

**WATER TOWER UPGRADES
A.I. #2955**

OWNER: NORTH MARSHALL WATER DISTRICT

SUPERINTENDENT: BOBBY GIFFORD

ENGINEER: PAUL CLOUD ENGINEERING

JANUARY 16, 2015

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NORTH MARSHALL WATER DISTRICT**

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**NORTH MARSHALL WATER DISTRICT
BENTON, KENTUCKY
WATER TOWER UPGRADES - AI #2955**

ADVERTISEMENT FOR BIDS

Sealed Bids for the construction of the **WATER TOWER UPGRADES - AI #2955** will be received by the North Marshall Water District, at the office of the North Marshall Water District , 96 Carroll Road, Benton, KY 42025 , until 11:45 AM local time on February 13, 2015, at which time the Bids received will be publicly opened and read. The Project consists of the construction of a new 250,000 gallon elevated storage tank and upgrades to four (4) existing elevated water towers. The upgrades include repairs, priming and painting. Note - one tower will require lead abatement prior to painting.

Bids will be received for a single prime Contract. 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: **Paducah Blueprint & Supply Co., Inc., 999 Broadway, Paducah, KY 42001, email: web@padblueprint.com, 270-444-6171.** Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of 7:30 AM - 5:00 PM, and may obtain copies of the Bidding Documents from the Issuing Office as described below.

Bidding Documents also may be examined at the AGC of Western Kentucky; online at Paducah Blueprint & Supply Co., Inc. (www.padblueprint.com); the office of the North Marshall Water District , 96 Carroll Road, Benton, KY 42025, on Mondays through Fridays between the hours of 8:00 AM - 4:30 PM; and the office of the Engineer, Paul Cloud Engineering, 437 Cactus Drive, Benton, KY 42025, by appointment.

Bidding Documents may be viewed and ordered online by registering with the Issuing Office at **www.padblueprint.com**. Following registration, complete sets of Bidding Documents may be downloaded from the Issuing Office's website as "zipped" portable document format (PDF) files. The cost of printed Bidding Documents from the Issuing Office will depend on the number and size of the Drawings and Project Manual, applicable taxes, and shipping method selected by the prospective Bidder. Cost of Bidding Documents and shipping is non-refundable. Upon Issuing Office's receipt of payment, printed Bidding Documents will be sent via the prospective Bidder's delivery method of choice; the shipping charge will depend on the shipping method chosen. 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 the Bidding Documents will not be available from the Issuing Office.

A pre-bid conference will be held at 11:30 AM local time on January 30, 2015 at the North Marshall Water District , 96 Carroll Road, Benton, KY 42025. Attendance at the pre-bid conference is highly encouraged but is not mandatory.

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

Owner: **North Marshall Water District**
By: **Bobby Gifford**
Title: **Superintendent**
Date: **January 19, 2015**

+ + END OF ADVERTISEMENT FOR BIDS + +

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.

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, Bidder shall submit with its Bid (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:
- A. Evidence of Bidder's authority (or its ability to obtain required authority or licenses) 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. Evidence of three (3) similar projects successfully completed with references from the Owner.
- 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. There is no data with respect to Hazardous Environmental Conditions at the Site. 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 shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. 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.

- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. 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. There are no reports of explorations and tests of subsurface conditions at or adjacent to the Site and (2) There are no reports and drawings relating to Hazardous Environmental Conditions;
- 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 exercise its rights under the Bid Bond.

- 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 61 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. 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.
- 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.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.
- 12.03 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

following portions of the Work: Boring Contractor, Primary Materials Supplier(s), Excavating Contractors, Landscape Restoration Contractor.

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, **without an increase in Bid price.**

- 12.04 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 **not** 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.

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. The corporate seal shall be affixed and attested by the corporate secretary or an assistant corporate secretary.
- 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 North Marshall Water District, 96 Carroll Road, Benton, KY 42025.
- 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; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder 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. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner shall announce to all bidders a “Base Bid plus alternates” budget after receiving all Bids, but prior to opening them. For comparison purposes alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be exceeded. After determination of the Successful Bidder based on this comparative process

and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.

- C. Bid prices will be compared after adjusting for differences in time of Substantial Completion (total number of calendar days to substantially complete the Work) designated by Bidders. The adjusting amount will be determined at the rate set forth in the Agreement for liquidated damages for failing to achieve Substantial Completion, or such other amount that Owner has designated in the Bid Form.
1. The method for calculating the lowest bid for comparison will be the summation of the Bid price shown in the Bid Form plus the product of the Bidder-specified time of Substantial Completion (in calendar days) times the rate for liquidated damages (in dollars per day).
 2. This procedure is only used to determine the lowest bid for comparison and contractor selection purposes. The Contract Price for compensation and payment purposes remains the Bid price shown in the Bid Form.

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.

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 – PREVAILING WAGE RATES

22.01 This Project is subject to the current Kentucky Prevailing Wage Rates. The attached prevailing wage determination was received on November 3, 2014.



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:

North Marshall Water District

Project Name:

Water Tower Upgrades - A.I. 2599

TYPE OF WORK:

The Project consists of the construction of a new 250,000 gallon

elevated storage tank and upgrades to four (4) existing elevated water

towers. The upgrades include repairs, priming and painting.

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:				
	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:				
	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:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE C - LIST OF MAJOR EQUIPMENT AVAILABLE

ITEM	PURCHASE DATE	CONDITION	ACQUIRED VALUE

BID FORM

WATER TOWER UPGRADES

AI #2955



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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

**North Marshall Water District
96 Carroll Road
Benton, Kentucky 42025**

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 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

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

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

- 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. Bidder has carefully studied 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.
- 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 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):

Lump Sum Base Bid Price	\$
-------------------------	----

Title	Base Bid Deduction
Moors Tank	
Bethel Tank	
Kenbar Tank	
Gilbertsville Tank	
Gifford Tank (New)	

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;
 - C. List of Proposed Suppliers;
 - D. List of Project References;
 - 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.

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.: _____

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: North Marshall Water District
96 Carroll Road
Benton, Kentucky 42025

BID

Bid Due Date: February 13, 2015
Description: Water Tower Upgrades - AI 2955, Marshall County, Kentucky - The Project consists of the construction of a new 250,000 gallon elevated storage tank and upgrades to four (4) existing elevated water towers. The upgrades include repairs, priming and painting..

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

Bidder's Name and Corporate Seal

(Seal)

Surety's Name and Corporate Seal

(Seal)

By: _____
Signature

By: _____
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.

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.

NOTICE OF AWARD

Date of Issuance:

Owner: North Marshall Water District Owner's Contract No.: AI #2955
Engineer: Paul Cloud Engineering Engineer's Project No.:
Project: Water Tower Upgrades 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 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

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

THIS AGREEMENT is by and between North Marshall Water District (“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: The Project consists of constructing of approximately 12.5 miles of PVC water mains throughout the District as shown on the project plans.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: The Project consists of the construction of a new 250,000 gallon elevated storage tank and upgrades to four (4) existing elevated water towers. The upgrades include repairs, priming and painting.

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by Paul Cloud Engineering.

3.02 The Owner has retained Paul Cloud Engineering (“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: Days*

A. The Work will be substantially completed within 270 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 30 days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence 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 \$200.00 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.
2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$200.00 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

4.04 Special Damages

- A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor’s failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.
- B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

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

- A. For all Work other than Unit Price Work, a lump sum of: \$ [REDACTED].

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

Title	Base Bid Deduction
Moors Tank	
Bethel Tank	
Kenbar Tank	

Gilbertsville Tank	
Gifford Tank (New)	

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 25th 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. 25 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. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 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 All amounts not paid when due shall bear interest at the rate of 2.00 percent per annum.

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. There are no reports of explorations and tests of subsurface conditions at or adjacent to the Site
 - E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor’s safety precautions and programs.
 - F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
 - G. Contractor is aware of the general nature of work to be performed by 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 1 to 3, inclusive).
 - 3. Payment bond (pages 1 to 3, inclusive).
 - 4. General Conditions (pages 1 to 65, inclusive).

5. Supplementary Conditions (pages 1 to 8, inclusive).
 6. Specifications as listed in the table of contents of the Project Manual.
 7. Drawings (not attached but incorporated by reference) consisting of the Drawings listed on the attached sheet index.
 8. Addenda (numbers ■■■ to ■■■, inclusive).
 9. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages ■■■ to ■■■, inclusive).
 10. 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.

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.)

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, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting 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.

Supplementary Conditions

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.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 *Defined Terms*

SC 1.01 Add to the list of definitions in Paragraph 1.01.A by inserting the following as numbered items in their proper alphabetical positions:

Geotechnical Baseline Report (GBR) — The interpretive report prepared by or for Owner regarding subsurface conditions at the Site, and containing specific baseline geotechnical conditions that may be anticipated or relied upon for bidding and contract administration purposes, subject to the controlling provisions of the Contract, including the GBR's own terms. The GBR is a Contract Document.

Geotechnical Data Report (GDR) — The factual report that collects and presents data regarding actual subsurface conditions at or adjacent to the Site, including Technical Data and other geotechnical data, prepared by or for Owner in support of the Geotechnical Baseline Report. The GDR's content may include logs of borings, trenches, and other site investigations, recorded measurements of subsurface water levels, the results of field and laboratory testing, and descriptions of the investigative and testing programs. The GDR does not include an interpretation of the data. If opinions, or interpretive or speculative non-factual comments or statements appear in a document that is labeled a GDR, such opinions, comments, or statements are not operative parts of the GDR and do not have contractual standing. Subject to that exception, the GDR is a Contract Document.

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

SC-5.03 *Subsurface and Physical Conditions*

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

C. The following reports of explorations and tests of subsurface conditions at or adjacent to the Site are known to the Owner:

1. Report dated September 17, 2013, prepared by Bacon, Farmer, Workman Engineering and Testing, Inc., Paducah, Ky., entitled: "Geotechnical

Exploration Report, Palma Water Tower, Raceway Lane, Marshall County, Kentucky", consisting of 9 pages and Appendices A, B, C, and D. The Technical Data contained in such report upon whose accuracy Contractor may rely are those indicated in the definition of Technical Data in the General Conditions.

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-6.02 Insurance—General Provisions

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

- 1. Contractor may obtain worker’s compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the project is located, (b) is certified or authorized as a worker’s compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker’s compensation insurance for similar projects by the state within the last 12 months.

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:	<u>Statutory</u>
Federal, if applicable (e.g., Longshoreman’s):	<u>Statutory</u>
Jones Act coverage, if applicable:	
Bodily injury by accident, each accident	\$ <u>N/A</u>
Bodily injury by disease, aggregate	\$ <u>N/A</u>
Employer’s Liability:	
Bodily injury, each accident	\$ <u>1,000,000</u>
Bodily injury by disease, each employee	\$ <u>1,000,000</u>
Bodily injury/disease aggregate	\$ <u>1,000,000</u>
For work performed in monopolistic states, stop-	\$ <u>N/A</u>

gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of: _____

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 \$ 2,000,000

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 \$ 1,000,000

Each accident \$ 1,000,000

Property Damage:

Each accident \$ 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: In addition to Owner and Engineer, include as additional insureds the following: Randall O'Bryan (Construction Inspector)

7. Contractor's Professional Liability:

Each Claim	\$ <u>1,000,000</u>
Annual Aggregate	\$ <u>1,000,000</u>

SC-6.05 Property Insurance

SC-6.05.A. Add the following to the list of items in Paragraph 6.05.A, as numbered items:

15. include for the benefit of Owner loss of profits and soft cost coverage including, without limitation, fixed expenses and debt service for a minimum of 12 months with a maximum deductible of 30 days, plus attorneys fees and engineering or other consultants' fees, if not otherwise covered;
16. include by express endorsement coverage of damage to Contractor's equipment.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.02 Labor; Working Hours

SC-7.02.B. Amend the first and second sentences of Paragraph 7.02.B to state "...all Work at the Site shall be performed during regular working hours, Monday through Saturday. Contractor will not perform Work on a Sunday or any legal holiday."

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.

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

SC-13.01 Cost of the Work

SC 13.01.B.5.c Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:

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

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

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.03 Substantial Completion

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

PERFORMANCE BOND

CONTRACTOR (name and address):

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

OWNER: North Marshall Water District
96 Carroll Road
Benton, Kentucky 42025

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description: Water Tower Upgrades - AI 2955, Marshall County, Kentucky - The Project consists of the construction of a new 250,000 gallon elevated storage tank and upgrades to four (4) existing elevated water towers. The upgrades include repairs, priming and painting.

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

Contractor's Name and Corporate Seal (seal)

Surety's Name and Corporate Seal (seal)

By: _____
Signature

By: _____
Signature (attach power of attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
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.

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: N/A

PAYMENT BOND

CONTRACTOR *(name and address):*

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

OWNER: North Marshall Water District
96 Carroll Road
Benton, Kentucky 42025

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description: Water Tower Upgrades - AI 2955, Marshall County, Kentucky - The Project consists of the construction of a new 250,000 gallon elevated storage tank and upgrades to four (4) existing elevated water towers. The upgrades include repairs, priming and painting.

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

Contractor's Name and Corporate Seal *(seal)*

Surety's Name and Corporate Seal *(seal)*

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
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.

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;
 - 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.
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.
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:

Contractor's Application for Payment No. _____

Application Period:	Application Date:
To (Owner): Project:	From (Contractor): Contract:
Owner's Contract No.:	Contractor's Project No.: Engineer's Project No.:

**Application For Payment
Change Order Summary**

Approved Change Orders			1. ORIGINAL CONTRACT PRICE.....	\$ _____
Number	Additions	Deductions	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).....	\$ _____
TOTALS				
NET CHANGE BY CHANGE ORDERS				

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: _____ (Date)
 Funding or Financing Entity (if applicable)

Progress Estimate - Lump Sum Work

Contractor's Application

For (Contract):					Application Number:			
Application Period:					Application Date:			
			Work Completed		E	F		G
A	B	C		D	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (F / B)	Balance to Finish (B - F)
Specification Section No.	Description	Scheduled Value (\$)	From Previous Application (C+D)	This Period				
Totals								

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				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)
Bid Item No.	Description			Item Quantity	Units	Unit Price	Total Value of Item (\$)						
Totals													

Stored Material Summary

Contractor's Application

For (Contract):							Application Number:				
Application Period:							Application Date:				
Bid Item No.	A Supplier Invoice No.	B Submittal No. (with Specification Section No.)	Storage Location	C Description of Materials or Equipment Stored	D Stored Previously		E Amount Stored this Month (\$)	Subtotal Amount Completed and Stored to Date (D + E)	F Incorporated in Work		G Materials Remaining in Storage (\$) (D + E - F)
					Date Placed into Storage (Month/Year)	Amount (\$)			Date (Month/Year)	Amount (\$)	
Totals											

Date of Issuance:
 Owner: North Marshall Water District
 Contractor:
 Engineer: Paul Cloud Engineering
 Project: Water Tower Upgrades

Effective Date:
 Owner's Contract No.: AI #2599
 Contractor's Project No.:
 Engineer's Project No.:
 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 <i>[note changes in Milestones if applicable]</i>
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: _____ Engineer (if required)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: _____ Date: _____
 Title: _____

NOTICE TO PROCEED

Owner:	North Marshall Water District	Owner's Contract No.:	A.I. #2955
Contractor:		Contractor's Project No.:	
Engineer:	Paul Cloud Engineering	Engineer's Project No.:	
Project:	Water Tower Upgrades	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 [REDACTED], 2015.

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 number of days to achieve Substantial Completion is 270, and the number of days to achieve readiness for final payment is 30.

Before starting any Work at the Site, Contractor must comply with the following:

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: North Marshall Water District
 Contractor:
 Engineer: Paul Cloud Engineering
 Project: Water Towers Upgrades

Owner's Contract No.: AI #2599
 Contractor's Project No.:
 Engineer's Project No.:
 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.

<p>EXECUTED BY ENGINEER:</p> <p>By: _____ (Authorized signature)</p> <p>Title: _____</p> <p>Date: _____</p>	<p>RECEIVED:</p> <p>By: _____ Owner (Authorized Signature)</p> <p>Title: _____</p> <p>Date: _____</p>	<p>RECEIVED:</p> <p>By: _____ Contractor (Authorized Signature)</p> <p>Title: _____</p> <p>Date: _____</p>
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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 Order 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).

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

**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(s) and Title(s) of Authorized Representative(s)

Signature(s)

Date

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 Transaction," without modification, in all lower tier covered transaction 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 participation 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

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:

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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).

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.



