant barrel. Valve boxes and fire hydrants shall be installed in accordance with Standard Detail Sheets MW-1 and MW-3.

2.4.6 Anchorage

Pressure pipe lines shall be protected against joint pulling or thrust damage by suitable anchors, braces, or tie rods installed at direction changes effected by fittings and all other critical points(i.e., in-line valves, etc.). Thrust blocks shall be of the size indicated on the drawings and shall bear on solid undisturbed earth.

2.4.7 Testing

CONTRACTOR shall make all preparation, furnish all equipment, and shall supply the labor for all tests. Pressure and leakage tests shall be in accordance with AWWA C.600, Section 4.1 and 4.2. Test pressure shall be a minimum of 150 psi or 50 psi above the standard operating pressure or 67% of the pipe rating whichever is greater. In addition, the hydrostatic test boundaries shall be each valved section of the waterline and each valve shall be as a minimum subjected to test pressure on one side. Allowable leakage shall not be greater than that determined by the following formula:

1 gallon per inch of pipe diameter per mile per 24 hours

in which L is the allowable leakage, in gallons per hour; S is the length of pipe tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test in pounds per square inch gauge.

The pressure test shall be performed first, and shall be for a period of at least 24 hours with pressure and metering charts provided to the District. The valved section of pipe under consideration shall be slowly filled with water and brought to the specified pressure by means of a pump. Before applying the specified test pressure, all air shall be expelled from the pipe.

The leakage test shall be conducted after the pressure test has been satisfactorily completed. The duration of each leakage test shall be twenty-four hours. The allowable leakage shall be as shown in the following table:

Allowable Leakage per 1000 ft. of Pipeline*—gph

Avg. Test Pressure	Nominal Pipe Diameter-In.													
psi	3	3	4	6	8	10	12	14	16	18	20	24	30	36
450	0.32	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.82	4.78	5.73
400	0.30	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41
350	0.28	0.42	0.56	0.84	1.12	1.40	1.69	11.97	2.25	2.53	2.81	3.37	4.21	5.06
300	0.26	0.39	0.51	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68
275	0.25	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.73	4.48
250	0.24	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27
225	0.23	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05
200	0.21	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82
175	0.20	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.98	3.58
150	0.19	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31
125	0.17	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.55	1.68	2.01	2.52	3.02
100	0.15	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70

**For pipe with 18 ft. nominal lengths. To obtain the recommended allowable leakage for pipe with 20 ft. nominal lengths, multiply the leakage calculated from the table by 0.9. If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.*

The District's Inspector shall observe all tests. If the pipe fails to meet test requirements, all leaks shall be repaired and defective pipe repaired or replaced by the CONTRACTOR. The test shall be repeated until satisfactory results are obtained.

The CONTRACTOR shall meter all flushing water and report quantity to the

INSPECTOR.

2.4.8 Disinfecting Water Mains

Water mains and accessories shall be disinfected in accordance with AWWA C.651. The CONTRACTOR shall have on site a set of the most recent AWWA Standards. Care shall be taken to minimize entrance of foreign material into pipe, fittings and valves. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug. The main shall be flushed prior to disinfection with sufficient flow to produce a velocity of 2.4 fps. No site for flushing shall be chosen unless it has been determined that drainage is adequate at the site.

2.4.8.1 Methods of Chlorine Application

a. Continuous Feed Method - Potable water shall be introduced into the pipe line at a constant flow rate. Chlorine shall be added at a constant rate to this flow so that the chlorine concentration in the water in the pipe is at least 50 mg/l. The chlorinated water shall remain in the pipe line at least 24 hours, after which, the chlorine concentration in the water shall be at least 25 mg/l. All valves and appurtenances shall be operated while the chlorinated water remains in the pipe line. Other methods must be approved by the District.

b. Slug Method if approved by the District - Potable water shall be introduced into the pipe line at a constant flow rate. This water shall receive a chlorine dosage which will result in a chlorine concentration of 100 mg/l in a "slug" of the water. The chlorine shall be added long enough to insure that all portions of the pipe are exposed to the 100 mg/l chlorine solution for at least 3 hours. The chlorine residual shall be checked at regular intervals not to exceed 2000 feet to insure that adequate residual is maintained. As the chlorinated water passes valves and appurtenances, they shall be operated to insure disinfection of these appurtenances.

c. Tablet Method if approved by the District - This method shall not be used if nonpotable water or foreign materials have entered the lines or if the water temperature is below 5°C (41°F).

The tablets shall be placed in each section and in all appurtenances. Enough tablets shall be used to insure that a chlorine concentration of 25 mg/l is provided in the water. They shall be attached by an adhesive to the top of the pipe sections and crushed or rubbed in all appurtenances. The adhesive shall be Permatex No. 1 or an alternative approved by the District. The velocity of the potable water in the pipe line shall be less than 1 ft/sec. The water shall then remain in contact with the pipe for 24 hours. All valves and appurtenances shall be operated while the chlorinated water is in the pipe

line. The CONTRACTOR may then proceed with adequate testing and flushing to make the line usable.

2.4.8.2 Final Flushing

Sites for flushing shall be chosen that are determined to have adequate drainage. In addition, special precautions shall be taken to prevent damage to aquatic life in receiving waters, from the heavily chlorinated waters. Flushing sites should be located as far from receiving waters as possible. Federal, state, and local regulations regarding toxic wastes must be followed. If necessary, dechlorination of the flushing water should be provided prior to discharge.

2.4.9 Bacteriological Testing

After final flushing and before the water main is placed in service, a minimum of two consecutive samples shall be collected at 24 hour intervals, for each section of pipe not exceeding 2000 feet throughout the length of pipe line. The samples shall be tested, by a laboratory chosen by the District, for bacteriologic quality and shall show the absence of coliform organisms.

2.5 – Backfilling

2.5.1 Material

All backfill material shall be free from mud, refuse, construction debris, organic material, boulders, rock over 4 inches, frozen or otherwise unsuitable material. From one foot above the top of the pipe to the original ground elevation, however, material containing stones up to 8 inches in their greatest dimension may be used, unless otherwise specified. The CONTRACTOR may backfill with the excavated material provided it meets the conditions as stated above.

2.5.2 Initial Backfill

All trenches shall be backfilled by hand with approved material in layers not exceeding 3 inches, from the bottom of the trench to the center line of the pipe. Material shall be deposited on both sides of the pipe simultaneously and compacted into place by tamping. From the center line of the pipe to a depth of 1 foot above the pipe the trench shall be backfilled by hand or by approved mechanical methods but in either case thoroughly tamped. In no case shall any particle size be larger than 3/4" in diameter in initial backfill.

2.5.3 Backfilling to Grade

The remainder of backfilling shall be carried up evenly on both sides of the trench in increments of twelve inches. Each layer of earth shall be compacted into place by tamping, before the next layer is applied. Damage to pipe lines or other structures resulting from compaction shall be corrected by the CONTRACTOR.

2.5.4 Finished Surfaces

Uniformly smooth grading of disturbed areas shall be required after backfill and compaction. Finished surfaces shall not be more than 0.10 feet above or below the original garde or cross section. Ditches and gutters shall be finished to drain readily. In grass or lawn areas, the last four 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.

2.5.5 Seeding

All lawn and grass areas disturbed shall be fertilized with a 5-10-5 fertilizer at the rate of 35 pounds per 1000 square feet worked in by harrow or rake at least 48 hours prior to seeding. All seed shall comply with applicable State and Federal seed laws. The seed mixture shall be a combination of rapid germinating annual grasses and perennial grasses and shall be applied at the rate of 6 pounds per 1000 square feet. Adequate rolling shall follow to compact the seeded areas.

2.5.6 Backfill Under Pavement

Backfilling of trenches under existing or proposed pavement shall be in layers of not more than 12 inches in thickness, and each layer shall be compacted to a minimum of 95 percent density as compared to density of the same material when tested in accordance with AASHO Specification T-99. Compaction shall be by pneumatic tampers of other approved methods. Compaction by water will not be permitted under pavement. All material under the pavement shall consist of aggregate base material meeting the requirements of Kentucky Department of Highways, Standard Specifications for Road and Bridge Construction, latest edition. This material shall be thoroughly and uniformly tamped with pneumatic tampers or other approved methods. Moisture content shall be within 20 percent of optimum. All moisture-density tests required by Mountain Water District shall be performed by Laboratories approved by the District and the CONTRACTOR shall bear the costs of all testing. The CONTRACTOR will be responsible for and shall repair any settlement in the backfill or pavement for a period of one year after completion of the work.

2.5.7 Replacement of Pavement and Structures

The CONTRACTOR shall restore all pavement, sidewalks, curbing, gutters, shrubbery, fences, poles, or other property and surface removed or disturbed as a part of the work to a condition equal to or better than before the work began.

2.5.8 Clean Up

All surplus materials, tools, temporary structures, dirt, rubbish, rock and excess earth from the excavation shall be removed at the completion of construction and the site left in a clean condition.

2.5.9 Sediment Control

The CONTRACTOR will be responsible for control of siltation and erosion from the Project within the Project limits. Control shall include all necessary measures to minimize the deposition of materials in downstream areas.

TECHNICAL SPECIFICATIONS

SECTION III

MATERIAL

3.1 Pipe

Water mains and lateral pipe shall be one of the following materials, at the CONTRACTOR'S option, except where otherwise indicated. The CONTRACTOR shall indicate at the time of bidding the type of pipe to be installed.

3.1.1 Ductile Iron Pipe

Of Grade 60-42-10, centrifugally cast in accordance with ANSI/AWWA C151/A21.51-91 shall be used. Pipe class shall be as indicated on the drawings, and minimum wall thickness shall be according to ANSI/AWWA C150/A21.50-91. Pipe shall be in nominal 16', 18' or 20' lengths.

3.1.2 PVC Pipe

Polyvinyl Chloride Pipe, Fittings and Joints: PVC water pipe shall conform, at a minimum, to ASTM Specifications D-2241, and shall be pressure class 250. The pipe furnished under ASTM A-2441 shall have a standard dimension ratio of SDR 17 or lower, and shall be rated to a working pressure of at least 250 psi at 73.4°F. In no case shall PVC pipe be utilized in a situation that will subject the pipe to greater than 50% of the rated working pressure of the pipe. In such cases, ductile iron **shall** be utilized.