**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(s) and Title(s) of Authorized Representative(s)

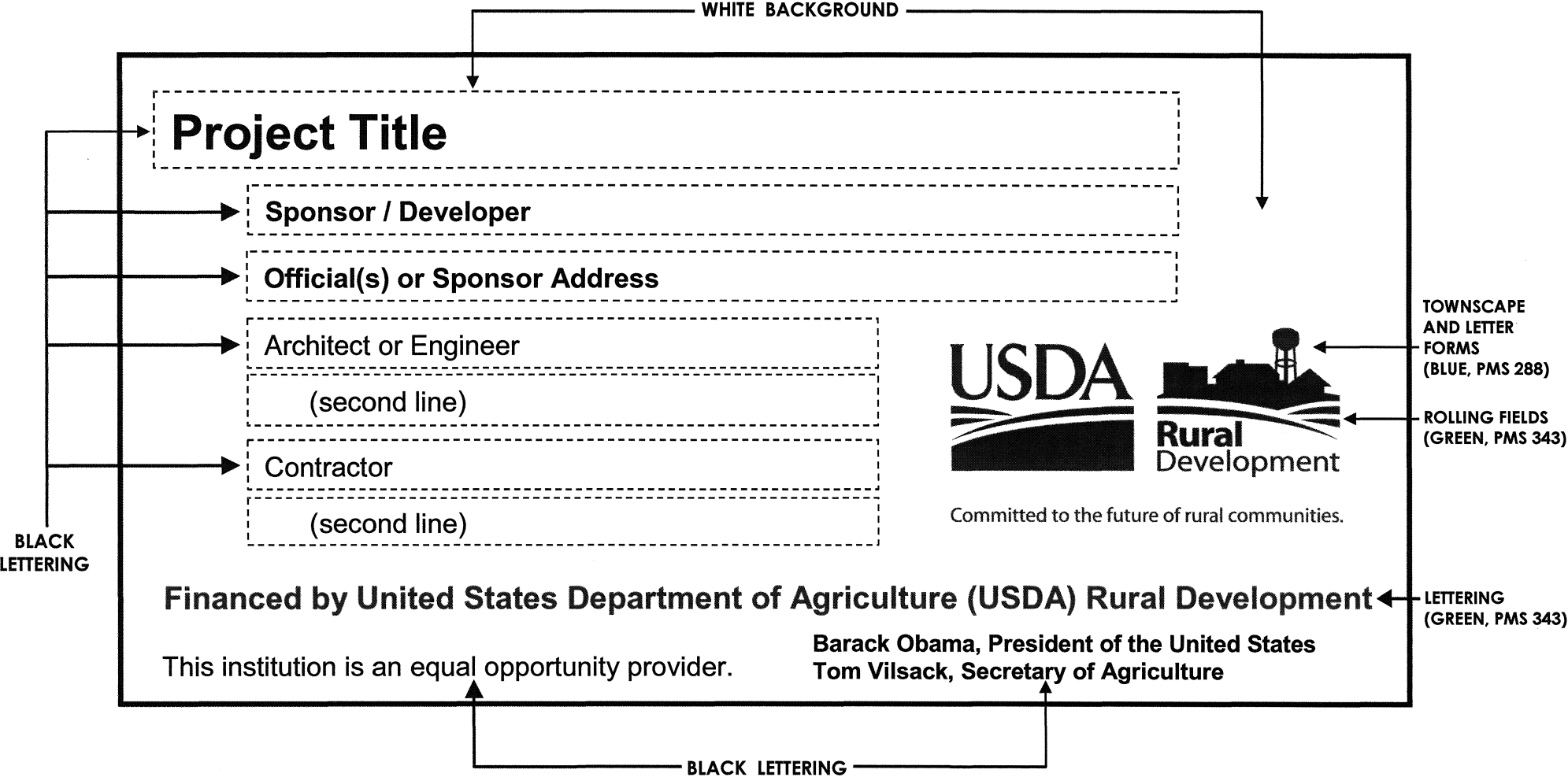
Signature(s)

Date

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 than 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 transactions,” “debarred,” “suspended,” “ineligible,” “lower tier covered transactions,” “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 it 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 participation 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.

TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT PROJECTS



**SIGN DIMENSIONS: 1200 mm x 2400 mm x 19 mm (approx. 4' x 8' x 3/4")
PLYWOOD PANEL (APA RATED A-B GRADE-EXTERIOR)**

CERTIFICATE OF OWNER’S ATTORNEY AND AGENCY CONCURRENCE

CERTIFICATE 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





Steven L. Beshear
Governor

KENTUCKY LABOR CABINET
DEPARTMENT OF WORKPLACE STANDARDS
DIVISION OF EMPLOYMENT STANDARDS,
APPRENTICESHIP & MEDIATION
1047 US Hwy 127 S - Suite 4
Frankfort, Kentucky 40601
Phone: (502) 564-3534
Fax (502) 696-1897
www.labor.ky.gov

Larry Roberts
Secretary

Anthony Russell
Commissioner

November 3, 2014

Paul Cloud
Paul Cloud Engineering
437 Cactus Drive
Benton KY 42025

Re: North Marshall Water District, North Marshall Water Towers

Advertising Date as Shown on Notification: December 1, 2014

Dear Paul Cloud:

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 1-002, dated July 14, 2014 for MARSHALL 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: 079-H-00169-14-1, Heavy/Highway

Sincerely,

Anthony Russell
Commissioner

KENTUCKY LABOR CABINET
PREVAILING WAGE DETERMINATION
CURRENT REVISION
LOCALITY NO. 02

WATER TOWERS

BALLARD, CARLISLE, MARSHALL & MCCRACKEN COUNTIES

Determination No. CR 1-002 2014

Date of Determination: July 14, 2014

Project No. 079-H-00169-14-1

_____ Building ___x___ HH

This schedule of the prevailing rate of wages for Ballard, Carlisle, Marshall & McCracken 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 1-002 2014

Apprentices shall be permitted to work as such subject to Administrative Regulations 803 KAR 1:010. 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, and/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 calendar day, but not more than ten (10) hours worked in any one calendar day, if such written agreement is prior to the over eight (8) hours in a calendar day 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.

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.



Anthony Russell, Commissioner
Department of Workplace Standards
Kentucky Labor Cabinet

Determination No. CR 1-002 2014
July 14, 2014

WATER TOWERS

CR 1-002 2014

CLASSIFICATIONS

BASE RATES AND FRINGE BENEFITS

ASBESTOS/INSULATION WORKERS: (Includes Pipe Insulator and Pipe Wrapping):

BASE RATE	\$29.99
FRINGE BENEFITS	15.42

HAZARDOUS MATERIAL HANDLER: (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems):

BASE RATE	\$19.35
FRINGE BENEFITS	10.35

BOILERMAKERS:

BASE RATE	\$35.79
FRINGE BENEFITS	16.71

BRICKLAYERS:

MCCRACKEN COUNTY:

BASE RATE	\$27.97
FRINGE BENEFITS	12.53

BRICKLAYERS:

BALLARD, CARLISLE & MARSHALL COUNTIES:

BASE RATE	\$24.55
FRINGE BENEFITS	0.00

BRICKLAYERS:

BALLARD, CARLISLE, MARSHALL & MCCRACKEN COUNTIES:
HEAVY HIGHWAY

BASE RATE	\$24.11
FRINGE BENEFITS	10.30

CARPENTERS:

(Includes acoustical ceiling installation, drywall hanging, form work & scaffold builder):

BUILDING

BASE RATE	\$21.44
FRINGE BENEFITS	15.57

Carpenters:

HEAVY & HIGHWAY

BASE RATE	\$27.50
FRINGE BENEFITS	14.92

Piledrivermen:

HEAVY & HIGHWAY

BASE RATE	\$27.75
FRINGE BENEFITS	14.92

Divers:

HEAVY & HIGHWAY

BASE RATE	\$41.63
FRINGE BENEFITS	14.92

WATER TOWERS

CEMENT MASONS & CONCRETE FINISHERS:

BUILDING	BASE RATE	\$22.90
	FRINGE BENEFITS	13.55

ELECTRICIANS:

Electricians (Includes Low Voltage Wiring):

BASE RATE	\$30.82
FRINGE BENEFITS	13.71

Cable Splicers:

BASE RATE	\$28.52
FRINGE BENEFITS	12.52

ELEVATOR CONSTRUCTORS:

BASE RATE	\$21.51
FRINGE BENEFITS	6.12

GLAZIERS:

BASE RATE	\$25.18
FRINGE BENEFITS	8.95

IRONWORKERS:

Structural:

BUILDING

BASE RATE	\$24.95
FRINGE BENEFITS	18.65

Projects with a total contract cost of \$20,000,000.00 or above:

HEAVY & HIGHWAY

BASE RATE	\$26.46
FRINGE BENEFITS	19.91

All Other Work:

HEAVY & HIGHWAY

BASE RATE	\$24.95
FRINGE BENEFITS	18.65

LABORERS / BUILDING:

BALLARD COUNTY:

GRADE CHECKER & MASON TENDER CEMENT/CONCRETE:

BASE RATE	\$21.01
FRINGE BENEFITS	10.70

COMMON OR GENERAL LABORER

BASE RATE	\$16.57
FRINGE BENEFITS	0.00

MASON TENDER-BRICK

BASE RATE	\$20.09
FRINGE BENEFITS	0.00

WATER TOWERS

LABORERS / BUILDING:

CARLISLE & MCCRACKEN COUNTIES:

COMMON OR GENERAL	BASE RATE	\$20.05
	FRINGE BENEFITS	11.35

GRADE CHECKER, MASON TENDER-CEMENT/CONCRETE & MASON TENDER –BRICK:

	BASE RATE	\$20.25
	FRINGE BENEFITS	11.35

LABORERS / BUILDING:

MARSHALL COUNTY:

Common or General	BASE RATE	\$22.24
	FRINGE BENEFITS	12.80

Grade Checker	BASE RATE	\$22.74
	FRINGE BENEFITS	12.80

MASON TENDER-BRICK	BASE RATE	\$20.09
	FRINGE BENEFITS	0.00

MASON TENDER – CEMENT/CONCRETE	BASE RATE	\$23.74
	FRINGE BENEFITS	12.30

LABORERS / HEAVY HIGHWAY:

GROUP 1: Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental – Nuclear, Radiation, Toxic & Hazardous Waste – Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Form; & General Cleanup:

HEAVY & HIGHWAY	BASE RATE	\$21.50
	FRINGE BENEFITS	12.26

GROUP 2: Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builders; Burner & Welder; Bushhammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental – Nuclear, Radiation, Toxic & Hazardous Waste – Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; & Wagon Driller:

HEAVY & HIGHWAY	BASE RATE	\$21.75
	FRINGE BENEFITS	12.26

WATER TOWERS

GROUP 3: Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Blaster; Side Rail Setter; Rail Paved Ditch; Screw Operator; Tunnel (Free air); & Water Blaster:
HEAVY & HIGHWAY

BASE RATE	\$21.80
FRINGE BENEFITS	12.26

GROUP 4: Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized:
HEAVY & HIGHWAY

BASE RATE	\$22.40
FRINGE BENEFITS	12.26

MILLWRIGHTS:

BASE RATE	\$23.48
FRINGE BENEFITS	15.06

OPERATING ENGINEERS / BUILDING:

GROUP 1: Backhoe, Bobcat/Skid/Steer Loader, bulldozer, cherry picker, crane, excavator, forklift, grader/blade, trackhoe:
BUILDING

*BASE RATE	\$28.13
FRINGE BENEFITS	14.15

***Crane with boom 150 feet and over, including jib, shall received \$1.00 above Group 1; 225 feet or over, including jib, shall receive \$1.50 above rate. Crane using piling leads shall receive \$1.00 above Rate regardless of boom length.**

GROUP 2: Oiler:
BUILDING

BASE RATE	\$24.31
FRINGE BENEFITS	14.15

GROUP 3: Front End Loader:
BUILDING

BASE RATE	\$25.14
FRINGE BENEFITS	14.15

HAZARDOUS PAY FOR ALL OPERATORS: Personal Protective Equipment, Level A \$1.00 Premium over Base Rate, Level B \$.75 Premium over Base Rate, Level C \$1.00 Premium over Base Rate and Level D No Premium.

OPERATING ENGINEERS / HEAVY HIGHWAY:

GROUP 1: A-Frame Winch Truck; Auto Patrol; Backfiller; Batcher Plant; Bituminous Paver; Bituminous Transfer Machine; Boom Cat; Bulldozer; Mechanic; Cableway; Carry-all Scoop; Carry Deck Crane; Central Compressor Plant; Clamshell; Concrete Mixer (21 cu. ft. or Over); Concrete Paver; Truck-Mounted Concrete Pump; Core Drill; Crane; Crusher Plant; Derrick; Derrick Boat; Ditching & Trenching Machine; Dragline; Dredge Operator; Dredge Engineer; Elevating Grader & Loaders; Grade-All; Gurrries; Heavy Equipment

WATER TOWERS

Robotics Operator/Mechanic; High Lift; Hoe-Type Machine; Hoist (Two or More Drums); Hoisting Engine (Two or More Drums); Horizontal Directional Drill Operator; Hydrocrane; Hyster; KeCal Loader; LeTourneau; Locomotive; Mechanic; Mechanically Operated Laser Screed; Mechanic Welder; Mucking Machine; Motor Scraper; Orangepeel Bucket; Piledriver; Power Blade; Pumpcrete; Push Dozer; Rock Spreader, attached to equipment; Rotary Drill; Roller (Bituminous); Scarifier; Scoopmobile; Shovel; Side Boom; Subgrader; Tailboom; Telescoping Type Forklift; Tow or Push Boat; Tower Crane (French, German & other types); Tractor Shovel; Truck Crane; Tunnel Mining Machines, including Moles, Shields or similar types of Tunnel Mining Equipment:

HEAVY & HIGHWAY	*BASE RATE	\$28.85
	FRINGE BENEFITS	14.15

GROUP 2: Air Compressor (Over 900 cu. ft. per min.); Bituminous Mixer; Boom Type Tamping Machine; Bull Float; Concrete Mixer (Under 21 cu. ft); Dredge Engineer; Electric Vibrator; Compactor/Self-Propelled Compactor; Elevator (One Drum or Buck Hoist); Elevator (when used to Hoist Building Material); Finish Machine; Firemen & Hoist (One Drum); Flexplane; Forklift (Regardless of Lift Height); Form Grader; Joint Sealing Machine; Outboard Motor Boat; Power Sweeper (Riding Type); Roller (Rock); Ross Carrier; Skid Mounted or Trailer Mounted Concrete Pump; Switchman or

OPERATING ENGINEERS / HEAVY HIGHWAY (CONTINUED):

GROUP 2 (CONTINUED):

Brakeman; Throttle Valve Person; Tractair & Road Widening Trencher; Tractor (50 HP or Over); Truck Crane Oiler; Tugger; Welding Machine; Well Points; & Whirley Oiler:

HEAVY & HIGHWAY	*BASE RATE	\$26.24
	FRINGE BENEFITS	14.15

GROUP 3: All off road material handling equipment, including articulating dump trucks, greaser on grease facilities servicing heavy equipment:

HEAVY & HIGHWAY	*BASE RATE	\$26.65
	FRINGE BENEFITS	14.15

GROUP4: Bituminous Distributor; Burlap & Curing Machine; Cement Gun; Concrete Saw; Conveyor; Deckhand Oiler; Grout Pump; Hydraulic Post Driver; Hydro Seeder; Mud Jack; Oiler; Paving Joint Machine; Power Form Handling Equipment; Pump; Roller (Earth); Steersman; Tamping Machine; Tractor (Under 50 HP); & Vibrator:

HEAVY & HIGHWAY	*BASE RATE	\$25.95
	FRINGE BENEFITS	14.15

***Cranes with booms 150 ft. & over (including jib) and where the length of the boom in combination with the length of the piling equals or exceeds 150 ft. - \$1.00 above 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.**

WATER TOWERS

PAINTERS: BALLARD COUNTY:

Brush & Roller Only:	BUILDING	BASE RATE	\$26.26
		FRINGE BENEFITS	15.18
All other work:	BUILDING	BASE RATE	\$13.84
		FRINGE BENEFITS	0.00
Bridges & Dams:	HEAVY & HIGHWAY	*BASE RATE	\$30.56
		FRINGE BENEFITS	15.18
All Other Work:	HEAVY & HIGHWAY	*BASE RATE	\$28.26
		FRINGE BENEFITS	15.18

***Spray, Blast, Steam, High & Hazardous (Including Lead Abatement) and All Epoxy - \$1.00 Premium**

PAINTERS: CARLISLE, MARSHALL & MCCRACKEN COUNTIES:

Brush & Roller Only:	BUILDING	BASE RATE	\$20.20
		FRNGE BENEFITS	12.05
All other work:	BUILDING	BASE RATE	\$13.84
		FRINGE BENEFITS	0.00
Bridges & Dams:	HEAVY & HIGHWAY	*BASE RATE	\$26.45
		FRINGE BENEFITS	12.05
All Other Work:	HEAVY & HIGHWAY	*BASE RATE	\$20.20
		FRINGE BENEFITS	12.05

*Waterblasting units with 3500 PSI and above - \$.50 premium; Spray painting and all abrasive blasting - \$1.00 premium; Work 40 ft. and above ground level – \$1.00 premium.

PLASTERERS:	BUILDING	BASE RATE	\$16.63
		FRINGE BENEFITS	0.00

PLUMBERS & PIPEFITTERS:	BASE RATE	\$33.11	
(Including HVAC Pipe Installation):		FRINGE BENEFITS	14.83

ROOFERS (excluding metal roofs):		BASE RATE	\$16.42
		FRINGE BENEFITS	1.50

WATER TOWERS

SHEETMETAL WORKERS (Including HVAC duct and metal roofs):	BASE RATE	\$28.66
	FRINGE BENEFITS	18.03

SPRINKLER FITTERS:	BASE RATE	\$30.14
	FRINGE BENEFITS	17.12

TRUCK DRIVERS / BUILDING:

Single-Axle:	BUILDING	BASE RATE	\$18.78
		FRINGE BENEFITS	8.27

Semi-Axle & Tandem:	BUILDING	BASE RATE	\$19.50
		FRINGE BENEFITS	8.27

Greaser, Tire Changer:	HEAVY & HIGHWAY	BASE RATE	\$19.38
		FRINGE BENEFITS	16.85

TRUCK DRIVERS / HEAVY HIGHWAY: (CONTINUED):

Truck Mechanic:	HEAVY & HIGHWAY	BASE RATE	\$19.56
		FRINGE BENEFITS	16.85

Single Axle Dump & Flatbed; Terrain Vehicle when used to haul materials; Semi-Trailer or Pole Trailer when used to pull building materials & equipment; Tandem Axle Dump; Distributor; & Mixer:

HEAVY & HIGHWAY	BASE RATE	\$19.56
	FRINGE BENEFITS	16.85

Euclid, Other Heavy Earthmoving Equipment & Lowboy; Articulator Cat Truck & 5 Axle Vehicle; Winch & A-Frame when used in transporting materials; Ross Carrier; Fork Lift Truck when used to transport building materials; & Drivers on Pavement Breaker:

HEAVY & HIGHWAY	BASE RATE	\$19.66
	FRINGE BENEFITS	16.85

Mixer All Types:	BASE RATE	\$19.64
	FRINGE BENEFITS	16.85

End of Document
CR 1-002 2014
July 14, 2014

TECHNICAL SPECIFICATIONS
WATER TOWERS UPGRADES
NORTH MARSHALL WATER DISTRICT

T-1. GENERAL

1.01. SCOPE.

The following Specifications shall control the materials and construction for the water tower installation and upgrades. All materials shall be new and from a reliable manufacturer. The Contractor shall be responsible for the safe handling, storage, installation and testing.

The scope of work includes providing the materials, equipment, labor and supervision to install a new 250,000 gallon elevated water tower as described in the following specifications and on the attached drawings. Four existing elevated storage tanks will have minor repairs and be prepared, primed and painted.

The Contractor is responsible for supplying all other materials to construct a complete, operational project.

The following work is generally included on the four existing tanks:

- a. Preparation of surface to receive finishes.
- b. Handling, analysis, and disposal of debris.
- c. Tank repairs and modifications.
- d. Coating applications to all surfaces.
- e. Cleaning.
- f. Testing and disinfection.

1.02. CONTRACTOR'S RESPONSIBILITIES.

- a. The Contractor shall obtain all necessary permits and approvals. All public utilities must be contacted by the Contractor to verify the location of all

WATER TOWERS

underground facilities. All costs arising from applicable permits as well as any damages to public utilities shall be borne by the Contractor.

b. The Contractor shall be responsible for repairing or replacing all defects in materials and workmanship for a period of two (2) years from the date of final acceptance from the Engineer. A one year inspection will be conducted in accordance with AWWA D102-97, Section 5.2.

c. The Contractor shall be responsible for supplying the Engineer with a set of "As-Built" plans. Drawings shall be a minimum 24"x36" with a minimum scale of 1"=100'.

d. All work shall be performed in accordance with the latest version of all applicable safety and construction regulations (i.e. OSHA, etc.).

1.03 The materials, design, fabrication, surface preparation, coating applications and testing shall conform to current standards including:

a. AWWA Standard for Welded Steel Storage Tanks for Water Storage, ANSI-AWWA D100-84, for the American Water Works Association.

b. ANSI-AWWA D102-97 - Standard for Painting Steel Water Storage Tanks

c. AWWA C652-92 - Standard for Disinfection of Steel Water Storage Tanks

d. SSPC - Steel Structures Painting Council Manuals, Systems and Specifications, Vol. 2, Sixth Ed.

e. SSPC-PA2 Paint Thickness Measurement

f. SSPC-PA5 Guide to Maintenance Painting Programs

g. ANSI/NSF Standard 61 - listed Drinking Water System Components - Health Effects.

h. ASTM B117, D149, D522, D3353, D4060, D4141C, D4541, D4585, G53.

i. Code of Federal Regulations: 29 CFR 1910, 29 CFR 1910.134, 29 CFR 1910.1020, 29 CFR 1910.1200, 20 CFR 1926, 40 CFR 50, 40 CFR 261, 40 CFR 268

1.04 The coatings manufacturer shall be TNEMEC, Co., Inc. of Kansas City, MO. All products for each specified function and system shall be of a single manufacturer. Equivalent products shall be acceptable providing they meet or

WATER TOWERS

exceed the performance criteria of the selected materials. The Contractor shall not proceed until he has received approval from the Engineer/Owner.

1.05 Paint Materials

- a. Rust inhibitive, zinc rich urethane interior and exterior primer: TNEMEC Series 94-H₂O-HYDRO-ZINC.
- b. Polyamidoamine epoxy interior intermediate coat and dry section primer: TNEMEC Series N140-39BL POTA-POX PLUS.
- c. Polyamidoamine epoxy interior and dry section primer: TNEMEC Series N140-39BL POTA-POX PLUS.
- d. Solventless epoxy filler and surfacer for pit and seam repairs: TNEMEC Series 215 SURFACING EPOXY (for potable water contact).
- e. Flexible urethane caulking for roof seams: SIKA-FLEX 1A.
- f. Urethane accelerator: TNEMEC Series 44-710.
- g. Aliphatic acrylic polyurethane exterior intermediate coat: TNEMEC Series 73 - color ENDURA-SHEILD.
- h. Fluoropolymer polyurethane high gloss exterior finish coat: TNEMEC Series 700- color HYDROFLON.

All manufacturer's latest printed instructions shall be followed in the mixing, thinning and application of the materials. Do not use materials beyond the manufacturer's designated shelf life or recommended pot life..

All surfaces shall have all visible oil, grease, soil, dirt, and other soluble contaminants in accordance with SSPC-SP1 prior to coating application.

- 1.06 All paint particles and used blast media containing paint particles shall be collected and removed from the tank site by the Contractor in accordance with all federal, state and local regulations.
- 1.07 Blasting shall not be performed when the surface temperature is less than 5°F above the dew point. The compressed air shall be free of oil and water. All dust, blasting debris and contaminants shall be removed from the tank surface prior to painting. Areas shall be reblasted as needed due to other work on the tank prior to painting.

WATER TOWERS

- 1.08 The interior coating shall cure for a minimum of 10 days before being immersed in water.
- 1.09 The Contractor shall allow the work to be inspected after blasting and between each coat. The Contractor shall keep a daily record of the materials stored and used, the ambient conditions (a minimum of three spaced throughout the work day), production record, personnel of site, hours worked, and in process quality control observations. this log shall be made available at any time to the Owner or their representative.
- 1.10 The Contractor shall not proceed to subsequent coats (steps) until an acceptable inspection is conducted. All rigging shall be left in place until the inspections are completed.

T-2. MOORS CAMP 500,000 GALLON WATER TOWER

- 2.01 This specification shall include the repairs, preparation of surfaces, and painting of the interior and exterior surfaces of the 500,000 gallon dry riser storage tank. the tank was constructed by Phoenix fabricators and Erectors in 1994. The following describes the tank in general:

Overall Height:	143'-0"
Shape:	Toro-Ellipsoidal
Bowl Diameter:	50'-0"
Head Range:	37'-1 3/4"

- 2.02 The exterior (dry) surface shall be removed by blasting to a commercial finish in accordance with SSPC-SP6.
- 2.03 The interior (wet) section's surface shall be removed by blasting to a near-white metal finish in accordance with SSPC-SP10.
- 2.04 The tank finish does not contain any known lead.
- 2.05 The Contractor shall be responsible for all costs associated with sampling, worker protection, environmental pollution control, handling of debris, laboratory analysis, and waste disposal.

WATER TOWERS

2.06 Clean and Paint Tank Interior (Wet)

<i>Estimated Surface Area:</i>	9,000 SF
<i>Surface Preparation:</i>	SSPC-SP10 Near White Blast Cleaning.
<i>Prime Coat:</i>	Aromatic zinc-rich urethane at 2.5-3.5 mils DFT.
<i>Intermediate Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.
<i>Stripe Coat:</i>	Polyamidoamine epoxy at 2-3 mils DFT (roller applied) to weld seams and edges.
<i>Finish Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.

Clean and Paint Tank Interior (Dry)

<i>Estimated Surface Area:</i>	5,500 SF
<i>Surface Preparation:</i>	SSPC-SP7 Sweep Blast Cleaning.
<i>Prime Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.
<i>Finish Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.

Clean and Paint Tank Exterior

<i>Estimated Surface Area:</i>	19,600 SF
<i>Surface Preparation:</i>	SSPC-SP7 Sweep Blast Cleaning.
<i>Spot Prime Coat:</i>	Polyamidoamine epoxy at 2.3 mils DFT.
<i>Intermediate Coat:</i>	Aliphatic acrylic polyurethane at 2-4 mils DFT.
<i>Full Finish Coat:</i>	Fluoropolymer polyurethane at 2-4 mils DFT.

2.07 The new tower shall be painted white. It shall be lettered "NORTH MARSHALL WATER DISTRICT" in cadet blue.

2.08 Repairs

- a. Caulk interior roof lap seams with Sika Flex-1A.
- b. Sharp Edges can cause premature coating failure. All sharp edges, weld spatter, and burrs shall be ground flush.
- c. Replace the U-bolts that support the fill pipe inside the dry riser pipe with stainless steel U-bolts of the same size. Rubber gasket material shall be placed between the bolt and the pipe to isolate dissimilar metals.
- d. Replace the roof vent insect screen with a new stainless screen.
- e. Remove the existing cathodic protection system. Patch all tank openings by welding.

WATER TOWERS

- f. Install a siphon pipe to drain the torus bowl into the funnel section at the top of the riser pipe. The 3" siphon pipe shall be made of Sch. 80 PVC pipe and shall be attached with stainless steel clips and hardware.
- g. Install a 3" diameter freeze proof drain in the base of the fill pipe. The pipe shall extend through the base of the dry riser pipe to allow flushing.
- h. Remove the deteriorated fall prevention cable from the interior wet section ladder and install a new stainless steel fall prevention cable and associated hardware.
- i. Install a hinged cover over the opening in the upper platform where the ladder passes through.
- j. Install a lockable hasp on the inside of the access tube hatch.
- k. Install a galvanized lockable, hinged ladder security cover.

T-3. BETHEL CHURCH 500,000 GALLON WATER TOWER

- 3.01 This specification shall include the repairs, preparation of surfaces, and painting of the interior and exterior surfaces of the 500,000 gallon dry riser storage tank. the tank was constructed by Phoenix fabricators and Erectors in 1994. The following describes the tank in general:

Overall Height:	155'-0"
Shape:	Toro-Ellipsoidal
Bowl Diameter:	50'-0"
Head Range:	37'-1 3/4"

- 3.02 The exterior (dry) surface shall be removed by blasting to a commercial finish in accordance with SSPC-SP6.
- 3.03 The interior (wet) section's surface shall be removed by blasting to a near-white metal finish in accordance with SSPC-SP10.
- 3.04 The tank finish does not contain any known lead.
- 3.05 The Contractor shall be responsible for all costs associated with sampling, worker protection, environmental pollution control, handling of debris, laboratory analysis, and waste disposal.

WATER TOWERS

3.06 Clean and Paint Tank Interior (Wet)

<i>Estimated Surface Area:</i>	9,000 SF
<i>Surface Preparation:</i>	SSPC-SP10 Near White Blast Cleaning.
<i>Prime Coat:</i>	Aromatic zinc-rich urethane at 2.5-3.5 mils DFT.
<i>Intermediate Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.
<i>Stripe Coat:</i>	Polyamidoamine epoxy at 2-3 mils DFT (roller applied) to weld seams and edges.
<i>Finish Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.

Clean and Paint Tank Interior (Dry)

<i>Estimated Surface Area:</i>	5,500 SF
<i>Surface Preparation:</i>	SSPC-SP7 Sweep Blast Cleaning.
<i>Prime Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.
<i>Finish Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.

Clean and Paint Tank Exterior

<i>Estimated Surface Area:</i>	19,600 SF
<i>Surface Preparation:</i>	SSPC-SP7 Sweep Blast Cleaning.
<i>Spot Prime Coat:</i>	Polyamidoamine epoxy at 2.3 mils DFT.
<i>Intermediate Coat:</i>	Aliphatic acrylic polyurethane at 2-4 mils DFT.
<i>Full Finish Coat:</i>	Fluoropolymer polyurethane at 2-4 mils DFT.

3.07 The new tower shall be painted white. It shall be lettered "NORTH MARSHALL WATER DISTRICT" in cadet blue.

3.08 Repairs

- a. Caulk interior roof lap seams with Sika Flex-1A.
- b. Sharp Edges can cause premature coating failure. All sharp edges, weld spatter, and burrs shall be ground flush.
- c. Replace the U-bolts that support the fill pipe inside the dry riser pipe with stainless steel U-bolts of the same size. Rubber gasket material shall be placed between the bolt and the pipe to isolate dissimilar metals.
- d. Replace the roof vent insect screen with a new stainless screen.
- e. Remove the existing cathodic protection system. Patch all tank openings by welding.

WATER TOWERS

- f. Install a siphon pipe to drain the torus bowl into the funnel section at the top of the riser pipe. The 3" siphon pipe shall be made of Sch. 80 PVC pipe and shall be attached with stainless steel clips and hardware.
- g. Install a 3" diameter freeze proof drain in the base of the fill pipe. The pipe shall extend through the base of the dry riser pipe to allow flushing.
- h. Remove the deteriorated fall prevention cable from the interior wet section ladder and install a new stainless steel fall prevention cable and associated hardware.
- i. Install a galvanized lockable, hinged ladder security cover.

T-4. MOORS CAMP 500,000 GALLON WATER TOWER

- 4.01 This specification shall include the repairs, preparation of surfaces, and painting of the interior and exterior surfaces of the 50,000 gallon dry riser storage tank. the tank was constructed by Caldwell Tanks in 1963. The following describes the tank in general:

Overall Height:	117'-3"
Shape:	Double Ellipsoidal
Bowl Diameter:	24'-0"
Head Range:	17'-3"

- 4.02 The exterior (dry) surface shall be removed by blasting to a commercial finish in accordance with SSPC-SP6.
- 4.03 The interior (wet) section's surface shall be removed by blasting to a near-white metal finish in accordance with SSPC-SP10.
- 4.04 The tank finish does not contain any known lead.
- 4.05 The Contractor shall be responsible for all costs associated with sampling, worker protection, environmental pollution control, handling of debris, laboratory analysis, and waste disposal.
- 4.06 Clean and Paint Tank Interior (Wet)

<i>Estimated Surface Area:</i>	9,000 SF
<i>Surface Preparation:</i>	SSPC-SP10 Near White Blast Cleaning.
<i>Prime Coat:</i>	Aromatic zinc-rich urethane at 2.5-3.5 mils DFT.
<i>Intermediate Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.

WATER TOWERS

Stripe Coat: Polyamidoamine epoxy at 2-3 mils DFT (roller applied) to weld seams and edges.

Finish Coat: Polyamidoamine epoxy at 4-6 mils DFT.