3.2 Joints and Joining

3.2.1 Ductile Iron Pipe

Joints shall be mechanical or slip-on as "Bell-Tite", "Tyton", "Grip-Tite", or approved equal, unless otherwise indicated. Joint assembly shall be installed according to the manufacturer's directions and shall comply with ANSI/AWWA C111/A21.11-90.

3.2.2 PVC Joints

Joints shall be of the push-on type conforming to ASTM D3139 and F477

requirements for elastometric-gasket joints. All jointing material and lubricants shall be non-toxic.

3.2.3 Restrained Joints

Provided that a schedule is submitted to the ENGINEER for approval, showing the location and length of pipe run where proposed for use, the CONTRACTOR shall have the option of using US Pipe "Field-Loc", Meglug 1400 or approved equal joint. Assembly, including allowed deflection, shall be strictly as recommended by the manufacturer. Concrete anchorage shown on the drawings will not be required where such joints are approved for use.

3.3 Fittings

3.3.1 Ductile Iron Fittings

Fittings of Grade 70-50-05 per ASTM A536, shall be of the same type and pressure class as the pipe, except that cast iron fittings of the same general pressure class may be used. Ductile-Iron fittings shall comply with ANSI/AWWA C110/A21.10-93.

3.3.2 PVC Fittings

Fittings shall be ductile iron Mechanical Joint Class 250 conforming to AWWA Specifications C110 for short body ductile iron fittings. Fittings shall be tar-coated outside, and shall receive the standard cement lining with bituminous seal coat on the inside as specified for the ductile iron pipe.

3.4 Protective Coating

Ductile iron pipe and fittings shall be cement lined in accordance with ANSI/AWWA C104/A21.4-90 except that the lining shall be half thickness, commonly referred to as "enameling", allowed by an interior coat of coal tar enamel. Underground pipe, fittings and accessories, and piping in casings shall have an exterior coat of coal tar enamel.

3.5 Service Connections

used. Only one service will be permitted per line.

3.5.2 Corporation Stop

Corporation stops shall be Ford F-1000-3 or approved equal with inlet threads conforming to AWWA C800-66 commonly known as the Mueller thread, and CTS-Pack joint fitting or connection.

3.5.3 Curb Stop

All services exceeding ¾" diameter or 50' in length and all stream crossings shall have curb stop. Curb stops shall have copper inlet and copper outlet, similar to the Ford model #B44-333, B44-444 or approved equal.

3.5.4 All service connections shall be "wet-tapped" with main line at normal operating pressures. No exceptions taken. Detail Sheet MW-8 depicts a Typical Service Connector.

3.6 Gate Valves

Gate valves shall be ductile cast iron, bronze mounted, resilient-seated, fusion bonded epoxy coating inside and out, with brass or bronze non-rizing stems complying with AWWA C509-87. Working pressure shall be at least equal to that of the pipe with which used. Valves shall open left or counter-clockwise. Valves shall be as manufactured by US Pipe model Metro seal 250, Mueller model A-2360 or approved equal.

3.7 Valve Boxes

Valve boxes shall be adjustable cast iron valve boxes of suitable diameter, length, and design shall be furnished and installed for all buried valves. Boxes shall be as the Buffalo Type No. H, 10380 by Mueller, F-2450 by Clow, B-3102 by M & H, or approved equal.

3.8 Hydrants

Fire hydrants shall be traffic type with safety flange protection conforming to AWWA C502-85 and shall have not less than 6 inch inside diameter barrel, 5 inch minimum hydrant valve and a capacity of not less than 1000 gpm with a loss of not more than 2.5 psi through the hydrant. Hydrants shall have a 6 inch mechanical joint connection to the water main; two 2.5 inch hose outlets; and one 4 inch pumper outlet, and be so designed that if broken off, the hydrant valve will remain closed. Direction of opening shall be left (counter-clockwise) and nozzle threadings shall be National Standard. Hydrants shall be a Mueller A24015 or an approved equal hydrant.

inch pumper outlet, and be so designed that if broken off, the hydrant valve will remain closed. Direction of opening shall be left (counter-clockwise) and nozzle threadings shall be National Standard. Hydrants shall be a Mueller A24015 or an approved equal hydrant.

3.9 Concrete

Concrete shall develop 2450 psi and 3500 psi compressive strength at 7 and 28 days, respectively, and be measured, mixed and placed according to the American Concrete Institute Standard Recommended Practice for these operations (ACI 614). Cement shall conform to ASTM C150 for Type I or III. Fine and coarse aggregates shall conform to ASTM C-33. Mixing water shall be clean and free from injurious quantities of oil, acid, alkali or other deleterious substances. Concrete shall be placed with the minimum suitable slope for the particular pour. An air entraining admixture, subject to the ENGINEER'S approval, shall be added to concrete at the mixer, unless air entraining cement is used or unless otherwise indicated in amount sufficient to entrain the percentages of air designated in the following table. Indicated air percentages shall be present at the time when concrete is placed in the forms.

Maximum Aggregate Size	Percent of Air
1-1/2", 2", or 2-1/2"	4% + or - 1%
3/4" or 1"	5% + or - 1%
3/8" or 1/2"	6% + or - 1%

Ready mixed concrete shall be mixed and delivered in compliance with ASTM C-94.

3.10 Casing Pipe

Casing pipe shall conform to the Materials Standards of ASTM Designation A-139 Grade B or approved equal. Only new prime pipe will be permitted. Casing pipe shall be 4" larger than the largest outside diameter of the carrier pipe.

When casing pipe is required for highways or railroad crossings, the project shall be completed in accordance with applicable federal, state, and local regulations. In the case of railroad crossings, the project should comply further with regulations established by the railroad company. In general, boring will be permitted for casing diameters through 36 in., with maximum length of about 175 ft.; jacking for diameters 30 in. through 60 in., with lengths of about 200 ft.; and tunneling for pipes 48 in. and larger for longer lengths.

3.11 Tapping Saddles

All connections to PVC pipe, including service connections, shall be made with approved Ford model S-70 tapping saddle or an approved equal for PVC or Ford model #F202 for ductile iron or approved equal.

3.12 Carrier Pipe

Carrier pipe shall be ductile iron pipe meeting the specifications as outlined in Section 2.3.1.1.

Carrier pipe may be pushed or pulled through the completed casing pipe. Casing spacers should be placed on the carrier pipe to ensure approximate centering within the casing pipe and to prevent damage during installation. Care must be exercised in order to avoid metal-to-metal contact. In order to avoid the transfer of earth and live loads to the carrier pipe, the space between the carrier and casing pipes should not be filled completely. Casing shall be sealed with a rubber boot type seal.

SECTION PAR

PERMITS AND APPROVALS

1. Letter from Division of Water

STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
200 FAIR OAKS LANE, 4TH FLOOR
FRANKFORT, KENTUCKY 40601
www.kentucky.gov

February 23, 2016

Mr. Roy B Sawyers
Mountain Water District #1 - Marrowbone Area
PO Box 3157
Pikeville, KY 41502

RE: Mountain Water District #1
Marrowbone Area
AI # 3672, APE20150007
PWSID # 0980575-15-007
Upper Pompey Water Supply Project
Pike County, KY

Dear Mr. Sawyers:

We have reviewed the plans and specifications for the above referenced project. The plans include the construction of approximately 12,400 LF of 6-inch DI, 6,000 LF of 4-inch DI, and 8,600 LF of 4-inch HDPE waterlines, a pump station with two pumps capable of delivering 95 gpm and 350 TDH, upgrades to the Ferrell's Creek pump station which includes replacing the existing pumps with pumps capable of 700 gpm at 445 ft TDH and a stationary generator, a mobile generator, and a 20,000 gallon skid tank. This is to advise that plans and specifications for the above referenced project are APPROVED with respect to sanitary features of design, as of this date with the requirements contained in the attached construction permit and the following condition:

- Plan Sheets T-1 and T-2 shall be replaced with the plan sheets signed February 16, 2016 by Jonathan Newman, P.E. (attached).

If you have any questions concerning this project, please contact Mr. Fred Sarabi at 502-564-3410 extension 4825.

Sincerely,

Terry Humphries, P.E.
Supervisor, Engineering Section
Water Infrastructure Branch
Division of Water

TH:FS

Enclosures
C: Summit Engineering, Inc.
Pike County Health Department
Public Service Commission
Division of Plumbing

PORT0000000099 (WLE) 12,400 LF of 6-inch DI, 6,000 LF of 4-inch DI, and 8,600 LF of 4-inch HDPE waterlines:

Narrative Requirements:

Condition No.	Condition
T-1	Construction of this project shall not result in the water system's inability to supply consistent water service in compliance with 401 KAR 8:010 through 8:600. [401 KAR 8:100 Section 5]
T-2	The public water system shall not implement a change to the approved plans without the prior written approval of the cabinet. [401 KAR 8:100 Section 4(3)]
T-3	A proposed change to the approved plans affecting sanitary features of design shall be submitted to the cabinet for approval in accordance with Section 2 of this administrative regulation. [401 KAR 8:100 Section 4(2)]
T-4	During construction, a set of approved plans and specifications shall be available at the job site. Construction shall be performed in accordance with the approved plans and specifications. [401 KAR 8:100 Section 3(1)]
T-5	Unless construction begins within two (2) years from the date of approval of the final plans and specifications, the approval shall expire. [401 KAR 8:100 Section 3(3)]
T-6	Upon completion of construction, a professional engineer shall certify in writing that the project has been completed in accordance with the approved plans and specifications. [401 KAR 8:100 Section 4(1)]
T-7	The system shall be designed to maintain a minimum pressure of 20 psi at ground level at all points in the distribution system under all conditions of flow. [Recommended Standards for Water Works 8.2.1, Drinking Water General Design Criteria IV.1.a]
T-8	Water lines should be hydraulically capable of a flow velocity of 2.5 ft/s while maintaining a pressure of at least 20 psi. [Drinking Water General Design Criteria IV.1.b]
T-9	The normal working pressure in the distribution system at the service connection shall not be less than 30 psi under peak demand flow conditions. Peak demand is defined as the maximum customer water usage rate, expressed in gallons per minute (gpm), in the pressure zone of interest during a 24 hour (diurnal) time period. [Drinking Water General Design Criteria IV.1.d]
T-10	When static pressure exceeds 150 psi, pressure reducing devices shall be provided on mains or as part of the meter setting on individual service lines in the distribution system. [Drinking Water General Design Criteria IV.1.c]