Clean and Paint Tank Interior (Dry)

Estimated Surface Area: 5,500 SF

Surface Preparation: SSPC-SP7 Sweep Blast Cleaning.

Prime Coat: Polyamidoamine epoxy at 4-6 mils DFT.

Finish Coat: Polyamidoamine epoxy at 4-6 mils DFT.

Clean and Paint Tank Exterior

Estimated Surface Area: 19,600 SF

Surface Preparation: SSPC-SP7 Sweep Blast Cleaning.

Spot Prime Coat: Polyamidoamine epoxy at 2.3 mils DFT.

Intermediate Coat: Aliphatic acrylic polyurethane at 2-4 mils DFT.

Full Finish Coat: Fluoropolymer polyurethane at 2-4 mils DFT.

4.07 The new tower shall be painted white. It shall be lettered "NORTH MARSHALL WATER DISTRICT" in cadet blue.

4.08 Repairs

- a. Caulk the roof cap plate and roof finger panels and all stiffener angles with Sika Flex-1A.
- b. Sharp Edges can cause premature coating failure. All sharp edges, weld spatter, and burrs shall be ground flush.
- c. Fill sharp edged pits and pits deeper than 1/16" with TNEMEC 215 Surfacing epoxy. Weld pits deeper than 3/16".
- d. Install a new hasp and new hinges for the existing roof access hatch cover. The 3/4" hatch pins and hardware shall be stainless steel.
- e. Remove the existing 3" diameter overflow pipe that runs from the upper knuckle to a discharge point just below the balcony. Install a new 6" diameter overflow pipe from the west upper knuckle, down the shell and through the balcony, down the west leg to a point just above grade. The pipe shall be supported at least ever 10' to the lag. The discharge point shall have a stainless steel insect screen installed between bolted flanges and a protective flap valve.
- f. Remove all 20 spider rods inside the tank. Grind all burrs flush.

WATER TOWERS

- g. Install clips to support the aviation light conduit away from the tank surface to allow for blast cleaning and painting.
- h. Replace the riser anchor bolt nuts.
- i. Seal the interface between the riser pipe and concrete foundation with Dow Corning CWS caulk..
- j. Install a galvanized lockable, hinged ladder security cover.

T-5. KENBAR (MAGGIES JUNGLE GOLF) 100,000 GALLON WATER TOWER

- 5.01 This specification shall include the repairs, preparation of surfaces, and painting of the interior and exterior surfaces of the 100,000 gallon dry riser storage tank. the tank was constructed by Caldwell Tanks. The following describes the tank in general:

Overall Height:	120'-0"
Shape:	Double Ellipsoidal
Bowl Diameter:	30'-0"
Head Range:	22'-0"

- 5.02 The exterior (dry) surface shall be removed by blasting to a commercial finish in accordance with SSPC-SP6.
- 5.03 The interior (wet) section's surface shall be removed by blasting to a near-white metal finish in accordance with SSPC-SP10.
- 5.04 The tank finish does not contain any known lead.
- 5.05 The Contractor shall be responsible for all costs associated with sampling, worker protection, environmental pollution control, handling of debris, laboratory analysis, and waste disposal.
- 5.06 Clean and Paint Tank Interior (Wet)

<i>Estimated Surface Area:</i>	3,000 SF
<i>Surface Preparation:</i>	SSPC-SP10 Near White Blast Cleaning.
<i>Prime Coat:</i>	Aromatic zinc-rich urethane at 2.5-3.5 mils DFT.
<i>Intermediate Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.
<i>Stripe Coat:</i>	Polyamidoamine epoxy at 2-3 mils DFT (roller applied) to weld seams and edges.
<i>Finish Coat:</i>	Polyamidoamine epoxy at 4-6 mils DFT.

WATER TOWERS

Clean and Paint Tank Interior (Dry)

Estimated Surface Area: 1,300 SF
Surface Preparation: SSPC-SP7 Sweep Blast Cleaning.
Prime Coat: Polyamidoamine epoxy at 4-6 mils DFT.
Finish Coat: Polyamidoamine epoxy at 4-6 mils DFT.

Clean and Paint Tank Exterior

Estimated Surface Area: 8,000 SF
Surface Preparation: SSPC-SP7 Sweep Blast Cleaning.
Spot Prime Coat: Polyamidoamine epoxy at 2.3 mils DFT.
Intermediate Coat: Aliphatic acrylic polyurethane at 2-4 mils DFT.
Full Finish Coat: Fluoropolymer polyurethane at 2-4 mils DFT.

5.07 Repairs

- a. Caulk the roof cap plate and roof finger panels and all stiffener angles with Sika Flex-1A.
- b. Sharp Edges can cause premature coating failure. All sharp edges, weld spatter, and burrs shall be ground flush.
- c. Fill sharp edged pits and pits deeper than 1/16" with TNEMEC 215 Surfacing epoxy. Weld pits deeper than 3/16".
- d. Install a new hasp and new hinges for the existing roof access hatch cover. The 3/4" hatch pins and hardware shall be stainless steel.
- e. Install clips to support the aviation light conduit away from the tank surface to allow for blast cleaning and painting.
- f. Replace the riser anchor bolt nuts.
- g. Seal the interface between the riser pipe and concrete foundation with Dow Corning CWS caulk..
- h. Install a galvanized lockable, hinged ladder security cover.

5.08 The new tower shall be painted white. It shall be lettered "NORTH MARSHALL WATER DISTRICT" in cadet blue.

5.09 This tank has paint which contains lead. The Contractor is responsible for all containment, removal and disposal of the lead containing paint particles. All

WATER TOWERS

federal, state and local requirements shall be followed. The Contractor is responsible for all certifications, licenses, bonds, and record keeping. The particles shall be properly sealed in approved barrels and transported to an approved landfill. The Contractor shall bear all costs including the required containment.

T-6. GIFFORD 250,000 GALLON WATER TOWER

- 6.01 A new 250,000 gallon elevated water tower shall be constructed at the location shown on Raceway Lane (east of the intersection of Highways 68 and 95). The Contractor shall fabricate and erect a new water tower and foundations as described in the North Marshall Gifford Tower Manual and Geotechnical Exploration Report. This shall be a complete project including fabrication, erection, concrete foundations, sandblasting, priming and painting of the tower.
- 6.02 The Tower Contractor shall be responsible for coordinating with the waterline Contractor for connecting the 10" PVC supply line, 8" overflow line, Chain link fence and gate, and the gravel driveway.
- 6.03 The new tower shall be painted white. It shall be lettered "NORTH MARSHALL WATER DISTRICT" in cadet blue.

Gifford Tower Manual

Technical Specifications

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PROJECT REQUIREMENTS

PART ONE – GENERAL

1.1 SCOPE

- 1.1.1 This section of the Project Manual covers the conditions and specific requirements for work on this project.
- 1.1.2 The Contractor shall furnish all materials, labor, equipment, superintendence, temporary facilities, and pay any and all fees or taxes associated with the execution of this work. The Contractor shall deliver the work complete and ready to use in every respect within the specified contract time.
- 1.1.3 All contractors, subcontractors, suppliers and other employers involved with any portion of the work on this project shall be responsible for compliance with all federal, state, local, and the Owner's regulations, standards and codes in effect during the contract period.

1.2 PROJECT

This project consists of the construction of One (1) 250,000 gallon, elevated water storage tank and appurtenances as described in this Project Manual at a location on:

- 1.2.1 Raceway Lane near the intersection of Highways 68 and 95 in Marshall County, Kentucky, at coordinates 36 deg. 56' 48" N, 88 deg. 21' 35" W.

1.3 RECORD DRAWINGS

At the completion of this project, the Contractor shall deliver to the Engineer a complete set of Record Drawings. The contractor shall keep an accurate set of As-Built Drawings on the job at all times during the construction period. Submission of a suitable set of the As-Built Drawings will be required prior to issuance of the final payment to the Contractor.

1.4 SUBSTITUTIONS

"Approved Equal", "Equal" and similar phrases are defined to be material and/or equipment of similar construction and of an equal quality and suitability for the work as the specified material or equipment. An "Approved Equal" material or item is one that has received approval from the Engineer in writing. Request for approval shall be submitted to the Engineer no less than three (3) working days prior to the bid opening date. Requests for substitutions will not be considered after the contract is awarded, unless it can be shown that the specified item has become unavailable.

1.5 OBSTRUCTIONS

- 1.5.1 All known pipelines, underground installations, structures, etc. in the vicinity of the work to be performed this contract are shown on the Drawings according to the best information available to the Owner and the Engineer. The Contractor shall field verify the

horizontal and vertical location of any possible utility or obstruction in the vicinity of the proposed water tower.

- 1.5.2 The Owner makes no express or implied guarantee for the accuracy of the information shown on the drawings regarding underground utilities or objects. The Contractor shall make every effort to locate all underground pipelines, utility service lines, conduits, and other structures by contacting owners of underground utilities, and/or prospecting in advance of all earthwork operations.
- 1.5.3 Any delay or inconvenience to the Contractor caused by pipelines, or other underground structures or obstructions not shown on the drawings, or found in a location different than those indicated, shall be handled in accordance with the General Conditions.
- 1.5.4 All incidental damage to existing utilities which are shown on the drawings, or which are made known to the Contractor prior to excavation, shall be repaired by the owning utility or the Contractor as directed, at the expense of the Contractor.
- 1.5.5 Obstructions which are replaced within the limits of the Contractor's normal excavation shall be backfilled by the Contractor along with the normal backfilling. Damage to any facilities during backfilling shall be the responsibility of the Contractor.

1.6 COMMUNICATIONS

All notices, demands, requests, instructions, reports, approvals, proposals change orders, field orders, and claims shall be in writing.

1.7 LAYOUT AND COORDINATION OF WORK

- 1.7.1 The Engineer will provide control points for the location of the centerline of the water tower and a project benchmark. The Contractor shall immediately locate all control points and take such action as necessary to prevent their destruction, layout his own work and be responsible for all lines, elevations, and measurements of all of the work to be executed in this contract.
- 1.7.2 The Contractor shall exercise proper precautions to verify existing fixtures or improvements shown on the Drawings before laying out his work. He will be held responsible for any error resulting from his failure to take such precautions.
- 1.7.3 The Contractor shall be responsible for the general overall coordination of the work. Subcontractors shall carefully check the Drawings, Specifications, and Project Site in order to advise and coordinate their phase of the work.

1.8 TEMPORARY FACILITIES

- 1.8.1 The Contractor shall provide, install and maintain adequate sanitation facilities on the site. These temporary facilities shall be acceptable to the health regulatory agency having jurisdiction and by the Engineer.
- 1.8.2 Upon completion of the work, all temporary facilities and Contractor equipment shall be removed from the site. Final payment is contingent upon the site being cleaned of all construction debris and any excess materials.

1.9 PRODUCT HANDLING

Materials delivered to and stored on the site must be handled in a careful manner as to prevent any damage to the materials. All materials and equipment damaged during

manufacture, shipment, delivery, storage, or construction shall be replaced with material or equipment of exactly the same kind by the Contractor at no additional cost to the Owner.

1.10 TESTING AND QUALITY ASSURANCE

1.10.1 Geotechnical and concrete testing during construction will be coordinated and furnished by the Engineer. The Contractor shall notify the Engineer a minimum of 24 hours before an item to be tested or inspected will be ready for such inspection or testing. Items that will require inspection or testing consists of, but is not limited to:

1.10.1.1 Foundation subgrade after excavation to final elevation.

1.10.1.2 Concrete used in footings.

1.10.1.3 Concrete used in piers.

1.10.1.4 Compaction of soil during backfilling operations.

1.10.2 Testing to assure quality of welds or other items of the storage tank construction will be coordinated and furnished by the Contractor and witnessed by the Engineer. Results of all such testing by the Contractor shall be furnished to the Engineer along with the As-Built Drawings at the completion of the construction.

1.11 TRAFFIC CONTROL

Follow all guidelines as specified in the Kentucky Department of Highways Manual on Uniform Traffic Control Devices.

1.12 REFERENCED STANDARDS

1.12.1 Referenced standards and specifications contained in these Technical Specifications are as follows:

1.12.1.1 ACI – American Concrete Institute

1.12.1.2 AISC – American Institute of Steel Construction

1.12.1.3 ANSI – American National Standards Institute

1.12.1.4 ASA – American Standards Association

1.12.1.5 ASTM – American Society for Testing Materials, Inc.

1.12.1.6 AWS – American Welding Society

1.12.1.7 AWWA – American Water Works Association

1.12.1.8 PCA – Portland Cement Association

1.12.1.9 UL – Underwriter's Laboratory, Inc.

1.12.1.10 USASI – United States of America Standards Institute (also designated as ASA)

1.12.1.11 Kentucky Department of Highways, Standard Specifications for Road and Bridge Construction, 2004 Edition

1.12.1.12 ASME – American Society of Mechanical Engineers

1.12.1.13 ASI – American Steel Institute

PART TWO – MATERIALS

2.1 All concrete used on this project shall be Class A with a minimum compressive strength of 3,500 PSI in manufactured in accordance with Section 03310, “Structural Concrete” unless otherwise noted.

END OF SECTION

PROJECT RECORD DOCUMENTS

PART ONE – GENERAL

1.1 DESCRIPTION

1.1.1 Work Included

During the construction period, maintain an accurate record of changes and other pertinent information as described in Section 3.1 below

Upon completion of the work, transfer the recorded changes and other pertinent information to a set of Record Documents as described in Section 3.2 below.

1.2 QUALITY ASSURANCE

Appoint one person on the Contractor's staff to be responsible for maintaining the Project Record Documents for this project.

Measurements for as-built locations shall be accurate.

Drafting entries made on the contract documents shall be accurate, legible and done with a moderate degree of drafting skill.

1.3 SUBMITTALS

Prior to submitting request for final payment, deliver the final Project Record Documents to the Engineer and secure his approval.

1.4 PRODUCT HANDLING

1.4.1 Maintain the job set of record documents completely protected from deterioration and from loss and damage until completion of the work. After project completion, transfer all of the recorded data to the final Project Record Documents.

1.4.2 In the event of the Contractors loss of recorded data, use all means necessary to field verify and secure the lost data to the Engineer's approval. This may mean removing and replacing concealed materials. Any work of this nature shall be at the Contractor's expense.

PART TWO – PRODUCTS

2.1 RECORD DOCUMENTS

2.1.1 Job Sets: Following receipt of the Owner's Notice to Proceed, secure three sets of all contract documents from the Engineer at no charge. Maintain one set of documents on the job site for day today use. Maintain one set on the job site for day to day Record Drawing preparation.

- 2.1.2 Office Set: Maintain one set of Contract documents off-site for use during final data and information transfer and for delivery of final Record Drawings.
- 2.1.3 Final Record Documents: Upon substantial completion of the work, and prior to issuance of final payment request, deliver one set to the Engineer for approval.

PART THREE – EXECUTION

3.1 MAINTENANCE OF JOB SET

- 3.1.1 Upon receipt of the job set described in Section 2.1.1, Identify each of the Documents with the title, “RECORD DOCUMENTS – JOB SET” AND “RECORD DOCUMENTS – FINAL SET.”
- 3.1.2 Method of Drawing Entry:
 - 3.2.1.1 Using an erasable, colored pencil clearly describe changes or other required dimensional data by graphic line and note as deemed reasonable by the Engineer.
 - 3.2.1.2 Date all entries to obtain an accurate record of facility installation dates.
 - 3.2.1.3 Call attention to the entry by a “cloud” drawn around the areas affected.
 - 3.2.1.4 In the event of overlapping changes, use different colors for the overlapping changes.
- 3.1.3 Required Drawing Entries
 - 3.1.3.1 Record any changes to the Contract Documents in the Record Documents.

3.2 FINAL PROJECT RECORD DOCUMENTS

- 3.2.1 The purpose of the final Project Record documents is to provide factual information regarding all aspects of the work, both concealed and visible, to enable future modifications of the work to proceed without lengthy and expensive site measurement, investigation, and examination.
- 3.2.2 Transfer all data from the job of the Record Drawings to the Final Project Record Documents.
- 3.2.3 Submit the completed, Final Project Record Documents to the Engineer for approval and make any subsequent changes if requested.

3.3 CHANGES SUBSEQUENT TO ACCEPTANCE

The Contractor has no responsibility for recording changes in the work subsequent to Final Completion of the project and final acceptance of the Record Drawings, except for changes resulting from work performed under warranty.

END OF SECTION

EXCAVATING, FILLING, AND GRADING

PART ONE – GENERAL

1.1 DESCRIPTION

1.1.1 Work included: Excavating, filling, and grading for this Work includes, but is not necessarily limited to:

- (1) Excavating for footings and foundations;
- (2) Filling and backfilling to attain indicated grades;
- (3) Trenching and trench backfilling
- (4) Rough and finish grading of the site;
- (5) Furnishing and installing granular cushion under all concrete slabs on grade.

1.1.2 Related work described elsewhere:

- (1) Subsurface conditions: Appendix "A"

1.2 JOB CONDITIONS

1.2.1 Dust control:

1.2.1.1 Use all means necessary to control dust on and near the Work and on and near all off-site borrow areas if such dust is caused by the Contractor's operations during performance of the Work or if resulting from the condition in which the Contractor leaves the site.

1.2.1.2 Thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other work on the site.

1.2.2 Protection:

1.2.2.1 Use all means necessary to protect all materials of this Section before, during, and after installation and protect all objects designated to remain.

1.2.2.2 In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

PART TWO - PRODUCTS

2.1 FILL MATERIAL, GENERAL

2.1.1 Approval required: All fill material shall be subject to the approval of the Engineer prior to use on the project.

2.1.2 Notification: Approval of fill material, notify the Engineer at least four working days in advance of intention to import material, designate, the proposed borrow area, and permit the Engineer to sample as necessary from the borrow area for the purpose of making acceptance tests to prove the quality of the material.

2.2 ON-SITE FILL MATERIAL

All on-site fill material shall be soil or soil-rock mixture which is free from organic matter and other deleterious substance. It shall contain no rocks or lumps over six inches in greatest dimension, and not more than 15% of the rocks or the lumps shall be larger than 2-1/2 inches in greatest dimension.

2.3 IMPORTED FILL MATERIAL

All imported fill material shall meet the requirements of Article above and, in addition, shall be predominately granular with a maximum particle size of two inches and a plasticity index of 12 or less.

2.4 FILL BENEATH FOUNDATIONS

All fill material placed within placed within two feet of the base of building foundations and/or slabs shall have a plasticity index of 15 or less.

2.4.1 GRANULAR CUSHION

Granular cushion under interior floor slabs shall be clean mineral aggregate with particle size grading within the following limits:

- | | |
|------------------------------------|------------------|
| (1) Passing the one inch mesh: | 100% |
| (2) Passing the number four sieve: | Not more than 5% |
| (3) Passing the number 200 sieve: | Not more than 1% |

2.4.2 TRENCH AND STRUCTURAL BACKFILL

2.4.3 On-site fill material used for trench and structural backfill shall meet the requirements of the Article 2.2 above.

2.4.4 Imported cohesionless material used for trench and structural backfill shall be free from organic substance and other deleterious matter, shall be subject to the approval of the Engineer, and shall be in particle size grading within the following limits:

- | | |
|------------------------------------|------------|
| (1) Passing the number four sieve: | 100% |
| (2) Passing the number 200 sieve | 3% maximum |

2.4.5 OTHER MATERIAL

All other materials not specifically described but required for a complete and proper installation, shall be as selected by the Contractor subject to the approval of the Engineer.

PART THREE- EXECUTION

3.1 GENERAL

3.1.1.1.1 Familiarization: Prior to all work of this section, become thoroughly familiar with the site, the site conditions, and all portions of the Work falling within this section.

3.1.2 Backfilling prior to approvals:

3.1.2.1 Do not allow or cause any of the work performed or installed to be covered up or enclosed by work of this Section prior to all required inspections, tests, and approvals.

3.1.2.2 Should any of the work be so enclosed or covered up before it has been approved, uncover all such work at no additional cost to the Owner.

3.1.2.3 After the work has been completely tested, inspected, and approved, make all repairs and replacements necessary to restore the work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.

3.2 FINISH ELEVATIONS AND LINES

For setting and establishing finish elevations and lines, secure the services of a registered civil engineer acceptable to the Engineer. Carefully preserve all data and monuments set by the civil engineer and, if displaced or lost, immediately replace to the approval of the Engineer and at no additional cost to the Owner.

3.3 EXCAVATING

3.3.1 Depression: Where depressions result from, or have resulted from, the removal of surface or subsurface obstructions, open the depression to equipment working width and remove all debris and soft material as directed by the Engineer.

3.3.2 Other areas: Excavate to grades shown on the Drawings. Where excavation grades are not shown on the Drawings, excavate as required to accommodate the installation.

3.3.3 Over-excavation: Backfill and compact all overexcavated areas as specified for fill below, at no additional cost to the Owner.

3.4 PREPARATION OF SUBGRADE

3.4.1 Scarifying: After the site has been cleared, stripped, and excavated to within six inches of the specified depths for recompaction, scarify the exposed surface to a minimum depth of six inches, thoroughly moisture condition, and compact to the requirements specified for fill below.

3.4.2 Leveling: Remove all ruts, hummocks, and other uneven surfaces by surface grading prior to placement of fill.

3.5 EXCESS WATER CONTROL

3.5.1 Unfavorable weather: Do not place, spread, or roll and fill material during unfavorable weather conditions. Do not resume operations until moisture content and fill density are satisfactory to the Engineer.

3.5.2 Flooding: Provide berms or channels to prevent flooding of subgrade. Promptly remove all water collecting in depressions.

3.5.3 Softened subgrade: Where soil has been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and recompact as specified for fill and compaction below.

3.5.3 Dewatering:

3.5.4.1 Provide and maintain at all times during construction, ample means and devices with which to remove promptly and dispose of all water from every source entering the excavations or other parts of the Work.

3.5.4.2 Dewater by means which will ensure dry excavations and the preservation of the final lines and grades of bottoms of excavations.

3.6 FILL AND COMPACTION

3.6.1 Filling: After subgrade compaction has been approved by the Engineer, spread approved fill material in layers not exceeding eight inches in uncompacted thickness.

3.6.2 Moisture-conditioning: Water or aerate the fill materials necessary, and thoroughly mix to obtain a moisture content which will permit proper compaction.

3.6.3 Compaction, general: Compact each soil layer to at least the specified minimum degree. Repeat compaction process until plan grade is attained.

3.6.4 Degree of compaction requirements:

3.6.4.1 Structural fill: densify all structural fill, including recompacted existing fill and backfill, to a minimum degree of compaction of 98% of Standard Proctor.

3.6.4.2 Pavement areas: Compact the upper six inches of fill in pavement areas to a minimum degree of compaction of 98% of Standard Proctor.

3.6.4.3 Trenches in building and pavement areas:

- (1) Building and pavement areas are defined, for the purpose of this Paragraph, as extending a minimum of five feet beyond the building and/or pavement.
- (2) Compact cohesive backfill material to a minimum degree of compaction of 90%.
- (3) Compact the upper six inches of backfill in pavement areas to a minimum degree of compaction of 95%.
- (4) Densify cohesionless backfill material to a minimum relative density of 70% as determined by ASTM D2049.
- (5) Compact materials of a questionable cohesion to either a minimum degree of compaction of 90% or a minimum relative density of 70%, whichever results in the greater dry density.

3.6.5 Jetting will not be permitted unless specifically authorized by the Engineer for densification of cohesionless material.

3.7 GRADING

3.7.1 General: Except as otherwise directed by the Engineer, perform all rough and finish grading required to attain the elevations shown on the Drawings.

3.7.2 Grading tolerances:

3.7.2.1 Rough grade

(1) Building and parking areas: Plus or minus 0.1 foot

3.7.2.2 Finish grade:

(1) Granular cushion under concrete slabs: Plus or minus 0.1 foot

(2) Parking areas: (N/A)

(3) Landscaped areas: (N/A)

3.7.3 Treatment after completion of grading:

3.7.3.1 After grading is completed and the Engineer has finished his inspection, permit no further excavating, filling, or grading except with the approval of and inspection of the Engineer.

3.7.3.2 Use all means necessary to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

3.8 EXCAVATING FOR FOOTINGS

3.8.1 Preparation:

3.8.1.1 To minimize differential settlement, it is essential that earth surfaces upon which footings will be placed be compacted to the approval of the Engineer and in accordance with the compaction requirements established in this section of these Specifications.

3.8.1.2 Verify that all compaction is complete and approved prior to excavating for footings.

3.8.2 Excavating: Excavate to the established lines and grades. Cut off bottom of trenches level, and remove all loose soil. Where soft spots are encountered, remove all defective material and replace with flowable fill at no additional cost to the Owner.

3.9 PLACING GRANULAR CUSHION

Carefully place the specified granular cushion in areas to receive concrete slabs on grade, uniformly attaining the thickness indicated on the Drawings, and providing all required transition planes.

3.10 TRENCHING

3.10.1 General:

3.10.1.1 Perform all trenching required for installation of items where the trenching is not specifically described in other Sections of these Specifications.

- 3.10.1.2 Make all trenches open vertical construction with sufficient width to provide free working space at both sides of the trench and around the installed item as required for Caulking, joining, backfilling, and compacting.
- 3.10.2 Depth: Trench as required to provide the elevations shown on the Drawings. Where elevations are not shown on the Drawings, trench to sufficient depth to give a minimum of 18 inches of fill above the top of the pipe, measured from the adjacent finished grade, except provide a minimum of 30 inches cover over PVC pipe.
- 3.10.3 Correction of faulty grades: Where trench excavation is inadvertently carried below proper elevations, backfill with material approved by the Engineer, and then compact to provide a firm and unyielding subgrade and/or foundation to the approval of the Engineer and at no additional cost to the Owner.
- 3.10.4 Trench bracing:
 - 3.10.4.1 Properly support all trenches in strict accordance with all pertinent rules and regulations.
 - 3.10.4.2 Brace, sheet, and support trench walls in such a manner that they will be safe and that the ground alongside the excavation will not slide or settle, and that all existing improvements of every kind, whether on public or private property, will be fully protected from damage.
 - 3.10.4.3 In the event of the damage to such improvements, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.
 - 3.10.4.4 Arrange bracing, sheeting, and shoring so as to not place stress on any portion of the completed Work until the general construction thereof has proceeded far enough to provide sufficient strength.
- 3.10.5 Removal of trench bracing: Exercise care in the drawing and removal of sheeting, shorting, bracing, and timbering to prevent collapse and caving of the excavation faces being supported.
- 3.10.6 Grading and stockpiling trenched material: Control the stockpiling of trenched material in a manner to prevent water running into the excavations. Do not obstruct surface drainage, but provide means whereby storm and waste waters are diverted into existing gutters, other surface drains, or temporary drains.

3.11 FOUNDATION FOR PIPES

- 3.11.1 General: Grade the trench bottoms to provide a smooth, firm, and stable foundation free from rock points throughout the length of the pipe.
- 3.11.2 Foundation material: Place a minimum of six inches of the specified cohesionless material in the bottom of the trench.
- 3.11.3 Subsurface conditions:
 - 3.11.3.1 In areas where soft, unstable materials are encountered at the surface upon which cohesionless material is to be placed, remove the unstable material and replace it with the material approved by the Engineer. Make sufficient depth to develop a firm foundation for the item being installed.

3.11.3.2 If the need for such overexcavation has been occasioned by an act or failure to act on the part of the Contractor, make the overexcavation and replacement at no additional cost to the Owner.

3.11.4 Shaping:

3.11.4.1 At each joint in pipe, recess the bottom of the trench as required into the firm foundation in such a manner as to relieve the bell of the pipe of all load and to ensure continuous bearing of the pipe barrel on the firm foundation.

3.11.4.2 Accurately shape all pipe subgrade and fit the bottom of the trench to the pipe shape. Use a drag template shaped to conform to the outer surface of the pipe if other methods do not produce satisfactory results.

3.12 **BEDDING FOR PIPES**

3.12.1 General: Place the specified cohesionless material in the trench, simultaneously on each side of the pipe for the full width of the trench, to a maximum depth of three feet and a minimum depth of one foot above the outside diameter of the pipe barrel.

3.12.2 Densification:

3.12.2.1 Densify the bedding material after placing by thoroughly saturating with water and vibrating with jetting equipment and a concrete vibrator stinger, at maximum intervals of two feet along both sides of the pipe.

3.12.2.2 Take special care to provide firm bedding support on the underside of the pipe and fittings for the full length of the pipe.

3.12.3 Alternate bedding: other bedding procedures and materials may be used if prior written approval has been obtained from the Engineer.

3.13 **BACKFILL FOR PIPES**

3.13.1 Using on-site materials: After the pipe has been thoroughly bedded and covered, spread the on-site material in uniform lifts of not more than eight inches in uncompacted thickness, and then compact as specified in this Section. Repeat the spreading and compacting procedure until adjacent grade.

3.13.2 Using imported cohesionless material: After the pipe has been thoroughly bedded and covered, fill the remaining portion of the trench with the specified cohesionless material, and densify as specified in this section.

END OF SECTION

CONCRETE FORMWORK

PART ONE- GENERAL

1.1 DESCRIPTION

1.1.1 Work included: Provide formwork in accordance with the provisions of this Section for all cast-in-place concrete shown on the Drawings or required by other Sections of these Specifications.

1.1.2 Related work described elsewhere: Excavating for footings is described in Section 02220.

1.2 QUALITY ASSURANCE

1.2.1 Design of formwork is the Contractor's responsibility.

1.2.2 Standards: Comply with all pertinent provisions of the ACI 347 as listed in Section 01085.

1.3 SUBMITTALS

1.3.1 General: Comply with pertinent provisions of Section 01300.

1.3.2 Manufacturers' data: Within 30 calendar days after award of the Contract, submit manufacturers' data and installation instructions for proprietary materials including form coatings, ties and accessories, and manufactured form systems if used.

PART TWO – PRODUCTS

2.1 FORM MATERIALS

2.1.1 Forms:

2.1.1.1 Construct formwork for exposed (painted or unpainted) concrete surfaces with smooth faced undamaged plywood or other panel type materials acceptable to the Engineer, to provide continuous, straight, smooth as-cast surfaces. Furnish in largest practicable sizes to minimize number of joints.

2.1.1.2 Provide form material with sufficient thickness to withstand pressure of newly placed concrete without excessive and objectionable bow or deflection.

2.1.2 Form Ties

2.1.2.1 Provide factory-fabricated, adjustable-length, removable or snapoff metal form ties, designed to prevent form deflection and to prevent spalling concrete surfaces upon removal

2.1.2.2 Provide ties so that the portion remaining within concrete after removal of exterior parts is at least 1 ½" from the outer concrete surface. Provide form ties which will not leave a hole larger than 1" diameter in the concrete surface.

2.1.3 Forms Coatings

Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds.

2.2 DESIGN OF FORMWORK

2.2.1 General

2.2.1.1 Design, erect, support, brace, and maintain formwork so that it will safely support vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure.

2.2.1.2 Carry vertical and lateral loads to ground by formwork system and in-place construction that has attained adequate strength for that purpose.

2.2.1.3 Construct formwork so that concrete members and structures are of correct size, shape, alignment, elevation and position.

2.2.1.4 Design forms and falsework to include assumed values of live load, dead load and any other loads imposed during the placement of concrete.

2.2.1.5 Provide shoring and struts with positive means of adjustment capable of taking up formwork settlement during concrete placement, using wedges or jacks or a combination thereof.

2.2.1.6 Provide trussed supports when adequate foundations for shores and struts cannot be secured.

2.2.1.7 Support form facing materials by structural members spaced sufficiently close to prevent objectionable deflection.

2.2.1.8 Fit forms spaced in successive units for continuous surfaces to accurate alignment, free from irregularities, and within allowable tolerances.

2.2.1.9 Provide camber in formwork as required for anticipated deflections due to weight and pressures for fresh concrete and construction loads.

2.2.1.10 Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Butt joints solidly and provide backup material at joints as required to prevent leakage and fins.

2.2.2 Earth Forms

2.2.2.1 Side forms of footings may be omitted and concrete placed directly against excavation only when requested by the Contractor and accepted by the Engineer. When omission of forms is accepted, provide additional concrete of 1" on each side of the minimum design profiles and dimensions shown.

PART THREE – EXECUTION

3.1 SURFACE CONDITIONS

Examine the substrate and conditions under which work of this section is to be performed, and correct unsatisfactory conditions which would prevent proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 FORM CONSTRUCTION

3.2.1 General

3.2.1.1 Construct forms complying with ACI 347, to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, level, and plumb work in finish structures.

3.2.1.2 Provide for openings, offsets, keyways, recesses, moldings, reglets, chamfers, blocking, screeds, bulkheads, anchorages, inserts, and other features required. Use selected materials to obtain required finishes.

3.2.2 Fabrication

3.2.2.1 Fabricate forms for easy removal without hammering or prying against concrete surfaces.

3.2.2.2 Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete.