PORT0000000099 (continued):

Narrative Requirements:

Condition No.	Condition
T-11	The minimum size of water main in the distribution system where fire protection is not to be provided should be a minimum of three (3) inch diameter. Any departure from minimum requirements shall be justified by hydraulic analysis and future water use, and can be considered only in special circumstances. [Recommended Standards for Water Works 8.2.2, Drinking Water General Design Criteria IV.2.b]
T-12	Water mains not designed to carry fire-flows shall not have fire hydrants connected to them. [Recommended Standards for Water Works 8.4.1.b]
T-13	Flushing devices should be sized to provide flows which will give a velocity of at least 2.5 feet per second in the water main being flushed. [Recommended Standards for Water Works 8.2.4.b, Recommended Standards for Water Works 8.4.1.b]
T-14	No flushing device shall be directly connected to any sewer. [Recommended Standards for Water Works 8.2.4.b, Recommended Standards for Water Works 8.4.1.b]
T-15	Pipe shall be constructed to a depth providing a minimum cover of 30 inches to top of pipe. [Drinking Water General Design Criteria IV.3.a]
T-16	Water mains shall be covered with sufficient earth or other insulation to prevent freezing. [Recommended Standards for Water Works 8.7]
T-17	A continuous and uniform bedding shall be provided in the trench for all buried pipe. Backfill material shall be tamped in layers around the pipe and to a sufficient height above the pipe to adequately support and protect the pipe. Stones found in the trench shall be removed for a depth of at least six inches below the bottom of the pipe. [Recommended Standards for Water Works 8.7]
T-18	Water line installation shall incorporate the provisions of the AWWA standards and/or manufacturer's recommended installation procedures. [Recommended Standards for Water Works 8.7]
T-19	All materials used for the rehabilitation of water mains shall meet ANSI/NSF standards. [Recommended Standards for Water Works 8.1]
T-20	Packing and jointing materials used in the joints of pipe shall meet the standards of AWWA and the reviewing authority. [Recommended Standards for Water Works 8.1]
T-21	All tees, bends, plugs and hydrants shall be provided with reaction blocking, tie rods or joints designed to prevent movement. [Recommended Standards for Water Works 8.7]

PORT0000000099 (continued):

Narrative Requirements:

Condition No.	Condition
T-22	All materials including pipe, fittings, valves and fire hydrants shall conform to the latest standards issued by the ASTM, AWWA and ANSI/NSF, where such standards exist, and be acceptable to the Division of Water. [Recommended Standards for Water Works 8.1]
T-23	Water mains which have been used previously for conveying potable water may be reused provided they meet the above standards and have been restored practically to their original condition. [Recommended Standards for Water Works 8.1]
T-24	Manufacturer approved transition joints shall be used between dissimilar piping materials. [Recommended Standards for Water Works 8.1]
T-25	Pipes and pipe fittings containing more than 8% lead shall not be used. All products shall comply with ANSI/NSF standards. [Recommended Standards for Water Works 8.1]
T-26	The minimum size of water main which provides for fire protection and serving fire hydrants shall be six?inch diameter. [Recommended Standards for Water Works 8.2, Drinking Water General Design Criteria IV.2.a]
T-27	Gaskets containing lead shall not be used. Repairs to lead?joint pipe shall be made using alternative methods. [Recommended Standards for Water Works 8.1]
T-28	Pipe materials shall be selected to protect against both internal and external pipe corrosion. [Recommended Standards for Water Works 8.1]
T-29	Dead end mains shall be equipped with a means to provide adequate flushing. [Recommended Standards for Water Works 8.2]
T-30	The hydrant lead shall be a minimum of six inches in diameter. Auxiliary valves shall be installed on all hydrant leads. [Recommended Standards for Water Works 8.4.3]
T-31	A sufficient number of valves shall be provided on water mains to minimize inconvenience and sanitary hazards during repairs. [Recommended Standards for Water Works 8.3]
T-32	Wherever possible, chambers, pits or manholes containing valves, blow?offs, meters, or other such appurtenances to a distribution system, shall not be located in areas subject to flooding or in areas of high groundwater. Such chambers or pits should drain to the ground surface, or to absorption pits underground. The chambers, pits and manholes shall not connect directly to any storm drain or sanitary sewer. Blow?offs shall not connect directly to any storm drain or sanitary sewer. [Recommended Standards for Water Works 8.6]

PORT0000000099 (continued):

Narrative Requirements:

Condition No.	Condition
T-33	At high points in water mains where air can accumulate provisions shall be made to remove the air by means of air relief valves. [Recommended Standards for Water Works 8.5.1]
T-34	Automatic air relief valves shall not be used in situations where flooding of the manhole or chamber may occur. [Recommended Standards for Water Works 8.5.1]
T-35	The open end of an air relief pipe from automatic valves shall be extended to at least one foot above grade and provided with a screened, downward?facing elbow. [Recommended Standards for Water Works 8.5.2.c]
T-36	Discharge piping from air relief valves shall not connect directly to any storm drain, storm sewer, or sanitary sewer. [Recommended Standards for Water Works 8.5.2.d]
T-37	Water pipe shall be constructed with a lateral separation of 10 feet or more from any gravity sanitary or combined sewer measured edge to edge where practical. If not practical a variance may be requested to allow the water pipe to be installed closer to the gravity sanitary or combined sewer provided the water pipe is laid in a separate trench or undisturbed shelf located on one side of the sewer with the bottom of the pipe at least 18 inches above the top of the gravity sanitary or combined sewer pipe. [Drinking Water General Design Criteria IV.3.b]
T-38	Water lines crossing sanitary, combined or storm sewers shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sanitary, combined or storm sewer with preference to the water main located above the sanitary, combined or storm sewer. [Drinking Water General Design Criteria IV.3.c]
T-39	At crossings, one full length of water pipe shall be located so both joints will be as far from the sewer as possible. [Recommended Standards for Water Works 8.8.3.b]
T-40	There shall be no connection between the distribution system and any pipes, pumps, hydrants, or tanks whereby unsafe water or other contaminating materials may be discharged or drawn into the system. [Recommended Standards for Water Works 8.10.1]
T-41	Water utilities shall have a cross connection program conforming to 401 KAR 8. [Recommended Standards for Water Works 8.10.1]
T-42	Installed pipe shall be pressure tested and leakage tested in accordance with the appropriate AWWA Standards. [Recommended Standards for Water Works 8.7.6]

PORT0000000099 (continued):

Narrative Requirements:

Condition No.	Condition
T-43	New, cleaned and repaired water mains shall be disinfected in accordance with AWWA Standard C651. The specifications shall include detailed procedures for the adequate flushing, disinfection, and microbiological testing of all water mains. In an emergency or unusual situation, the disinfection procedure shall be discussed with the Division of Water. [Recommended Standards for Water Works 8.7.7]
T-44	A minimum cover of five feet shall be provided over pipe crossing underwater. [Recommended Standards for Water Works 8.9.2]
T-45	Valves shall be provided at both ends of water crossings so that the section can be isolated for testing or repair; the valves shall be easily accessible, and not subject to flooding for pipes crossing underwater. [Recommended Standards for Water Works 8.9.2.b]
T-46	Permanent taps or other provisions to allow insertion of a small meter to determine leakage and obtain water samples on each side of the valve closest to the supply source for pipes crossing. [Recommended Standards for Water Works 8.9.2.c]

PORT0000000100 (PS) a pump station with two pumps capable of delivering 94 gpm and 350 TDH:

Narrative Requirements:

Condition No.	Condition
T-1	Construction of this project shall not result in the water system's inability to supply consistent water service in compliance with 401 KAR 8:010 through 8:600. [401 KAR 8:100 Section 5]
T-2	The public water system shall not implement a change to the approved plans without the prior written approval of the cabinet. [401 KAR 8:100 Section 4(3)]
T-3	A proposed change to the approved plans affecting sanitary features of design shall be submitted to the cabinet for approval in accordance with Section 2 of this administrative regulation. [401 KAR 8:100 Section 4(2)]
T-4	During construction, a set of approved plans and specifications shall be available at the job site. Construction shall be performed in accordance with the approved plans and specifications. [401 KAR 8:100 Section 3(1)]
T-5	Unless construction begins within two (2) years from the date of approval of the final plans and specifications, the approval shall expire. [401 KAR 8:100 Section 3(3)]
T-6	Upon completion of construction, a professional engineer shall certify in writing that the project has been completed in accordance with the approved plans and specifications. [401 KAR 8:100 Section 4(1)]
T-7	The system shall be designed to maintain a minimum pressure of 20 psi at ground level at all points in the distribution system under all conditions of flow. [Recommended Standards for Water Works 8.2.1, Drinking Water General Design Criteria IV.1.a]
T-8	Pumping facilities shall be elevated to a minimum of three feet above the 100?year flood elevation, or three feet above the highest recorded flood elevation, whichever is higher, or protected to such elevations, [Recommended Standards for Water Works 6.1.1.a]
T-9	Pumping facilities shall be readily accessible at all times. [Recommended Standards for Water Works 6.1.1.b]
T-10	Pumping facilities shall be graded around the station so as to lead surface drainage away from the station. [Recommended Standards for Water Works 6.1.1.c]
T-11	Pumping facilities shall be protected to prevent vandalism and entrance by animals or unauthorized persons. [Recommended Standards for Water Works 6.1.1.d]
T-12	Raw and finished pump stations shall have adequate space for the installation of additional units if needed, and for the safe servicing of all equipment. [Recommended Standards for Water Works 6.2.a]

PORT0000000100 (continued):

Narrative Requirements:

Condition No.	Condition
T-13	Raw and finished pump stations shall have floors that slope to a suitable drain. [Recommended Standards for Water Works 6.2.e]
T-14	Raw and finished pump stations shall provide a suitable outlet for drainage from pump glands without discharging onto the floor. [Recommended Standards for Water Works 6.2.f]
T-15	At least two pumping units shall be provided. With any pump out of service, the remaining pump or pumps shall be capable of providing the maximum pumping demand of the system. [Recommended Standards for Water Works 6.3]
T-16	Pumps shall have ample capacity to supply the peak demand against the required distribution system pressure without dangerous overloading, [Recommended Standards for Water Works 6.3.a]
T-17	Pumps shall be driven by prime movers able to meet the maximum horsepower condition of the pumps. [Recommended Standards for Water Works 6.3.b]
T-18	Pumps shall be provided with readily available spare parts and tools. [Recommended Standards for Water Works 6.3.c]
T-19	Pump stations shall have indicating, totalizing, and recording metering of the total water pumped. [Recommended Standards for Water Works 6.6.3]
T-20	Each pump shall have a standard pressure gauge on its discharge line. [Recommended Standards for Water Works 6.6.3.a]
T-21	Each pump shall have a compound gauge on its suction line. [Recommended Standards for Water Works 6.6.3.b]
T-22	Where two or more pumps are installed, provision shall be made for alternation. [Recommended Standards for Water Works 6.6.5]
T-23	Provisions shall be made to prevent energizing the pump motor in the event of a backspin cycle. [Recommended Standards for Water Works 6.6.5]
T-24	Electrical controls shall be located above grade. [Recommended Standards for Water Works 6.6.5]
T-25	Equipment shall be provided or other arrangements made to prevent surge pressures from activating controls which switch on pumps or activate other equipment outside the normal design cycle of operation. [Recommended Standards for Water Works 6.6.5]

PORT0000000100 (continued):

Narrative Requirements:

Condition No.	Condition
T-26	Pump stations shall have a power supply provided from at least two independent sources or a standby or an auxiliary source. [Recommended Standards for Water Works 6.6.6]
T-27	If standby power is provided by onsite generators or engines, the fuel storage and fuel line must be designed to protect the water supply from contamination. [Recommended Standards for Water Works 6.6.6]
T-28	All lubricants which come into contact with the potable water shall be certified for conformance to ANSI/NSF Standard 60. [Recommended Standards for Water Works 6.6.8]
T-29	Booster pumps stations shall have a bypass available. [Recommended Standards for Water Works 6.4.e]
T-30	Each booster pumping station shall contain not less than two pumps with capacities such that peak demand can be satisfied with the largest pump out of service. [Recommended Standards for Water Works 6.4.1]
T-31	All booster pumping stations shall be fitted with a flow rate indicating and totalizer meter. [Recommended Standards for Water Works 6.4.2]
T-32	Inline booster pumps shall be accessible for servicing and repairs. [Recommended Standards for Water Works 6.4.3]
T-33	Each pump must have an isolation valve on the intake and discharge side of the pump to permit satisfactory operation, maintenance and repair of the equipment. [Recommended Standards for Water Works 6.6.1]
T-34	Each pump shall have a positive?acting check valve on the discharge side between the pump and the shut?off valve. [Recommended Standards for Water Works 6.6.1]
T-35	Pump station piping shall be designed so that the friction losses will be minimized, not be subject to contamination, have watertight joints, be protected against surge or water hammer with suitable restraints when necessary, and be such that each pump has an individual suction line or the lines shall be manifolded that they will insure similar hydraulic and operating conditions. [Recommended Standards for Water Works 6.6.2]
T-36	Booster pumps taking suction from storage tanks shall be provided adequate net positive suction head. [Recommended Standards for Water Works 6.4.b]

PORT0000000100 (continued):

Narrative Requirements:

Condition No.	Condition
T-37	Booster pumps shall controlled so that automatic shutoff or low pressure controllers maintain at least 20 psi in the suction line under all operating conditions. [Recommended Standards for Water Works 6.4.c]
T-38	Booster pumps taking suction from ground storage tanks shall be equipped with automatic shutoffs or low pressure controllers. [Recommended Standards for Water Works 6.4.c]
T-39	All automatic pump stations should be provided with automatic signaling apparatus which will report when the station is out of service. [Recommended Standards for Water Works 6.5]
T-40	All remote controlled stations shall be electrically operated and controlled and shall have signaling apparatus of proven performance. [Recommended Standards for Water Works 6.5]
T-41	Raw and finished pump stations shall have a floor elevation of at least six inches above finished grade. [Recommended Standards for Water Works 6.2.c]

STOR0000000023 (Skid tank) 20,000 gallon skid tank :

Narrative Requirements:

Condition No.	Condition
T-1	Construction of this project shall not result in the water system's inability to supply consistent water service in compliance with 401 KAR 8:010 through 8:600. [401 KAR 8:100 Section 5]
T-2	The public water system shall not implement a change to the approved plans without the prior written approval of the cabinet. [401 KAR 8:100 Section 4(3)]
T-3	A proposed change to the approved plans affecting sanitary features of design shall be submitted to the cabinet for approval in accordance with Section 2 of this administrative regulation. [401 KAR 8:100 Section 4(2)]
T-4	During construction, a set of approved plans and specifications shall be available at the job site. Construction shall be performed in accordance with the approved plans and specifications. [401 KAR 8:100 Section 3(1)]
T-5	Unless construction begins within two (2) years from the date of approval of the final plans and specifications, the approval shall expire. [401 KAR 8:100 Section 3(3)]
T-6	Upon completion of construction, a professional engineer shall certify in writing that the project has been completed in accordance with the approved plans and specifications. [401 KAR 8:100 Section 4(1)]
T-7	The system shall be designed to maintain a minimum pressure of 20 psi at ground level at all points in the distribution system under all conditions of flow. [Recommended Standards for Water Works 8.2.1, Drinking Water General Design Criteria IV.1.a]
T-8	Water storage tanks shall have a minimum 100% turnover rate of once per 72 hours. [Drinking Water General Design Criteria IV.6.a]
T-9	Minimum water level for all gravity storage tanks shall maintain a minimum design pressure of 30 psi for all potential points of use supplied by the tank. [Drinking Water General Design Criteria IV.6.b]
T-10	Separate inlet and outlet is required on storage tanks; and the inlet has to be in the upper half of the tank (unless there is a separate mixing system). [Drinking Water General Design Criteria IV.6.c]
T-11	The maximum variation between high and low levels in storage structures providing pressure to a distribution system should not exceed 30 feet. [Recommended Standards for Water Works 7.3.1]

STOR0000000023 (continued):

Narrative Requirements:

Condition No.	Condition
T-12	Finished water storage structures which provide pressure directly to the distribution system shall be designed so they can be isolated from the distribution system and drained for cleaning or maintenance without causing a loss of pressure in the distribution system. [Recommended Standards for Water Works 7.3.2]
T-13	The storage structure drain shall discharge to the ground surface with no direct connection to a sewer or storm drain. [Recommended Standards for Water Works 7.3.2]
T-14	Adequate controls shall be provided to maintain levels in distribution system storage structures. Level indicating devices should be provided at a central location. [Recommended Standards for Water Works 7.3.3]
T-15	The minimum storage capacity (or equivalent capacity) for systems not providing fire protection shall be equal to the average daily consumption. [Recommended Standards for Water Works 7.0.1.b]
T-16	The system should be designed to facilitate turnover of water in the reservoir. [Recommended Standards for Water Works 7.0.6]
T-17	Excessive storage capacity should be avoided to prevent potential water quality deterioration problems. [Recommended Standards for Water Works 7.0.1.c]
T-18	The overflow pipe shall be of sufficient diameter to permit waste of water in excess of the filling rate. [Recommended Standards for Water Works 7.0.7.d]
T-19	Finished water storage structures shall be designed with reasonably convenient access to the interior for cleaning and maintenance. [Recommended Standards for Water Works 7.0.8]
T-20	Finished water storage structures shall be vented. Vents shall prevent the entrance of surface water, rainwater, bird, and animals. The overflow pipe shall not be considered a vent. Open construction between the sidewall and roof is not permissible. [Recommended Standards for Water Works 7.0.9]
T-21	Finished water storage structures and their appurtenances, especially the riser pipes, overflows, and vents, shall be designed to prevent freezing. Equipment used for freeze protection that will come into contact with the potable water shall meet ANSI/NSF Standard 61. [Recommended Standards for Water Works 7.0.13]
T-22	If a flapper valve is utilized, a screen shall be provide inside the valve. Provisions must be included to prevent the flapper from freezing shut. [Recommended Standards for Water Works 7.0.7.e]

STOR0000000023 (continued):

Narrative Requirements:

Condition No.	Condition
T-23	The roof and sidewalls of all water storage structures must be watertight with no openings except properly constructed vents, manholes, overflows, risers, drains, pump mountings, control ports, or piping for inflow and outflow. [Recommended Standards for Water Works 7.0.10]
T-24	Any pipes running through the roof or sidewall of a metal storage structure must be welded, or properly gasketed. In concrete tanks, these pipes shall be connected to standard wall castings which were poured in place during the forming of the concrete. [Recommended Standards for Water Works 7.0.10.a]
T-25	Openings in the roof of a storage structure designed to accommodate control apparatus or pump columns, shall be curbed and sleeved with proper additional shielding to prevent contamination from surface or floor drainage. [Recommended Standards for Water Works 7.0.10.b]
T-26	Valves and controls should be located outside the storage structure so that the valve stems and similar projections will not pass through the roof or top of the reservoir. [Recommended Standards for Water Works 7.0.10.c]
T-27	Every catwalk over finished water in a storage structure shall have a solid floor with sealed raised edges, designed to prevent contamination from shoe scrapings and dirt. [Recommended Standards for Water Works 7.0.14]
T-28	The discharge pipes from water storage structures shall be located in a manner that will prevent the flow of sediment into the distribution system. [Recommended Standards for Water Works 7.0.15]
T-29	Smooth-nosed sampling tap(s) shall be provided to facilitate collection of water samples for both bacteriological and chemical analyses. The sample tap(s) shall be easily accessible. [Recommended Standards for Water Works 7.0.19]
T-30	Sewers, drains, standing water, and similar sources of possible contamination must be kept at least 50 feet from water storage facilities. Gravity sewers constructed of water main quality pipe, pressure tested in place without leakage, may be used at distances greater than 20 feet but less than 50 feet. [Recommended Standards for Water Works 7.0.2.c]
T-31	The roof of the storage structure shall be well drained. Downspout pipes shall not enter or pass through the reservoir. [Recommended Standards for Water Works 7.0.10.d]
T-32	Porous material, including wood and concrete block shall not be used for potable water contact applications. [Recommended Standards for Water Works 7.0.11]
T-33	All finished water storage structures shall have suitable watertight roofs which exclude birds, animals, insects, and excessive dust. [Recommended Standards for Water Works 7.0.3]