3.2.3 Falsework

3.2.3.1 Erect falsework and support, brace and maintain it to safely support vertical, lateral and asymmetrical loads applied until such loads can be supported by in-place construction. Construct falsework so that adjustments can be made for take-up and settlement.

3.2.3.2 Provide wedges, jacks, or camber strips to facilitate vertical adjustments. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to produce work of required dimensions.

3.2.4 Forms for exposed concrete

3.2.4.1 Drill forms to suit ties used and prevent leakage of concrete mortar around holes.

3.2.4.2 Provide sharp clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.

3.2.4.3 Use extra studs, walers and bracing to prevent objectionable bowing of forms between studs and to avoid bowed appearance in concrete.

3.2.5 Corner Treatment Unless shown otherwise, form chamfers with $\frac{3}{4}$ " x $\frac{3}{4}$ " strips, accurately formed and surfaced to produce uniformly straight lines and tight edged joints on exposed concrete. Extend terminal edges to required limit and miter chamfer strips at changes in direction.

3.2.6 Control Joints Locate as shown on the drawings.

- 3.2.7 Cleaning and tightening Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before concrete is placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

3.3 FORM COATINGS

Coat form contact surfaces with form-coating compound before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come into contact with surfaces which will be bonded to fresh concrete. Apply in compliance with manufacturer's instructions.

3.4 INSTALLATION OF EMBEDDED ITEMS

- 3.4.1 General Set and build into the work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete.
- 3.4.2 Edge forms and screeds strips for slabs Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in the finished slab surface. Provide and secure units to support types of screeds required.

3.5 REMOVAL OF FORMS

- 3.5.1 General Formwork not supporting concrete may be removed after cumulative curing at not less than 50° F. for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operation and providing that curing and protection operations are maintained.
- 3.5.2 Formwork Supporting weight of concrete may not be removed in less than 14 days and not until concrete has attained design minimum 28 day compressive strength.

END OF SECTION

CONCRETE REINFORCEMENT

PART ONE – GENERAL

1.1 DESCRIPTION

1.1.1 Work included: Provide complete, in place, all steel required for reinforcement of cast-in-place concrete as shown on the Drawings.

1.1.2 Related work described elsewhere: Steel reinforcement is also required under Section 03310

1.2 QUALITY ASSURANCE

Comply with pertinent provisions of the following standards, except as herein modified:

- (1) CRSI "Manual of Standard Practice";
- (2) ACI 318.

1.3 SUBMITTALS

1.3.1 General: Comply with pertinent provisions of this Section.

1.3.2 Shop Drawings: Within 30 calendar days after award of the Contract, submit complete Shop Drawings of all material proposed to be furnished and installed under this Section. Show:

- (1) Bar schedule, stirrup spacing, diagrams of bent bars, and arrangement and assemblies.
- (2) Make shop Drawings in accordance with ACI 315.

1.3.3 Mill certificates: Accompanying the Shop Drawings, submit steel producer's certificates of mill analysis, tensile, and bend tests for reinforcing steel.

1.4 PRODUCT HANDLING

1.4.1 Delivery: Deliver reinforcement to the job site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

1.4.2 Storage: Store reinforcement at the job site in a manner to prevent damage and accumulation of dirt and excessive rust.

PART TWO –PRODUCTS

2.1 MATERIALS

2.1.1 Reinforcing bars: Comply with ASTM A 615, Grade 60.

2.1.2 Steel wire: Comply with ASTM A 82.

2.1.3 Welded wire fabric: Comply with ASTM A 185.

2.1.4 Supports for reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement in place:

- (1) Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Do not use wood, brick, and other unacceptable materials.
- (2) For slabs on grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
- (3) For exposed -to- view concrete surfaces, where legs of supports are in contact with forms, provide supports with either hot-dip galvanized or plastic protected legs.

2.2 FABRICATION

2.2.1 General: Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerance complying with CRSI Manual. In case of fabricating errors, do not rebend or straighten reinforcement in a manner that will injure or weaken the material.

2.2.2 Unacceptable materials: Reinforcement with any of the following defects will not be permitted in the Work:

- (1) Bar lengths, depths, and bends exceeding specified fabrication tolerances.
- (2) Bend or kinks not indicated on Drawings or final Shop Drawings.
- (3) Bars with reduced cross-section due to excessive rusting or other cause.

PART THREE- EXECUTION

3.1 INSPECTION

Examine the substrate, formwork, and the conditions under which concrete reinforcement is to be placed, and correct conditions which would prevent proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

3.2.1 General:

3.2.1.1 Comply with the specified standards for details and methods of reinforcement placement and supports, and as herein specified.

3.2.1.2 Clean reinforcement to remove loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.

3.2.1.3 Position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

3.2.1.4 Place reinforcement to obtain the minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gage wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.

- 3.2.1.5 Install welded wire fabrics in as long lengths as practicable. Lap adjoining pieces at least one full mesh.
- 3.2.1.6 Provide sufficient numbers of supports and of strength to carry reinforcement. Do not place reinforcing bars more than 5 cm (2") beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.
- 3.2.2 Splices: Provide standard reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying.

END OF SECTION

STRUCTUAL CONCRETE

PART ONE-GENERAL

1.1 DESCRIPTION

1.1.1 Work included: Provide all cast-in-place concrete, complete, in place, as indicated on the Drawings, specified herein, and needed for a complete and proper installation.

1.1.2 Related work described elsewhere:

- (1) Concrete formwork: Section 03100
- (2) Concrete reinforcement: Section 03200

1.2 QUALITY ASSURANCE

1.2.1 Standards:

1.2.1.1 Comply with standards specified in this Section.

1.2.1.2 In case of conflict between the referenced standards, the more stringent requirements shall govern.

1.2.2 Qualifications of installers:

1.2.2.1 Throughout the progress of installation of the work of this Section, provide at least one person who shall be thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills, and who shall be present at the site and shall direct all work performed under this Section.

1.2.2.2 In actual installation of the work of this Section, use adequate numbers of skilled workmen to ensure installation in strict accordance with the approved design.

1.2.2.3 In acceptance or rejection of work performed under this Section, the Engineer will make no allowance for lack of skill on the part of workmen.

1.2.3 Quality control:

1.2.3.1 Prior to all work under this Section, make all necessary arrangements with the testing laboratory. The testing laboratory shall:

- (1) Test, and furnish certified reports on:
 - a. Proposed aggregates;
 - b. Proposed cements, unless such testing is waived by the Engineer; and
 - c. Mixing water.
- (2) Prepare design mixes for each type of concrete, using previously tested and approved materials. These mix designs shall be prepared under the supervision of a concrete technologists experienced in the special consideration of materials and mixes.

- (3) Proportion mixes by either laboratory trial batch or field experience methods, using Materials to be employed on the Work for each class of concrete required, and reporting to the Engineer:
 - a. Complete identification of aggregate source of supply;
 - b. Results of tests of aggregate for compliance with specified requirements;
 - c. Scale weight of each aggregate;
 - d. Absorbed water in each aggregate;
 - e. Brand, type chemistry, and physical test for each cement;
 - f. Brand, type, and amount of each admixture;
 - g. Amounts of water used in trial mixes;
 - h. Proportions of each material per cu. m (cu. Yd);
 - i. Gross weight and yield per cu. M (cu. Yd) of trial mixes;
 - j. Measured slump;
 - k. Measured air content;
 - l. Compressive strength developed at one day, three days, seven days, and 28 days, from not less than three test cylinders cast for each one, three, seven, and 28 day test, and for each design mix.
- (4) Furnish certified reports of each proposed mix for each type of concrete at least 30 days prior to start of installation of the Work of this Section.

1.2.3.2 Do not begin concrete production until all mixes have been reviewed by the Engineer.

1.2.3.3 Also see other requirements for testing as stated in Part Three of this Section.

1.3 SUBMITTALS

1.3.1 General: Comply with provisions of this Section.

1.3.2 Product data: Within 30 calendars days after award of Contract, submit:

- (1) Complete materials list of items proposed to be furnished and installed under this Section;
- (2) Sufficient data to demonstrate compliance with the specified requirements;
- (3) Complete information on cement source of supply, physical and chemical characteristics, transportation and intermediate terminaling procedures for mill-to-site handling, and site storage procedures;
- (4) Complete information on aggregate procurement, processing, and storage;
- (5) Complete information on proposed batching and mixing equipment and procedures, including water chilling or other devices or systems to reduce mix temperatures;

- (6) Complete information on concrete handling equipment proposed to be used, including capacities, for chutes, pumps, tremies, buckets, and all other equipment.
 - (7) Complete information on proposed consolidation equipment;
 - (8) Complete description of proposed curing methods;
 - (9) Complete mix designs, prepared in accordance with the provisions of subparagraph 1.2.3.1 above.
- 1.3.3 Shop Drawings: Accompanying the above submittal, submit complete Shop Drawings including, but not necessarily limited to:
- (1) Location of all proposed construction joints, keying, and water stops;
 - (2) Location of all openings, depressions, construction and control joints, trenches, sleeves, inserts, and other items affecting the reinforcement and placing of concrete.
- 1.3.4 Samples: Accompanying the above submittal, submit samples of:
- (1) Concrete constituents, including admixtures;
 - (2) Form ties and spreaders;
 - (3) Form release agent;
 - (4) Remolded joint filler;
 - (5) Vapor barriers;
 - (6) Waterstops;
 - (7) Wedge inserts;
 - (8) Expansion bolts;

1.4 PRODUCT HANDLING

- 1.4.1 Protection: Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the work and materials of all other trades.
- 1.4.2 Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

PART TWO- PRODUCTS

2.1 CEMENT

2.1.1 General:

- 2.1.1.1 All Portland cement shall conform to the requirements of ASTM C 150, except that 28 day cube strength shall be a minimum of 387 kg per sq. Cm (5500 psi).
- 2.1.1.2 Cement to be used in construction at or below grade shall comply with the requirements of the Type V, sulphate resistant.

2.1.1.3 Cement for above grade construction shall be Type I or Type V.

2.1.1.4 Do not use cement having a temperature greater than 60 degrees C (140 degrees F).

2.1.2 Sequence of use: Use only one brand of cement for the entire work and use in the same sequence as received at the site.

2.1.3 Mill tests: Furnish mill tests for all cement. The 28 day cube strength results may be submitted in a separate report but shall be related to the specific batch tested.

2.2 AGGREGATES

2.2.1 General: All aggregates shall conform to requirements of ASTM C 33, except as modified below:

Percent by weight passing U.S. sieve:

<u>U.S. Size:</u>	<u>Zone 2:</u>	<u>Zone 3:</u>	<u>Zone 4:</u>
3/8 inch:	100	100	100
No. 4:	100	100	100
No. 8:	98-100	90-100	98-100
No. 16:	55-90	75-100	90-100
No. 30:	35-59	69-79	80-100
No. 50:	8-30	12-40	15-50
No. 100:	0-10	0-10	0-15

2.2.2 Course aggregates:

2.2.2.1 Course aggregates shall be crushed limestone complying with ASTM C 33, size 67.

2.2.2.2 If the Contractor demonstrates to the Engineer by tests that a finer gradation can be used with the proposed fine aggregate to produce an equal or better quality concrete, the use of the finer gradation will be approved by the Engineer when complete sustaining data is submitted and approved.

2.2.2.3 Quality comparisons will be made on compressive strength, flexural strengths, workability, and drying shrinkage.

2.2.3 Aggregate sources: Provide aggregates from one source of supply only.

2.2.4 Aggregate sizes:

2.2.4.1 Maximum aggregate size shall be not larger than one-fifth of the narrowest dimension between sides of forms, one-third of the depth of slabs, or three-fourths of the minimum clear spacing between individual reinforcing bars or bundles of bars.

2.2.4.2 Stockpile the aggregates in a manner to protect from contamination.

2.3 WATER

Water used as an ingredient in concrete shall be clean, potable, and free from injurious amounts of foreign matter.

2.4 CONCRETE ADMIXTURES

2.4.1 General:

2.4.1.1 Admixtures shall conform to ASTM C 494, Type A for water-reducing and Type D for water-reducing/set-retarding.

2.4.1.2 Acceptable substitutes: The Engineer will only consider those proposed admixture substitutions which have been completely tested and reported upon by the testing laboratory in accordance with the provisions of subparagraph 1.2.3.1 above.

2.5 CURING MATERIALS

2.5.1 Liquid curing and sealing compounds shall conform to ASTM C 309, Type 1.

2.5.2 Sheet materials shall conform to ASTM C 171

2.5.3 Burlap cloth made from jute or kenaf and weighing approximately 305 grams per sq. m (9 oz.) per sq. yd) for moist curing shall conform to AASHTO M 182 and shall use two layers.

2.6 OTHER MATERIALS

2.6.1 Preformed expansion joint filler material shall be bituminous fiber type conforming to ASTM D 1751.

2.6.2 Waterstops shall be extruded from new stock polyvinyl chloride, ribbed, and expandable center build. The minimum width shall be 150 mm and minimum thickness shall be 6.4 mm.

2.6.3 Vapor barriers shall be polyethylene sheets having a thickness of 0.2 mm minimum.

2.6.4 Chemical floor hardener shall be a colorless aqueous solution containing a blend of magnesium fluorosilicate and zinc fluorosilicate combined with a wetting agent, containing not less than 215 grams per liter.

2.6.5 Metallic aggregate, heavy-duty finish shall be packaged ground and graded cubicle-iron particles with dispersing agents formulated to blend with Portland cement for monolithic surface treatment. Use iron aggregate free from nonferrous metals, oil, grease, rust, and other impurities.

2.6.6 Nonshrink grout shall be a ready-to-use metallic aggregate product requiring only the addition of water at the job site, and shall have the following attributes:

- (1) Be capable of producing a flowable grouting material having no drying shrinkage or at any age:
- (2) The compressive strength of grout (50 mm or 2" cubes) shall be not less than 350 kg per sq. cm (5,000 psi) at age seven days, and 527 kg per sq. cm (7,500 psi) at age 28 days.

Store, mix, and place the nonshrink grout in strict accordance with manufacturer's recommendations as approved by the Engineer.

2.7 BATCHING, MIXING, AND DELIVERY EQUIPMENT

Use transit-mixed concrete from approved batching and mixing plant. Batch, mix, and transport concrete to site in accordance with provisions of ASTM C 94.

PART THREE-EXECUTION

3.1 INSPECTION

Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 CONCRETE PLACEMENT

3.2.1 General: Place concrete in compliance with practices and recommendations of ACI 304, and as herein specified.

3.2.2 Procedures:

3.2.2.1 Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the Section.

3.2.2.2 If a section cannot be placed continuously, provide construction joints as herein specified.

3.2.2.3 Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic.

3.2.2.4 Deposit concrete as nearly as practicable in its final location to avoid segregation due to rehandling and flowing.

3.2.2.5 Do not subject concrete to any procedure which will cause segregation.

3.2.2.6 Screed concrete which is to receive other construction to the proper level to avoid excessive skimming and grouting.

3.2.2.7 Do not use concrete which becomes nonplastic and unworkable, or does not meet the required quality control limits, or which has been contaminated by foreign materials.

3.2.2.8 Remove rejected concrete from the site and dispose of it in a location approved by the Engineer for that purpose. Any such removal shall be at the Contractor's expense.

3.2.3 Placement schedule: Place concrete in conformance with the placement schedule to ensure an even distribution of loads throughout the entire structure.

3.2.4 Concrete conveying:

3.2.4.1 Handle concrete from the point of delivery and transfer to the concrete conveying equipment, and to the locations of final deposit, as rapidly as practicable and by methods which will prevent segregation and loss of concrete mix materials.

- 3.2.4.2 Provide runways for wheeled concrete conveying equipment from the concrete delivery point to the locations of final deposit.
- 3.2.4.3 Keep interior surfaces of conveying equipment, including chutes and tremies, free from hardened concrete, debris, water, and other deleterious materials.
- 3.2.4.4 Pumps may be used only if they can pump the mix designed. Do not add fine aggregate or water to the mix to satisfy needs of a pumping device.
- 3.2.4.5 Use chutes or tremies for placing concrete where a drop of more than 2 m (72") is required.
- 3.2.4.6 Where free drop through tremies exceeds 6 m (18'-0"), use flow checking devices.
- 3.2.5 Placing concrete in forms:
 - (1) Deposit concrete in forms in horizontal layers not deeper than 60 cm (24"), to avoid inclined construction joints.
 - (2) Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
 - (3) Remove temporary spreaders in forms when concrete placing has reached the elevation of such spreaders.
 - (4) Do not place concrete in supporting elements until the concrete previously placed in columns and walls is no longer plastic.
- 3.2.6 Placing concrete slabs:
 - 3.2.6.1 Deposit and consolidate concrete slabs in a continuous operation, within the limits of construction joints, until the placing of a panel or section is completed.
 - 3.2.6.2 Consolidate concrete during placement by use of the specified equipment, thoroughly working concrete around the reinforcement and into corners.
 - 3.2.6.3 Consolidate concrete placed in beams and girders of supported slabs, and against bulkheads of slabs on grade, as specified for formed concrete structures.
 - 3.2.6.4 Consolidate concrete in remainder of slabs by vibrating bridge screeds, roller pipe screeds, or other methods acceptable to the Engineer.
 - 3.2.6.5 Limit the time of vibrating consolidation to prevent bringing an excess of fine aggregate to the surface.
 - 3.2.6.6 Bring slab surfaces to the correct level with a straight edge, and then strike off.
 - 3.2.6.7 Use bullfloats or derbies to smooth the surface, leaving it free from bumps and hollows.
 - 3.2.6.8 Do not sprinkle water on the plastic surface; do not disturb the slab surfaces prior to start of finishing operations.
- 3.2.7 Cold weather placing: Comply with ACI 306 to protect all concrete work from physical damage and reduced strength which would be caused by frost, freezing actions, or low temperatures.

3.2.8 Hot weather placing:

3.2.8.1 When hot weather conditions exist which would seriously impair the quality and strength of concrete, place the concrete as follows:

- (1) Maintain concrete temperature at time of placement below 32 degrees C (90 degrees F). Use chilled mixing water or chopped ice to control concrete temperature, provided the water equivalent of the ice is calculated to the total amount of water.
- (2) Cover reinforcing steel with water-soaked burlap if the steel becomes too hot. Steel temperature shall not exceed the ambient air temperature immediately prior to placement of concrete.
- (3) Wet forms thoroughly prior to placement of concrete.
- (4) Use set-control admixtures in the mix.

3.3 CONSOLIDATION

3.3.1 General:

3.3.1.1 Consolidate all concrete in accordance with provisions of ACI 309.

3.3.1.2 Consolidate each layer of concrete immediately after placing, by use of concrete vibrators supplemented by hand-spading, rodding, or tamping.

3.3.1.3 Do not use vibrators to transport concrete inside the forms.

3.3.1.4 During all phases of operation, maintain a frequency of not less than 10,000 vibrations per minute per internal vibrator.

3.3.1.5 Do not vibrate forms or reinforcement.

3.3.2 Equipment:

3.3.2.1 Provide adequate number of units and power sources at all times. Maintain spare units on hand to ensure adequacy.

3.3.2.2 If, in the opinion of the Engineer, the equipment being used is not adequate to accomplish proper consolidation, the Engineer may order delay in further placement of concrete until such equipment is available for use at the location of placement of concrete.

3.3.3 Procedures:

3.3.3.1 Limit duration of vibration to time necessary to produce satisfactory consolidation without causing segregation of aggregates.

3.3.3.2 Insert the vibrator so as to penetrate the lift immediately below the one being placed, and manipulate to blend the two lifts.

3.3.3.3 Do not insert the vibrator into lower courses which have begun to set.

3.3.3.4 Use the vibrator to melt down the concrete as it is being placed, and use the vibrator to consolidate the mass of concrete.

- 3.3.3.5 In the case of wall construction, assign at least one vibrator and vibrator-operator to melting down the mix; and assign at least one other vibrator and vibrator-operator to consolidating the mass of concrete.
- 3.3.3.6 Spacing between insertions of the vibrator which is used to consolidate shall not exceed twice the radius of action as shown in table 5.1.4 of ACI 309.
- 3.3.3.7 Under no circumstances shall the points of insertion during the consolidation phase be more than 45 cm (18") apart.

3.4 JOINTS

3.4.1 Construction joints:

- 3.4.1.1 Horizontal construction joints will not be permitted except as may be shown on the Drawings.
- 3.4.1.2 If construction joints necessary for the progress of the Work are not shown on the Drawings, show them in complete detail on the Shop Drawings required under paragraph 1.3.3.
- 3.4.1.3 For slabs on grade, locate the unindicated joints in a manner to divide the slab into areas not in excess of 50 sq. m (600 sq. ft.), with one dimension being not greater than 120% of the of the other dimension.
- 3.4.1.4 Provide keyways at least 38 mm (1-1/2") deep in all construction joints in walls, slabs, and between footings and walls.
- 3.4.1.5 Place construction joints perpendicular to the main reinforcement. Continue all reinforcement across construction joints.
- 3.4.2 Isolation joints in slabs on grade: Provide isolation joints in slabs on grade at points of contact between slabs on grade and vertical surfaces where indicated. Caulk in accordance with provisions of Section 07951.

3.4.3 Control joints in slabs on grade:

- 3.4.3.1 Provide control joints in slabs on grade to form panels or patterns as shown. Use inserts 6 mm (1/4") wide by 1/5 to 1/4 of the slab depth.
- 3.4.3.2 Form control joints by inserting a premolded hardboard or fiberboard strip into the fresh concrete until the top surface of the strip is flush with the slab surface.
- 3.4.3.3 After the concrete has cured for at least seven days, remove inserts and clean loose debris from the grooves.
- 3.4.3.4 Caulk in accordance with provisions of Section 07951.

3.5 CONCRETE FINISHING

3.5.1 Finish of formed surfaces:

- 3.5.1.1 Rough form finish:

- (1) Provide as-cast rough form finish to formed concrete surfaces that are to be concealed in the finish work or by any other construction.
- (2) Standard rough form finish shall be the concrete surface having the texture imparted by the form facing material used, with tie holes and defective areas repaired and patched, and all fins and other projections exceeding 6 mm (1/4") in height rubbed down or chipped off.

3.5.1.2 Smooth form finish:

- (1) Provide as-cast smooth form finish for formed concrete surfaces that are to be exposed to view, or that are to be covered with a coating material other than cement plaster applied directly to the concrete.
- (2) Produce smooth form finish by selecting form material to impart a smooth, hard, uniform texture and arranging them orderly and symmetrically with a minimum of seams.
- (3) Repair and patch defective areas with all fins and other projections completely removed and smoothed.

3.5.1.3 Related unformed surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a smooth troweled finish.

3.5.2 Monolithic slab finishes:

3.5.2.1 Scratch finish:

- (1) Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for terrazzo tile and other bonded applied cementitious-finish
- (2) After placing slabs, plane the surface to a tolerance not exceeding 6 mm (1/4") in 60 cm (24") when tested with a straightedge.
- (3) Slope uniformly to drains where required.
- (4) After leveling, roughen the surface before its final set by using a stiff broom, a brush, or a rake.

3.5.2.2 Float finish:

- (1) Apply float finish to monolithic slab surfaces that are to receive trowel finish and other finishes as specified, and to slab surfaces which are to be covered with insulation, and as otherwise shown on the Drawings or in the schedules.
- (2) After placing concrete slabs, do not work the surface further until ready for floating.
- (3) Begin floating when the surface water has disappeared and when the concrete has stiffened sufficiently to permit operation of a power-driven float, or both.
- (4) Consolidate the surface with power-driven floats or by hand-floating if area is small or inaccessible to power units.
- (5) Check and level the surface plane to a tolerance not exceeding 6 mm (1/4") in 3 m (10'-0") when tested with a 3 m (10'-0") straightedge placed on the surface at not less than two different angles.

- (6) Cut down high spots and fill low spots.
- (7) Uniformly slope to drains where required.
- (8) Immediately after leveling, refloat the surfaces to a smooth, uniform, granular texture.

3.5.2.3 Trowel finish:

- (1) Apply trowel finish to monolithic slab surfaces that are to be exposed to view, unless otherwise shown, and to slab surfaces that are to be covered with resilient flooring, carpeting, paint, or other thin-film finish coating system.
- (2) After floating, begin the first trowel finish operation using a power-driven trowel. Begin final troweling when the surface produces a ringing sound as the trowel is moved over the surface.
- (3) Consolidate the concrete surface by the final hand troweling operation, free from trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 3 mm (1/8") in 3 m (10'-0") when tested with a 3 m (10'-0") straightedge.
- (4) Grind smooth those surface defects which would telegraph through applied floor covering system.

3.5.2.4 Nonslip broom finish:

- (1) Apply nonslip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as shown on the Drawings or in the schedule.
- (2) Immediately after trowel finishing, slightly roughen the concrete surface by brooming in the direction perpendicular to the main traffic route. Use a fiber bristle broom.
- (3) Coordinate the required finish with the Engineer prior to application.

3.5.2.5 Chemical hardener finish:

- (1) Apply chemical hardener finish to exposed dry interior concrete floors where required by the Drawings and the schedules.
- (2) Apply liquid chemical hardener after complete curing and drying of the concrete surface.
- (3) Dilute the liquid hardener with water and apply three coats:
 - a. First coat: 1/3 strength;
 - b. Second coat: 1/2 strength;
 - c. Third coat: 2/3 strength.
- (4) Evenly apply all coats and allow 24 hours drying time between coats.

3.5.2.6 Heavy-duty wear-resistant finish:

- (1) Provide heavy-duty wear-resistant finish monolithic slab surfaces where shown on the Drawings or in the schedules.

- (2) Premix Portland cement and required dispersing agents, and deliver to the site in moisture-resistant sealed bags.
- (3) Apply the premixed material at the manufacturer's recommended rate, providing not less than 7.35 kg of material per sq. m (1.4 lbs. Per sq. ft.).
- (4) Immediately following the first floating operation, uniformly distribute over the concrete surface approximately ½ of the specified weight of the blended dry shake materials, and embed with power floating.
- (5) After the first dry shake application has been embedded, uniformly distribute the remaining portion of blended dry shake material at right angles to the first application, and embed by power floating.
- (6) Comply with manufacturer's application instructions.
- (7) After completion of broadcasting and floating, apply a trowel finish as specified herein.

3.6 MISCELLANEOUS CONCRETE ITEMS

3.6.1 Steel pan stairs: Provide concrete fill for steel pan stair treads and landings, and associated items. Screed, tamp, and finish surfaces as specified to receive the specified finish. Install nonslip aggregate finish where concrete is designed to be left exposed.

3.6.2.1 Junction with existing concrete building construction:

3.6.2.2 Above floor slab and below, clean existing concrete of earth and foreign materials, and place new concrete against the existing construction. Use bonding agent.

3.6.3 Filling in: Fill in holes and openings left in concrete structures for the passage of work of other trades, unless otherwise directed, after the work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide all other miscellaneous concrete filling to complete the Work.

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

3.6.5 Equipment bases and foundations: Provide machine and equipment bases and foundations as shown on the Drawings or required for the machine and equipment actually furnished. Set anchor bolts for machines and equipment to template, at correct elevations, complying with certified diagrams or templates of the manufacturer furnishing the machines and equipment. Provide isolation joints surrounding bases where indicated or required. Fill joints with joint filler and sealant in accordance with the provisions of Section 07951.

3.7 REMEDIAL WORK

3.7.1 General: Reinforce or replace deficient work as directed by the Engineer and at no additional cost to the Owner.

3.7.2 Patching: Repair defective areas and fill form-tie holes and similar defects in accordance with Chapter 9 of ACI 301. Where, in the opinion of the Engineer, surface defects such as honeycomb occur, repair the defective areas as directed by the Engineer.

END OF SECTION

MULTI-COLUMN ELEVATED WATER STORAGE TANK

1. PART ONE - GENERAL REQUIREMENTS

1.1. Scope

The Contractor shall be responsible for all labor, materials and equipment necessary for the design, fabrication, construction, painting, and disinfection and testing of an elevated, welded carbon steel water storage tank supported by four (4) columns and cross bracing. The style of tank shall be Double Ellipsoidal. Design and construction of the Elevated Tank shall conform to all requirements of AWWA D100-2005 Standard for Welded Carbon Steel Tanks for Water Storage, except as modified by the requirements of these contract documents.

1.2. Qualification of Manufacturer

The design and construction of the "Multi-Column" elevated water storage tank shall only be undertaken by a Contractor with a minimum of five years experience with elevated tank construction. The Contractor must be able to demonstrate experience through the design and construction of at least five "Multi-Column" elevated water tanks. The Contractor shall not subcontract the design or erection of the steel tank and supporting tower.

1.3. Submittals

No bid will be considered unless this information is provided with the proposal:

- 1.3.1. A list of five "Multi-Column" elevated tanks constructed within the last five years, including the name of the Owner, tank capacity and the Consulting Engineer.
- 1.3.2. A preliminary drawing of the tank showing major dimensions and plate thickness upon which the bid is based, the high and low water levels and the dimensions of the supporting tower.
- 1.3.3. A foundation design drawing showing preliminary dimensions and approximate quantities of concrete and reinforcing steel.

1.4. Standard Specifications

All work on the water storage tank shall fully conform to the requirements of the latest published editions of the following Standard Specifications:

- 1.4.1. AWWA (American Water Works Association) D100, Standard for Welded Carbon Steel Tanks for Water Storage.
- 1.4.2. AWWA D102 - Standard for Painting Steel Water Storage Tanks.
- 1.4.3. AWWA C652 - Standard for Disinfection of Water Storage Facilities.
- 1.4.4. AWS (American Welding Society) D1.1
- 1.4.5. NSF (National Sanitation Foundation) 61 - Materials in contact with Potable Water.
- 1.4.6. Steel Structures Painting Council Manual - Volume 1 - Good Painting Practice.
- 1.4.7. Steel Structures Painting Council Manual - Volume 2 - Systems and Specifications.
- 1.4.8. ACI 318 - Building Code Requirements for Reinforced Concrete
- 1.4.9. ACI 301 - Standard Specification for Structural Concrete

1.5. Tank Details

The elevated tank shall be all-welded construction of the most economical design. All members of structural steel or of reinforced concrete shall be designed to safely withstand the maximum stresses to which they may be subjected during erection and operation.

- 1.5.1. The minimum operating capacity of the storage tank will be 150,000 US gallons.
- 1.5.2. The capacity of the tank, low water level to high water level, shall be contained within a maximum operating head range of 28.5 feet +/- 2.5 feet.
- 1.5.3. The height of the tank, top of foundation to high water level, shall be 102.75 feet.
- 1.5.4. Top of foundation elevation shall be 506.25.
- 1.5.5. The existing ground elevation is 505.0 +/-
- 1.5.6. The finished ground elevation shall be 505.5

1.6. Permits, Easements, Electrical Lines and Utilities

Permits, licenses, and easements required for the construction of the tank and associated work have been provided by the Owner.

The site plans indicate the approximate location of all overhead or underground electrical lines and other utilities and piping.

1.7. Working Drawings

After contract award and prior to construction, the Contractor shall provide engineering drawings and design calculations for the elevated steel tank and the foundation. Drawings shall show the size and location of all structural components and the foundations along with reinforcement details, the required strength and grade of all materials, and the size and arrangement of principle piping and equipment. The drawings and calculations shall bear the certification of a professional Engineer licensed in the State of Kentucky. The design coefficients and resultant loads for snow, wind and seismic forces, and the methods of analysis shall be documented.

2. PART TWO - DESIGN

2.1. General

The structural design of the elevated storage tank shall conform to the following design standards (latest edition) except as modified or clarified as follows:

- 2.1.1. Foundations – AWWA D100 and ACI 318 – Building Code Requirements for reinforced concrete.
- 2.1.2. Steel Tank – AWWA D100-05
- 2.1.3. Steel Tank Painting – AWWA D102

2.2. LOADS

2.2.1. Seismic Loads

Seismic Design shall be performed in accordance with Section 13 of AWWA D100-05.

- | | |
|------------------------------|-----------------------|
| a) Seismic Use Group | Seismic Use Group II. |
| b) Seismic Importance Factor | $I_E = 1.25$ |
| c) Site Class | Site Class "D" |
| d) Latitude | 36° 56' 48" |
| e) Longitude | 88° 21' 35" |

- f) Mapped Accelerations $S_S = 112\%$ for Site Class B. Modification to Site Class D yields $S_{MS} = 118\%$.
- g) Mapped Accelerations $S_1 = 30\%$ for Site Class B. Modification to Site Class D yields $S_{M1} = 54\%$.

2.2.2. Wind Loads

Wind pressure shall be determined in accordance with AWWA D100-05, Section 3.1.4. for basic wind speed of 90 Miles Per Hour, Exposure "C".

2.2.3. Snow Loads

Snow load shall be determined in accordance with AWWA D100-05, Section 3.1.3.1 for 25 PSF minimum loading.