STOR0000000023 (continued):

Narrative Requirements:

Condition No.	Condition
T-34	Fencing, locks on access manholes, and other necessary precautions shall be provided to prevent trespassing, vandalism, and sabotage. [Recommended Standards for Water Works 7.0.4]
T-35	Ladders, ladder guards, balcony railings, and safely located entrance hatches shall be provided where applicable. [Recommended Standards for Water Works 7.0.12.a]
T-36	All water storage structures shall be provided with an overflow which is brought down to an elevation between 12 and 24 inches above the ground surface, and discharges over a drainage inlet structure or a splash plate. All overflow pipes shall be located so that any discharge is visible. [Recommended Standards for Water Works 7.0.7]
T-37	No drain on a water storage structure may have a direct connection to a sewer or storm drain. [Recommended Standards for Water Works 7.0.5]
T-38	The design shall allow draining the storage facility for cleaning or maintenance without causing loss of pressure in the distribution system. [Recommended Standards for Water Works 7.0.5]
T-39	No overflow may be connected directly to a sewer or a storm drain. [Recommended Standards for Water Works 7.0.7]
T-40	Proper protection shall be given to metal surfaces by paints or other protective coatings, by cathodic protective devices, or by both. [Recommended Standards for Water Works 7.0.17]
T-41	Paint systems shall meet ANSI/NSF standard 61. [Recommended Standards for Water Works 7.0.17.a]
T-42	Interior paint must be applied, cured, and used in a manner consistent with the ANSI/NSF approval. [Recommended Standards for Water Works 7.0.17.a]
T-43	After curing, the coating shall not transfer any substance to the water which will be toxic or cause taste or odor problems. [Recommended Standards for Water Works 7.0.17.a]
T-44	Wax coatings for the tank interior shall not be used on new tanks. [Recommended Standards for Water Works 7.0.17.b]
T-45	Old wax coating must be completely removed before using another tank coating. [Recommended Standards for Water Works 7.0.17.b]

STOR0000000023 (continued):

Narrative Requirements:

Condition No.	Condition
T-46	Finished water storage structures shall be disinfected in accordance with AWWA Standard C652. Two or more successive sets of samples, taken at 24?hour intervals, shall indicate microbiologically satisfactory water before the facility is placed into operation. [Recommended Standards for Water Works 7.0.18.a]
T-47	The disinfection procedure specified in AWWA Standard C652 chlorination method 3, section 4.3 which allows use of the highly chlorinated water held in the storage tank for disinfection purposes, is prohibited unless the initial heavily chlorinated water is properly disposed. [Recommended Standards for Water Works 7.0.18.c]
T-48	The overflow for a ground?level storage reservoir shall open downward and be screened with twenty?four mesh non-corrodible screen. [Recommended Standards for Water Works 7.0.7.b]
T-49	Each ground level structure manhole shall be elevated at least 24 inches above the top of the tank or covering sod, whichever is higher. [Recommended Standards for Water Works 7.0.8.2]
T-50	Each ground level structure manhole shall be fitted with a solid water tight cover which overlaps a framed opening and extends down around the frame at least two inches. The frame shall be at least four inches high. Each cover shall be hinged on one side, and shall have a locking device. [Recommended Standards for Water Works 7.0.8.2]
T-51	Ground level structure vents shall open downward with the opening at least 24 inches above the roof or sod and covered with twenty?four mesh non-corrodible screen. [Recommended Standards for Water Works 7.0.9.d]
T-52	The area surrounding a ground?level structure shall be graded in a manner that will prevent surface water from standing within 50 feet of it. [Recommended Standards for Water Works 7.0.16]
T-53	The bottom of ground level reservoirs and standpipes should be placed at the normal ground surface and shall be above the 100 Year Flood or the highest flood of record. [Recommended Standards for Water Works 7.0.2.b]
T-54	The roof of concrete reservoirs with earthen cover shall be sloped to facilitate drainage. [Recommended Standards for Water Works 7.0.10.e]
T-55	If the bottom elevation of a storage reservoir must be below normal ground surface, it shall be placed above the groundwater table. At least 50 percent of the water stored should be above grade. [Recommended Standards for Water Works 7.0.2.c]

STOR0000000023 (continued):

Narrative Requirements:

Condition No.	Condition
T-56	The top of a partially buried storage structure shall not be less than two feet above normal ground surface. [Recommended Standards for Water Works 7.0.2.d]
T-57	If a water circulation system is used, it is recommended that the circulation pipe be located separately from the riser pipe. [Recommended Standards for Water Works 7.0.13]
T-58	Reservoirs with pre-cast concrete roof structures must be made watertight with the use of a waterproof membrane or similar product. [Recommended Standards for Water Works 7.0.10.f]

SECTION PWG

PREVAILING WAGE REQUIREMENTS

Matthew G. Bevin
Governor

Jenean M. Hampton
Lt. Governor

Kentucky Labor Cabinet
Department of Workplace Standards
Division of Employment Standards, Apprenticeship and Mediation
1047 US Hwy 127 S STE 4
Frankfort, Kentucky 40601
Phone: (502) 564-3070
Fax: (502) 696-1897
www.labor.ky.gov

Derrick K. Ramsey
Secretary

April 5, 2016

Jonathan Newman
Summit Engineering Inc.
131 Summit Drive Ste 201
Pikeville KY 41501

Re: Mountain Water District, Upper Pompey Water Supply Project

Advertising Date as Shown on Notification: April 4, 2016

Dear Jonathan Newman:

This office is in receipt of your written notification on the above project as required by KRS 337.510 (1).

I am enclosing a copy of the current prevailing wage determination number CR 2-031, dated January 12, 2016 for PIKE County. This schedule of wages shall be attached to and made a part of the specifications for the work, printed on the bidding blanks, and made a part of the contract for the construction of the public works between the public authority and the successful bidder or bidders.

The determination number assigned to this project is based upon the advertising date contained in your notification. There may be modifications to this wage determination prior to the advertising date indicated. In addition, if the contract is not awarded within 90 days of this advertising date or if the advertising date is modified, a different set of prevailing rates of wages may be applicable. It will be the responsibility of the public authority to contact this office and verify the correct schedule of the prevailing rates of wages for use on the project. Your project number is as follows: 098-H-00303-16-2, Heavy/Highway

Sincerely,

Michael C. Donta
Deputy Commissioner

KENTUCKY LABOR CABINET
PREVAILING WAGE DETERMINATION
CURRENT REVISION
LOCALITY NO. 031

ELLIOTT, LAWRENCE, MARTIN, MORGAN & PIKE COUNTIES

Determination No. CR 2-031

PROJECT # 098-H-00303-16-2

____BLDG __**X**___ HH

Date of Determination: January 12, 2016

This schedule of the prevailing rate of wages for Locality No. 031, which includes Elliott, Lawrence, Martin, Morgan and Pike Counties, has been determined in accordance with the provisions of KRS 337.505 to 337.550. This determination shall be referred to as Prevailing Wage Determination No. CR 2-031.

Apprentices shall be permitted to work in accordance with Administrative Regulations adopted by the Commissioner of the Department of Workplace Standards. Copies of these regulations will be furnished upon request to any interested person.

Overtime is to be computed at not less than one and one-half (1 1/2) times the indicated BASE RATE for all hours worked in excess of eight (8) hours per day or in excess of forty (40) hours per week. However, KRS 337.540 permits an employee and employer to agree, in writing, that the employee will be compensated at a straight time base rate for hours worked in excess of eight (8) hours in any one workday, but not more than ten (10) hours worked in any one workday, if such written agreement is prior to the over eight (8) hours in a workday actually being worked, or where provided for in a collective bargaining agreement. The fringe benefit rate is to be paid for each hour worked at a straight time rate for all hours worked. Fringe benefit amounts are applicable for all hours worked except when otherwise noted. Welders will receive rate for craft in which welding is incidental.

No laborer, workman or mechanic shall be paid at a rate less than that of the General Laborer except those classified as bona fide apprentices registered with the Kentucky State Apprenticeship Supervisor unless otherwise specified in this schedule of wage rates.

NOTE: The type of construction shall be determined by applying the following definitions:

BUILDING CONSTRUCTION
Building construction is the construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. It includes all construction of such structures, the installation of utilities and the installation of equipment, both above and below grade level, as well as incidental grading, utilities and paving.

HIGHWAY CONSTRUCTION
Highway construction includes the construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction. It includes all incidental construction in conjunction with the highway construction project.

HEAVY CONSTRUCTION
Heavy projects are those projects that are not properly classified as either "building" or "highway". For example, dredging projects, water and sewer line projects, dams, flood control projects, sewage treatment plants and facilities, and water treatment plants and facilities are considered heavy.

Derrick K. Ramsey

Derrick K. Ramsey, Secretary
Kentucky Labor Cabinet

CLASSIFICATIONS		RATE AND FRINGE BENEFITS	
ASBESTOS/INSULATION WORKERS:		BASE RATE	$26.10
		FRINGE BENEFITS	11.86
BOILERMAKERS:		BASE RATE	$35.80
		FRINGE BENEFITS	25.10
BRICKLAYERS:			
Bricklayer:		BASE RATE	$24.26
		FRINGE BENEFITS	10.44
Sawman, Power Tools, Swing/Scaffold:		BASE RATE	$25.74
		FRINGE BENEFITS	10.44
Carbon or Acid Brick:		BASE RATE	$25.05
		FRINGE BENEFITS	10.44
Hot Pay, Gunnite:		BASE RATE	$25.77
		FRINGE BENEFITS	10.44
CARPENTERS:			
Carpenters:	BUILDING	BASE RATE	$28.55
		FRINGE BENEFITS	17.32
Piledrivermen:	BUILDING	BASE RATE	$28.95
		FRINGE BENEFITS	17.32
Carpenters:	HEAVY & HIGHWAY	BASE RATE	$26.40
		FRINGE BENEFITS	13.95
Piledrivermen:	HEAVY & HIGHWAY	BASE RATE	$26.65
		FRINGE BENEFITS	13.95
Diver:	HEAVY & HIGHWAY	BASE RATE	$39.98
		FRINGE BENEFITS	13.95
CEMENT MASONS:		BASE RATE	$25.69
		FRINGE BENEFITS	8.62
ELECTRICIANS:		BASE RATE	$32.86
		FRINGE BENEFITS	22.52

CLASSIFICATIONS		RATE AND FRINGE BENEFITS	
ELECTRICIANS: (CONTINUED):			
LINEMAN:	HEAVY HIGHWAY	BASE RATE	$31.86
		FRINGE BENEFITS	11.63
EQUIPMENT OPERATOR:	HEAVY HIGHWAY	BASE RATE	$28.48
		FRINGE BENEFITS	10.94
GROUNDSMEN:	HEAVY HIGHWAY	BASE RATE	$18.87
		FRINGE BENEFITS	9.03
ELEVATOR CONSTRUCTORS:		BASE RATE	$26.76
		FRINGE BENEFITS	8.26
GLAZIERS:		BASE RATE	$24.11
		FRINGE BENEFITS	4.22
IRONWORKERS:		BASE RATE	$30.52
		FRINGE BENEFITS	20.50

LABORERS (BUILDING):

GROUP 1
Laborers, carpenter helpers, cement finishers helpers, concrete men, wreckers, oxygen & acetylene handler s, environmental laborers, hole watch & fire watch:

	BUILDING	BASE RATE	$28.14
		FRINGE BENEFITS	14.67

GROUP 2
Hod Carriers & Mortar Men, jackhammer, electrical, gas or air driven tools, burning torch, wagon drill operators, tile layers, signal men, tool room men, asphalt worker, creosote material handler:

	BUILDING	BASE RATE	$28.29
		FRINGE BENEFITS	14.67

GROUP 3
Deck & scow men, wrapping & applying hot and cold tar and tape on all pipes, operation of tester:

	BUILDING	BASE RATE	$28.31
		FRINGE BENEFITS	14.67
Rock & Power Men	BUILDING	BASE RATE	$29.37
		FRINGE BENEFITS	14.67
Sand Hog & Mucker	BUILDING	BASE RATE	$28.77
		FRINGE BENEFITS	14.67

CLASSIFICATIONS		RATE AND FRINGE BENEFITS	
LABORERS (BUILDING) CONTINUED:			
Caisson Worker	BUILDING	BASE RATE	$29.34
		FRINGE BENEFITS	14.67

LABORERS / HEAVY HIGHWAY

Asphalt Lute & Rakerman, Side Rail Setter:			
	HEAVY & HIGHWAY	BASE RATE	$23.35
		FRINGE BENEFITS	14.50
Drill Operator of Percussion type drills which are both powered & propelled by an independent air supply:			
	HEAVY & HIGHWAY	BASE RATE	$25.75
		FRINGE BENEFITS	14.50
Power driven toll operator of following: Wagon Drill, Chain Saw, Sand Blaster, Jack Hammer, Concrete Chipper, Pavement Breaker, Vibrator, Power Wheel Barrow, Power Buggy; Sewer Pipe Layer, Bottom Men, Dry Cement Handler, Concrete Rubber, Mason Tender:			
	HEAVY & HIGHWAY	BASE RATE	$23.30
		FRINGE BENEFITS	14.50
Gunnite Nozzel Man, Gunnite Operator:			
	HEAVY & HIGHWAY	BASE RATE	$23.45
		FRINGE BENEFITS	14.50
Hand Blade Operator, Batch Truck Dumper, Deck Hand or Scow Man:			
	HEAVY & HIGHWAY	BASE RATE	$23.20
		FRINGE BENEFITS	14.50
Caisson Worker:	HEAVY & HIGHWAY	BASE RATE	$24.45
		FRINGE BENEFITS	14.50
Laborer, Flagman, Steam Jenny:			
	HEAVY & HIGHWAY	BASE RATE	$22.95
		FRINGE BENEFITS	14.50
Tunnel Miner, Blaster & Driller (Free Air):			
	HEAVY & HIGHWAY	BASE RATE	$23.90
		FRINGE BENEFITS	14.50
Tunnel Laborer (Free Air):	HEAVY & HIGHWAY	BASE RATE	$23.50
		FRINGE BENEFITS	14.50

CLASSIFICATIONS			RATE AND FRINGE BENEFITS
LABORERS/HEAVY HIGHWAY CONTINUED:			
Tunnel Mucker (Free Air):	HEAVY & HIGHWAY	BASE RATE	$23.55
		FRINGE BENEFITS	14.50
MARBLE, TILE & TERRAZZO WORKERS:		BASE RATE	$22.64
		FRINGE BENEFITS	6.10
MARBLE, TILE & TERRAZZO FINISHERS:		BASE RATE	$15.42
		FRINGE BENEFITS	5.42
MILLWRIGHTS:		BASE RATE	$33.73
		FRINGE BENEFITS	18.64

OPERATING ENGINEERS (BUILDING):

Class A-1:
Operating Engineers possessing 3rd party certification NCCCO (National Commission for the Certification of Crane Operators) (or Operating Engineers Certification Program or US Coast Guard Approved Boat Pilot License) shall be paid the minimum rate per hour on the following equipment: Crane, dragline, hoist (1 drum when used for stack or chimney construction or repair), hoisting engineer (2 or more drums), orangepeel bucket, overhead crane, piledriver, truck crane, tower crane hydraulic crane, tug boat or push boat:

BUILDING	BASE RATE	$31.97
	FRINGE BENEFIT	14.52

Class A:
Articulating dump, auto patrol, batcher plant, bituminous paver, cable-way, clamshell, concrete mixer (21 cu. ft. or over), concrete pump, crane, crusher plant, derrick, derrick boat, ditching and trenching machine, dragline, dredge engineer, elevator (regardless of ownership when used for hoisting any building material), elevating grader and all types of loaders, hoe-type machine, hoisting engine, locomotive, LeTourneau or carry-all scoop, bulldozer, mechanic, orangepeel bucket, piledriver, power blade, roller (bituminous), roller (earth), roller (rock), scarifier, shovel, tractor shovel, truck crane, well points, winch truck, push dozer, grout pump, high lift, fork lift (regardless of lift height), all types of boom cats, multiple operator, core drill, tow or push boat, A-Frame winch truck, concrete paver, gradeall, hoist, hyster, material pump, pumpcrete, ross carrier, sheep foot, sideboom, throttle-valve man, rotary drill, power generator, mucking machine, rock spreader attached to equipment, scoopmobile, KeCal loader, tower cranes (French, German and other types), hydrocrane, tugger, backfiller gurries, self-propelled compactor, self-contained hydraulic percussion drill, overhead crane, backfiller, gurries, subgrader, tunnel mining machines including moles, shields or similar types of tunnel mining equipment, hydro excavator, micro pile driving machine, remote controlled demolition equipment, self-propelled modular transporter, skidsteer, transfer machine/shuttle buggy, vacuum truck:

BUILDING	BASE RATE	$31.10
	FRINGE BENEFITS	14.52

CLASSIFICATIONS RATE AND FRINGE BENEFITS

OPERATING ENGINEERS (BUILDING) CONTINUED:

Class B:
All air compressors (200 cu. ft. per min. or greater capacity), bituminous mixer, concrete mixer (under 21 cu. ft.), welding machine, form grader, greaser on grease facilities servicing heavy equipment, tractor (50 H.P. and over), bull float, finish machine, outboard motor boat, brakeman, mechanic helper, whirly oiler, tractair and road widening trencher, articulating trucks, joint sealing machine, roller (rock), flexplane, fireman, boom type tamping machine, self propelled compactor, tractair, farm tractor with attachments (except backhoe, highlift and endloader), elevator (when used for hoisting materials), hoisting engineer, (1 drum or buck hoist), firebrick masonry excluded, well points, grout pump, throttle valve man, tugger, electric vibrator compactor, caisson drill helper and water pull/water truck when used for compacting:

BUILDING	BASE RATE	$26.47
	FRINGE BENEFITS	14.52

Class C:
Bituminous distributor, cement gun, conveyor, mud jack, paving joint machine, pump, tamping machine, tractors (under 50 H.P.), vibrator, oiler, air compressors (under 200 cu. ft. per min. capacity), concrete saw, burlap and curing machine, hydro seeder, power form handling equipment, deckhand oiler, hydraulic post driver, drill helper:

BUILDING	BASE RATE	$25.13
	FRINGE BENEFITS	14.52

OPERATING ENGINEERS (HEAVY & HIGHWAY):

Class A-1:
Operating Engineers possessing 3rd party certification NCCCO (National Commission for the Certification of Crane Operators) (or Operating Engineers Certification Program or US Coast Guard approved Boat Pilot License) shall be paid the minimum rate per hour on the following equipment: Cableway, carry deck crane, cherry picker, clamshell, crane, derrick, derrick boat, dragline, hoist engine (2 or more drums), hydraulic boom truck, hydrocrane, organgepeel bucket, overhead crane, piledriver, rough terrain crane, tower cranes (French, German and other types), truck crane:

HEAVY HIGHWAY	BASE RATE	$31.08
	FRINGE BENEFIT	14.40

Class A:
A-Frame winch truck, auto patrol, batcher plant, bituminous paver, cable-way, clamshell, concrete mixer (21 cu. ft. or over), concrete pump, crane, crusher plant, derrick, derrick boat, ditching and trenching machine, dragline, dredge engineer, elevator (regardless of ownership when used for hoisting any building material), elevating grader and all types of loaders, hoe-type machine, hoisting engine, locomotive, LeTourneau or carry-all scoop, bulldozer, mechanic, orangepeel bucket, piledriver, power blade, roller (bituminous), roller (earth), roller (rock), scarifier, shovel, tractor shovel, truck crane, well points, winch truck, push dozer, grout pump, high lift, fork lift (regardless of lift height), all types of boom cats, multiple operator, core drill, tow or push boat, A-Frame winch truck, concrete paver, gradeall, hoist, hyster, material pump, pumpcrete, ross carrier, sheep foot, sideboom, throttle-valve man, rotary drill, power generator, mucking machine, rock spreader attached to equipment, scoopmobile, KeCal loader, tower cranes (French, German and other types), hydrocrane, tugger, backfiller gurries, self-propelled compactor, self-contained hydraulic percussion drill, self propelled modular transporter, hydro excavator, micor pile machine, remote controlled demolition equipment, milling machine, track hoe, rubber tire back hoe, reclaimer/stabilizer:

HEAVY HIGHWAY	BASE RATE	$29.95
	FRINGE BENEFITS	14.40

CLASSIFICATIONS RATE AND FRINGE BENEFITS

OPERATING ENGINEER (HEAVY HIGHWAY) CONTINUED:

Class B:
All air compressors (200 cu. ft. per min. or greater capacity), bituminous mixer, concrete mixer (under 21 cu. ft.), welding machine, form grader, tractor (50 H.P. and over), bull float, finish machine, outboard motor boat, brakeman, mechanic helper, whirly oiler, tractair and road widening trencher, articulating trucks, water pull/water truck when used for compacting:

HEAVY HIGHWAY	BASE RATE	$27.26
	FRINGE BENEFITS	14.40

Class B-2:
Greaser on grease facilities servicing heavy equipment:

HEAVY HIGHWAY	BASE RATE	$27.68
	FRINGE BENEFITS	14.40

Class C:
Bituminous distributor, cement gun, conveyor, mud jack, paving joint machine, pump, tamping machine, tractors (under 50 H.P.), vibrator, oiler, air compressors (under 200 cu. ft. per min. capacity), concrete saw, burlap and curing machine, hydro seeder, power form handling equipment, deckhand oiler, hydraulic post driver:

HEAVY HIGHWAY	BASE RATE	$26.96
	FRINGE BENEFITS	14.40

PAINTERS:	BASE RATE	$22.79
	FRINGE BENEFITS	11.37

PLUMBERS & PIPEFITTERS:	BASE RATE	$29.00
	FRINGE BENEFITS	24.12

ROOFERS:		
(Excluding Metal Roof)	BASE RATE	$22.03
	FRINGE BENEFITS	9.10

SHEETMETAL WORKERS:		
(Including Metal Roof)	BASE RATE	$23.79
	FRINGE BENEFITS	11.63

SPRINKLER FITTERS:	BASE RATE	$31.35
	FRINGE BENEFITS	17.87

TEAMSTERS/TRUCK DRIVERS:

Truck helper and warehouseman:

BUILDING	BASE RATE	$17.15
	FRINGE BENEFITS	7.80

CLASSIFICATIONS		RATE AND FRINGE BENEFITS	

TRUCK DRIVERS (CONTINUED):

Driver, winch truck and A-Frame when used in transporting materials:

BUILDING	BASE RATE	$17.25
	FRINGE BENEFITS	7.80

Driver, (semi-trailer or pole trailer), driver (dump truck, tandem axle), driver of distributor:

BUILDING	BASE RATE	$17.35
	FRINGE BENEFITS	7.80

Driver on mixer trucks (all types):

BUILDING	BASE RATE	$17.40
	FRINGE BENEFITS	7.80

Truck mechanic:

BUILDING	BASE RATE	$17.45
	FRINGE BENEFITS	7.80

Driver (3 tons and under), tire changer and truck mechanic helper:

BUILDING	BASE RATE	$17.48
	FRINGE BENEFITS	7.80

Driver on pavement breakers:

BUILDING	BASE RATE	$17.50
	FRINGE BENEFITS	7.80

Driver (over 3 tons), driver (truck mounted rotary drill):

BUILDNG	BASE RATE	$17.69
	FRINGE BENEFITS	7.80

Driver, Euclid and other heavy earth moving equipment and Low Boy:

BUILDING	BASE RATE	$18.26
	FRINGE BENEFITS	7.80

Greaser on greasing facilities:

BUILDING	BASE RATE	$18.35
	FRINGE BENEFITS	7.80

TRUCK DRIVERS/HEAVY & HIGHWAY:

Driver (3 tons & under), tire changer & truck mechanic helper:

HEAVY & HIGHWAY	BASE RATE	$23.53
	FRINGE BENEFITS	14.50

CLASSIFICATIONS		RATE AND FRINGE BENEFITS	
TRUCK DRIVERS/HEAVY HIGHWAY CONTINUED:			
Driver; (over 3 tons) Driver, (truck mounted rotary drill):			
	HEAVY & HIGHWAY	BASE RATE	$23.74
		FRINGE BENEFITS	14.50
Driver, (semi-trailer or pole trailer), driver (dump truck, tandem axle), driver of distributor:			
	HEAVY & HIGHWAY	BASE RATE	$23.40
		FRINGE BENEFITS	14.50
Driver on mixer trucks (all types):	HEAVY & HIGHWAY	BASE RATE	$23.45
		FRINGE BENEFITS	14.50
Truck mechanic:	HEAVY & HIGHWAY	BASE RATE	$23.50
		FRINGE BENEFITS	14.50
Truck helper & Warehouseman:	HEAVY & HIGHWAY	BASE RATE	$23.20
		FRINGE BENEFITS	14.50
Driver on pavement breakers:	HEAVY & HIGHWAY	BASE RATE	$23.55
		FRINGE BENEFITS	14.50
Driver, Euclid and other heavy earth moving equipment and Low Boy:			
	HEAVY & HIGHWAY	BASE RATE	$24.31
		FRINGE BENEFITS	14.50
Greaser on greasing facilities:	HEAVY & HIGHWAY	BASE RATE	$24.40
		FRINGE BENEFITS	14.50
Driver (Winch Truck & A-Frame Truck) when used in transporting material:			
	HEAVY & HIGHWAY	BASE RATE	$23.30
		FRINGE BENEFITS	14.50

END OF DOCUMENT CR 2-031
January 12, 2016
Page 9 of 9

General Decision Number: KY160135 03/25/2016 KY135

Superseded General Decision Number: KY20150135

State: Kentucky

Construction Type: Heavy

County: Pike County in Kentucky.

HEAVY CONSTRUCTION PROJECTS (including sewer/water construction).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/08/2016
1	03/25/2016

CARP0064-007 05/01/2015

	Rates	Fringes
CARPENTER (Form Work Only)	$ 27.50	16.06

ELEC0369-004 09/01/2014

	Rates	Fringes
LINE CONSTRUCTION		
Equipment Operator	$ 30.51	11.25
Groundman	$ 20.21	9.19
Lineman	$ 34.13	13.02

ENGI0181-011 07/01/2015

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 29.95	14.40
GROUP 2	$ 27.26	14.40
GROUP 4	$ 26.96	14.40

OPERATING ENGINEER CLASSIFICATIONS

GROUP 1 - Bulldozer; Crane; Drill; Grader/Blade; Mechanic; Scraper

GROUP 2 - Bobcat/Skid Steer/Skid Loader; Forklift

GROUP 4 - Oiler

Operators on cranes with booms 150 feet and over (including jib) shall receive $1.00 above Group 1 rate; 250 feet and over including jib shall receive $1.50 above Class 1 rate. Combination Rate: All crane operators operating cranes, where the length of the boom in combination with the length of the piling leads equal or exceeds 150 feet, shall receive $1.00 above the Group 1 rate.

Employees assigned to work below ground level are to be paid 10% above basic wage rate. This does not apply to open cut work.

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* IRON0782-010 05/01/2015

	Rates	Fringes
IRONWORKER (Reinforcing & Structural)		
Projects over $20,000,000.00	$ 27.09	20.66
Projects under $20,000,000.00	$ 26.00	19.86

LABO0189-014 07/01/2015

	Rates	Fringes
LABORER		
Concrete Saw (Hand Held/Walk Behind)	$ 22.55	12.46
Concrete Worker	$ 22.30	12.46

LABO1445-001 07/01/2015

	Rates	Fringes
LABORER		
Airtrack Driller	$ 23.20	12.46

SUKY2011-012 06/25/2014

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 21.60	10.35
ELECTRICIAN	$ 32.35	2.18

LABORER: Common or General.....$ 21.36 9.39

LABORER: Flagger.....$ 18.31 8.89

LABORER: Pipelayer.....$ 20.15 8.92

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 27.23 0.00

OPERATOR: Loader.....$ 30.35 0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

SECTION FAF

FUNDING AGENCY FORMS

1. Form RD 400-6 Compliance Statement and Notice to Prospective Subcontractors of Requirements for Certifications of Non-Segregated Facilities

2. Form AD-1048 Certification Regarding Debarment, Suspension, Intelligibility, and Voluntary Exclusion – Lower Tier Covered Transactions

3. Exhibit A-1 of RD Instruction 1940-Q Certification fro Contracts, Grants and Loans

4. Construction Project Sign

5. Certificate of Owner's Attorney

6. Engineer's Certification of Final Plans and Specifications

7. Affidavit for Bidders, Offerors, and Contractors

USDA
Form RD 400-6
(Rev. 4-00)

Form Approved
OMB No. 0575-0018

COMPLIANCE STATEMENT

This statement relates to a proposed contract with _____

_____
(Name of borrower or grantee)

who expects to finance the contract with assistance from either the Rural Housing Service (RHS), Rural Business-Cooperative Service (RBS), or the Rural Utilities Service (RUS) or their successor agencies, United States Department of Agriculture (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor, I represent that:

1. ☐ I have, ☐ have not, participated in a previous contract or subcontract subject to Executive 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.

2. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not, filed all compliance reports that have been required to file in connection with the contract or subcontract.

If the proposed contract is for $50,000 or more and I have 50 or more employees, I also represent that:

3. ☐ I have, ☐ have not previously had contracts subject to the written affirmative action programs requirements of the Secretary of Labor.

4. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the RHS, RBS or RUS, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications for proposed subcontractors for specific time periods) I will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods): (See Reverse).

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR CERTIFICATIONS OF NON-SEGREGATED FACILITIES

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, may 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding $ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date _____ _____

(Signature of Bidder or Prospective Contractor)

_____

Address (including Zip Code)

U.S. DEPARTMENT OF AGRICULTURE

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, *Federal Register* (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency with which this transaction originated.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

(1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Organization Name	PR/Award Number or Project Name
Name and Title of Authorized Representative	
Signature	Date (mm/dd/yyyy)

Form AD-1048 (2/89)
This form was electronically produced using Applix 4.41

INSTRUCTIONS FOR CERTIFICATION

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out on the reverse side in accordance with these instructions.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms ``covered transaction,'' ``debarred,'' ``suspended,'' ``ineligible,'' ``lower tier covered transaction,'' ``participant,'' ``person,'' ``primary covered transaction,'' ``principal,'' ``proposal,'' and ``voluntarily excluded,'' as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled ``Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions,'' without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participating in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____ _____

(name) (date)

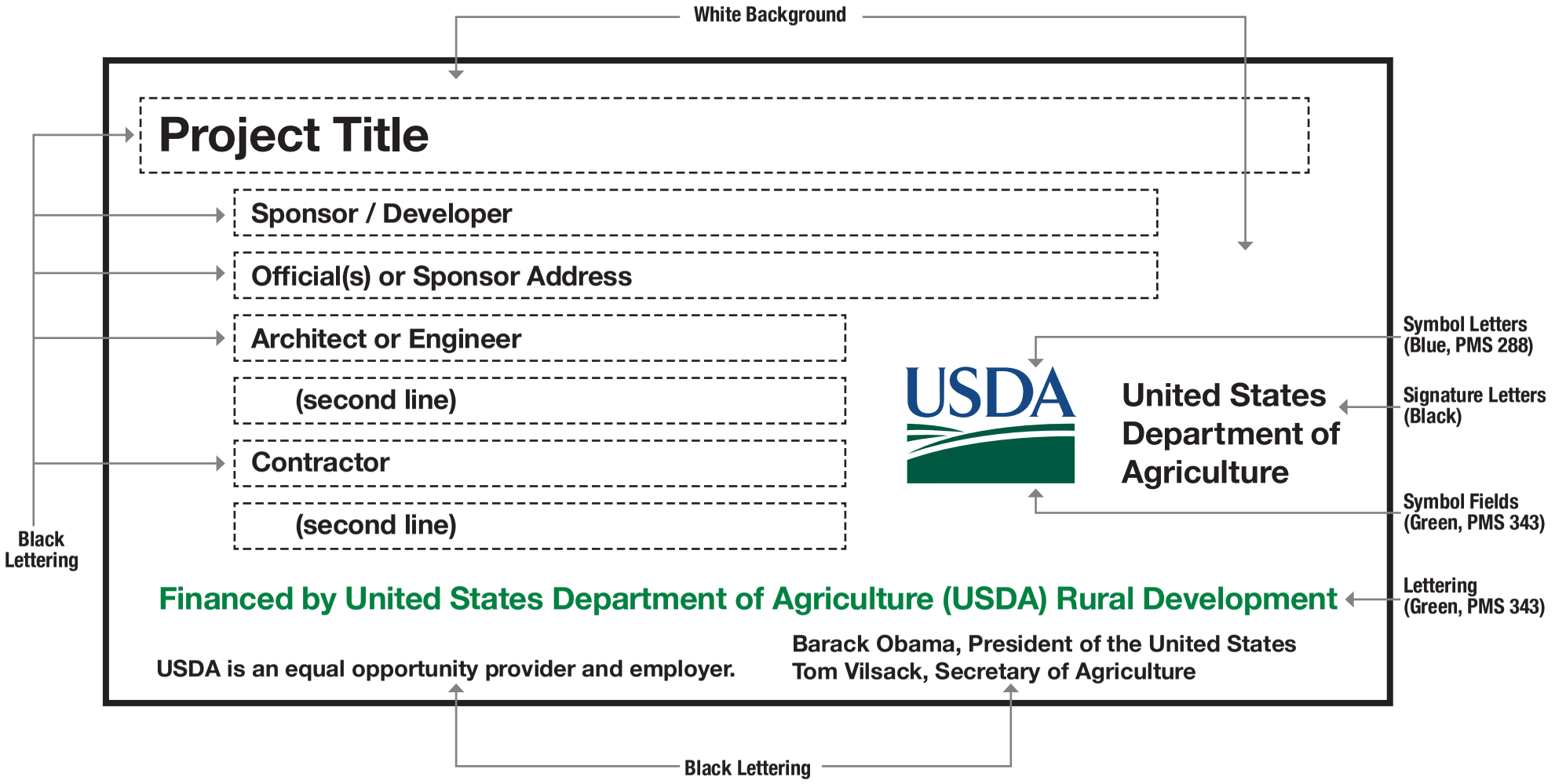
_____

(title)

oOo

(08-21-91) PN 171

TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT PROJECTS



SIGN DIMENSIONS: 1200 mm x 2400 mm x 19 mm (approx. 4' x 8' x ¾")
PLYWOOD PANEL (APA RATED A-B GRADE–EXTERIOR)

CERTIFICATE OF OWNER'S ATTORNEY AND AGENCY CONCURRENCE

CERTFICATE OF OWNER'S ATTORNEY

PROJECT NAME: _____

CONTRACTOR NAME: _____

I, the undersigned, _____, the duly authorized and acting legal representative of _____, do hereby certify as follows: I have examined the attached Contract(s) and performance and payment bond(s) and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements is adequate and has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions, and provisions thereof.

_____

Name Date

AGENCY CONCURRENCE

As lender or insurer of funds to defray the costs of this Contract, and without liability for any payments thereunder, the Agency hereby concurs in the form, content, and execution of this Agreement.

_____

Agency Representative Date

_____

Name

ENGINEER'S CERTIFICATION OF FINAL PLANS AND SPECIFICATIONS

PROJECT NAME: Upper Pompey Water Supply Project Contracts 1 (AML) & Contract 2

The final Drawings and Specifications, other assembled Construction Contract Documents, bidding-related documents (or requests for proposals or other construction procurement documents), and any other Final Design Phase deliverables, comply with all requirements of the U.S. Department of Agriculture, Rural Utilities Service, to the best of my knowledge and professional judgment.

If the Engineers Joint Contract Documents Committee (EJCDC) documents have been used, all modifications required by RUS Bulletin 1780-26 have been made in accordance the terms of the license agreement, which states in part that the Engineer "must plainly show all changes to the Standard EJCDC Text, using 'Track Changes' (redline/strikeout), highlighting, or other means of clearly indicating additions and deletions." Such other means may include attachments indicating changes (e.g. Supplementary Conditions modifying the General Conditions).

Summit Engineering, Inc.	3-15-16
Engineer	Date

SR. PROJECT ENG.

Name and Title

Solicitation/Contract #: _____

REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS **PAGE 1 OF 2**

FOR BIDS AND CONTRACTS IN GENERAL:

I. Each bidder or offeror swears and affirms under penalty of perjury, that:

a. In accordance with KRS 45A.110 and KRS 45A.115, neither the bidder or offeror as defined in KRS 45A.070(6), nor the entity which he/she represents, has knowingly violated any provisions of the campaign finance laws of the Commonwealth of Kentucky; and the award of a contract to the bidder or offeror or the entity which he/she represents will not violate any provisions of the campaign finance laws of the Commonwealth.

b. The bidder or offeror swears and affirms under penalty of perjury that, to the extent required by Kentucky law, the entity bidding, and all subcontractors therein, are aware of the requirements and penalties outlined in KRS 45A.485; have properly disclosed all information required by this statute; and will continue to comply with such requirements for the duration of any contract awarded.

c. The bidder or offeror swears and affirms under penalty of perjury that, to the extent required by Kentucky law, the entity bidding, and its affiliates, are duly registered with the Kentucky Department of Revenue to collect and remit the sales and use tax imposed by KRS Chapter 139, and will remain registered for the duration of any contract awarded.

d. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding is not delinquent on any state taxes or fees owed to the Commonwealth of Kentucky and will remain in good standing for the duration of any contract awarded.

FOR "NON-BID" CONTRACTS (I.E. SOLE-SOURCE; NOT-PRACTICAL OR FEASIBLE TO BID; OR EMERGENCY CONTRACTS, ETC):

II. Each contractor further swears and affirms under penalty of perjury, that:

a. In accordance with KRS 121.056, and if this is a non-bid contract, neither the contractor, nor any member of his/her immediate family having an interest of 10% or more in any business entity involved in the performance of any contract awarded, have contributed more than the amount specified in KRS 121.150 to the campaign of the gubernatorial slate elected in the election last preceding the date of contract award.

b. In accordance with KRS 121.330(1) and (2), and if this is a non-bid contract, neither the contractor, nor officers or employees of the contractor or any entity affiliated with the contractor, nor the spouses of officers or employees of the contractor or any entity affiliated with the contractor, have knowingly contributed more than $5,000 in aggregate to the campaign of a candidate elected in the election last preceding the date of contract award that has jurisdiction over this contract award.

Solicitation/Contract #: _____

REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS **PAGE 2 OF 2**

c. In accordance with KRS 121.330(3) and (4), and if this is a non-bid contract, to the best of his/her knowledge, neither the contractor, nor any member of his/her immediate family, his/her employer, or his/her employees, or any entity affiliated with any of these entities or individuals, have directly solicited contributions in excess of $30,000 in the aggregate for the campaign of a candidate elected in the election last preceding the date of contract award that has jurisdiction over this contract.

As a duly authorized representative for the bidder, offeror, or contractor, I have fully informed myself regarding the accuracy of all statements made in this affidavit, and acknowledge that the Commonwealth is reasonably relying upon these statements, in making a decision for contract award and any failure to accurately disclose such information may result in contract termination, repayment of funds and other available remedies under law.

_____ _____
Signature Printed Name

_____ _____
Title Date

Company Name _____

Address _____

_____

_____

Subscribed and sworn to before me by _____ _____
(Affiant) (Title)

of _____ this _____day of _____,20___.
(Company Name)

_____
Notary Public

[seal of notary] My commission expires: _____