2.3. Foundation

A Geotechnical investigation has been carried out at the site and a copy of the report is included with the Contract Documents. Recommendations for the foundation and allowable bearing capacities are defined in this report. The Owner will retain the services of the Geotechnical consultant to verify the adequacy of the bearing stratum after the Contractor has carried out the excavation and before any concrete or reinforcement is placed. The concrete foundation shall be designed by the Contractor based upon the recommendations in the Geotechnical report. The report provides the allowable soil bearing pressure with appropriate factors of safety, the active and passive earth pressure coefficients, the angle of soils internal friction, its cohesion, unit weight and recommendations for bearing depth and backfill requirements.

2.4. Steel Tank

2.4.1. General

The materials, design, fabrication, erection, welding, testing and inspection of the steel tank shall be in accordance with the applicable sections of AWWA D100 except as modified in this document.

2.4.2. Minimum Plate Thickness

The minimum thickness for any part of the structure shall be 3/16 inch for parts not in contact with water and 1/4 inch for parts in contact with water. All portions of the tank including the roof shall be of watertight construction.

3. PART THREE - CONSTRUCTION

3.1. Concrete Foundation

The foundation shall be designed and constructed to safely and permanently support the structure. The basis of the foundation construction shall be consistent with the soils investigation data included herein at the end of these specifications. Appropriate changes to construction schedule and price will be negotiated if, during excavation, soil conditions are encountered which differ from those described in geotechnical report. The concrete foundation shall be constructed in accordance with ACI 301. Minimum concrete compressive strength shall be 3,500 PSI at 28 days as specified in Section 03310, "Structural Concrete" and Section 01000, "Project Requirements".

3.2. Steel Tank Construction

3.2.1. General

The erection of the steel tank shall comply with the requirements of Section 10 of AWWA D100 except as modified by these documents.

3.2.2. Welding

All shop and field welding shall conform to AWS and AWWA D100, Section 10. The contractor shall ensure welders or welding operators are qualified in accordance with ASME Section IX or ANSI/AWS B2.1.

3.2.3. Fabrication

All fabrication and shop assembly shall conform to the requirements of AWWA D100, Section 9, Shop Fabrication.

3.2.4. Erection

Plates subjected to stress by the weight or pressure of the contained liquid shall be assembled and welded in such a manner that the proper curvature of the plates in both directions is maintained. Plates shall be assembled and welded together by a procedure that will result in a minimum of distortion from weld shrinkage.

3.2.5. Inspection and Testing

Inspection of shop and field welds shall be in accordance with AWWA D100, Section 11.5, Inspection and Testing. All inspection shall be performed prior to interior and exterior field painting. Radiographic inspection shall be performed by an independent testing agency with all costs included in the Contractor's bid and paid by the Contractor.

3.2.6. Roof Lap Joints

All roof lap joints shall be sealed by means of continuous seal welding. This shall include penetrations of roof accessories.

3.2.7. Painting and Disinfection

Surface preparation, coating and disinfection of all water tower surfaces shall be in accordance with Section 5.0, "Cleaning, Painting and Disinfection".

4. PART FOUR - ACCESSORIES

4.1. General

The following accessories shall be provided in accordance with these specifications. All items shall be in full conformity with the current applicable OSHA safety regulations and the operating requirements of the structure.

4.2. Ladders

Access ladders shall be provided at the following locations:

- 4.2.1. The tower ladder shall extend up one column from near the base connecting with the balcony. The first rung shall be located approximately 8 feet above top of foundation.
- 4.2.2. An outside tank ladder from the balcony to the roof hatch.
- 4.2.3. An inside tank ladder from the roof hatch to the inside bottom of the tank.
- 4.2.4. An inside riser ladder from the base of the riser to the bottom of the tank.
- 4.2.5. Ladder side rails shall be a minimum 3/8 inch by 2 inches with a 16 inch clear spacing. Rungs shall be not less than 3/4 inch, round or square, spaced at 12 inch centers. The surface of the rungs shall be knurled, dimpled or otherwise treated to minimize slipping. Ladders shall be secured to adjacent structures by brackets located at intervals not exceeding 10 feet. Brackets shall be of sufficient length to provide a minimum distance of 7 inches from the center of the rung to the nearest permanent object behind the ladder.

4.3. Fall Protection

Ladders shall be equipped with a fall arrest system meeting OSHA regulations. The system shall be supplied complete with safety harnesses, locking mechanisms, and accessories for two persons.

4.4. Balcony

The tank shall be equipped with a balcony not less than 30" wide with a handrail not less than 42" high. The floor shall be perforated for drainage.

4.5. OPENINGS

4.5.1. Roof Hatches

Provide two access hatches on the roof of the tank. One hatch shall be 30 inch diameter and allow access from the roof to the interior of the tank. The hatch will be hinged and equipped with a hasp for locking. The hatch cover shall have a 2 inch downward edge. The second hatch will be 24 inch diameter and flanged with a removable cover so constructed that an exhaust fan may be connected for ventilation during painting operations. The openings shall have a minimum 4 inch curb.

4.5.2. Tank Vent

The tank vent should be centrally located on the tank roof above the maximum weir crest elevation. The tank vent shall have an intake and relief capacity sufficiently large that excessive pressure or vacuum will not develop during maximum flow rate of 1,000 GPM. The vent shall be designed, constructed and screened so as to prevent the ingress of wind driven debris, insects, birds and animals. The vent shall be designed to operate when frosted over or otherwise clogged. The screens or relief material shall not be damaged by the occurrence and shall return automatically to operating position after the blockage is cleared.

4.5.3. Riser Manhole

A minimum 18 x 24 inch elliptical access manhole shall be provided approximately 3 feet above the base of the wet riser. The hatch shall open inward.

4.6. Riser

The diameter of the wet riser shall be not less than 3 feet.

4.7. Piping

4.7.1. Inlet/Outlet Piping

The vertical combined inlet/outlet pipe connection to the bottom of the riser shall be an 8 inch standard weight carbon steel pipe with appropriate transition to a ductile iron base elbow of the same diameter. The vertical pipe shall extend up into the riser one foot above the riser base.

4.7.2. Overflow

The overflow pipe shall be designed to carry the maximum design flow rate of 800 GPM. The 8 inch steel overflow pipe shall have a minimum wall thickness of 1/4". A suitable weir shall be provided inside the tank with the crest located at High Water Level. The overflow shall be routed from the weir to closely match the roof contour and extend down the ladder column and terminate approximately 1 to 2 feet above grade and discharge onto a concrete splash pad. The point of discharge shall have a 45 degree elbow to and be equipped with a stainless steel screen.

4.8. Identification Plate

A tank identification plate shall be mounted on the tank riser pipe above the access manhole. The identification plate shall be corrosion resistant and contain the following information.

- 4.8.1. Tank Contractor
- 4.8.2. Contractor's project or file number
- 4.8.3. Tank capacity
- 4.8.4. Height to High Water Level
- 4.8.5. Date erected

4.9 Obstruction Light and Antennae Mounting Brackets

Provide a double obstruction light enclosed in aviation red obstruction light globes as approved by the FAA. Provide three (3) factory installed mounting brackets welded to the tank cap – one (1) for the obstruction lights and two (2) for telemetry/antennae by others.

Steel angle brackets for attaching conduit shall be provided and welded to one of the legs and the shell during construction.

5. PART FIVE – CLEANING, PAINTING AND DISINFECTION

5.1 Shop Cleaning

- 5.1.1 Shop Cleaning Interior Surfaces: Blast clean surfaces to a near white metal, until each element or surface is free of all visible residues per SSPC-SP10.
- 5.1.2 Shop Cleaning Exterior Surfaces: Remove all rust, mill scale and foreign matter by blasting per SSPC-SP6.

5.2 Field Cleaning

- 5.2.1 After erection and prior to field patch priming, all surfaces shall be cleaned to remove surface contamination. All abraded areas and plate edges not covered by shop paint shall be thoroughly cleaned by spot sand blasting to assure removal of weld scale, slag, and flux and rust deposits. Contaminated surfaces of the bowl interior shall be blasted to near white metal per SSPC-SP 10 prior to field priming. Use DuPont Starblast or approved equal blast media for all field surface preparation.

5.3 Painting

- 5.3.1 Paint for All Interior Surfaces:

All paint incorporated in the elevated storage tank coating system shall be as manufactured by the Tnemec Company, Inc. Kansas City, Mo. Substitute paint systems shall be subject to Engineer approval and must be submitted and approved prior to the bid opening.

- 5.3.1.1 Shop Primer

Apply one coat of Tnemec Series 94-H₂O Hydro Zinc Primer at 2.5-3.5 mils DFT immediately after abrasive blasting. In no instance may the plate steel go more than eight hours uncoated. Surfaces damaged during shipping and erection shall be cleaned and reprimed with the above system at the above rate.

5.3.1.2 Field Primer

Field apply one coat of Tnemec Series 91-H₂O Hydro Zinc Primer at 2.5-3.5 mils DFT immediately after abrasive blasting. In no instance may plate steel go more than eight hours uncoated.

5.3.1.3 Stripe Coat

Field apply one coat of Tnemec Series N140-1255 Pota-Pox Plus by brush to all weld seams, sharp edges, ladders and any other difficult to reach areas at 2.5-3.5 mil DFT. Color shall contrast with the field primer and intermediate field coat.

5.3.1.4 Intermediate Coat

Apply one coat of Tnemec Series N140-39BL Pota-Pox Plus at 4.0 to 6.0 mils DFT.

5.3.1.5 Finish Coat

Apply one coat of Tnemec Series N140-15BL Pota-Pox Plus at 4.0 to 6.0 mils DFT. Finish coat color shall be "Tank White".

5.3.2 Paint for Exterior Surfaces:

Provide a coating system which is VOC compliant and in general accordance with AWWA D102, OCS-6, Three Coat Zinc, Epoxy Polyurethane:

5.3.2.1 Shop Primer

Apply one coat of Tnemec Series 94-H₂O Hydro Zinc Primer at 2.5-3.5 mils DFT immediately after abrasive blasting. In no instance may the plate steel go more than eight hours uncoated. Surfaces damaged during shipping and erection shall be cleaned and reprimed with the above system at the above rate.

5.3.2.2 Field Primer

Field apply one coat of Tnemec Series 91-H₂O Hydro Zinc Primer at 2.5-3.5 mils DFT immediately after abrasive blasting. In no instance may plate steel go more than eight hours uncoated.

5.3.2.3 Intermediate Coat

Apply one coat of Tnemec Series N69-1255 Beige Hi-Build Epoxoline II at 3.0 to 5.0 mils DFT. Roller application may require more than one coat to achieve specified thickness.

5.3.2.4 Finish Coat and Logo Lettering

Apply one coat of Tnemec Series 1074U-color Endura-Shield II at 2.0-3.0 mils DFT. Some colors may require more than one coat to achieve opacity. Colors shall be selected by Owner during shop drawing review.

5.3.3 Weather Painting Conditions

Coatings shall be applied during good weather. Air and surface temperatures shall be within limits prescribed by the manufacturer of the paint system and work areas shall be free of airborne dust at the time of application and while the coating is drying.

5.4 DISINFECTION

5.4.1 General

Following cure of the tank interior final coat of paint, the elevated storage tank shall be disinfected in accordance with AWWA C652.

5.4.2 Method

The Contractor shall disinfect the tank utilizing Chlorination Method 3 in accordance with Section 4.3 of AWWA C652 as summarized below:

Chlorination Method 3. Water and chlorine shall be added to the storage facility in amounts such that the solution will initially contain 50 mg/L available chlorine and will fill approximately 5 percent of the total storage volume. The solution shall be held in the tank for a period of not less than 6 hours. The storage tank shall then be filled to the overflow level by flowing potable water into the highly chlorinated water. It shall be held full for a period of not less than 24 hours. All highly chlorinated water shall then be purged from the drain piping. Following this procedure and subject to satisfactory bacteriological testing and acceptable aesthetic quality, the remaining water may be delivered to the distribution system.

5.4.3 Disposal of Water

The environment to which the chlorinated water is to be discharged shall be inspected and if there is any question that the environment will be damaged, then a reducing agent shall be applied to the water. Federal, state or local governmental regulations may require special provisions or permits prior to disposal of highly chlorinated water. The Contractor is responsible for contacting the proper authorities prior to disposal of this water.

5.4.4 Bacteriological Testing

Sampling and testing shall be per Section 5.1 of AWWA C652.

5.4.5 Re-Disinfection Procedure

Should bacterial tests show evidence of bacterial concentrations in excess of state or federal standards, the tank shall be disinfected again utilizing the procedure specified above.

6. PART 6 - GUARANTEE

- 6.1. The tank Contractor shall guarantee its work for a period of one year from the completion date defined in the contract documents to the extent that it will repair any defects caused by faulty design, workmanship or material furnished under the

specifications. If Contractor is not advised of any defects within 30 days of end of guarantee period, guarantee shall be considered fulfilled and complete

- 6.2. All guarantees obtained by the tank Contractor from the manufacturer or installer of paint, equipment or accessories not manufactured by tank Contractor shall be obtained for the benefit of the Owner.

END OF SECTION

APPENDIX "A"

SUBSURFACE INVESTIGATION

FOR

GIFFORD WATER TOWER SITE



GEOTECHNICAL EXPLORATION REPORT
OF
PALMA WATER TOWER
RACEWAY LANE
MARSHALL COUNTY, KENTUCKY

Submitted By:





BACON | FARMER | WORKMAN
ENGINEERING & TESTING, INC.

September 17, 2013

Mr. Paul Cloud
 Paul Cloud Engineering
 437 Cactus Drive
 Benton, Kentucky 42025

Re: **Geotechnical Exploration Report**
Palma Water Tower
Marshall County, Kentucky

Dear Mr. Cloud:

Bacon Farmer Workman Engineering & Testing, Inc., is pleased to present the attached Geotechnical Exploration Report for the referenced site. The geotechnical exploration was conducted in accordance with applicable ASTM Standards.

The attached report includes a review of pertinent project information provided to us, descriptions of site and subsurface conditions encountered and our general recommendations for site preparation and construction phase concerns. The Appendix contains a Boring Layout Map, results of all field and laboratory tests conducted for this project and foundation design criteria.

We appreciate the opportunity to serve you and look forward to future association with you on this and other projects. If you have questions concerning this report, please call our office.

Sincerely,

BACON | FARMER | WORKMAN
 ENGINEERING & TESTING, INC.

Christopher N. Farmer, P.E.
 Principal Engineer



Attachments: Geotechnical Exploration Report

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GEOTECHNICAL EXPLORATION REPORT

**PALMA WATER TOWER
RACEWAY LANE
MARSHALL COUNTY, KENTUCKY**

Prepared For:

**Paul Cloud
Paul Cloud Engineering
437 Cactus Drive
Benton, Kentucky 42025**

Prepared By:



BACON | FARMER | WORKMAN

**ENGINEERING & TESTING, INC.
500 SOUTH 17TH STREET
PADUCAH, KY 42003**

September 17, 2013

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1.0 Objective

The purpose of this geotechnical study is to explore the subsurface conditions present at the site and to determine pertinent engineering properties of the materials encountered.

2.0 Project Information

Based on information provided by the client, the project consists of a multi-column (5) elevated water tower. No specific structural loading data was provided at the time of this report.

2.1 Site Description

A site reconnaissance was conducted on September 5, 2013. Observations made during the site visit were used to aid in interpreting topographic, geologic and other conditions that may affect proposed construction.

The area of investigation is situated on the end of a cul-de-sac of Raceway Lane. The site consists of 1.031 acres of vacant grass-covered land in an area primarily characterized with residential, agricultural, and light commercial property usage.

The site is located within the United States Geologic Survey, Briensburg, Kentucky 7.5-Minute Quadrangle. The natural topography of the project area is gently sloping with a gradual drop in elevation towards the west/southwest. The approximate elevation of the site is 455-465 feet above sea level (National Geodetic Vertical Datum of 1929).

2.2 Exploratory Method

The procedures used by BFW, Inc. for field and laboratory sampling and testing are in general accordance with ASTM procedures, and established engineering practice. Three (3) borings were advanced within 30 feet of the center of the proposed water tower. Two of the borings were advanced to a depth of approximately 20 feet below ground surface (bgs), with the final boring advanced to 100 feet bgs to obtain seismic site classification. Borings were located in the field by BFW representatives based upon data provided by the client. See the Boring Location Map and Subsurface Boring Logs in Appendix B and C, respectively.

A Diedrich D-50 track-mounted rotary-drilling rig was used to advance the soil test borings and to obtain soil samples for laboratory evaluation. The test borings were advanced in accordance with geotechnical investigative procedures outlined in ASTM D-1452.

Disturbed samples were retrieved during Standard Penetration tests (ASTM D-1586) using an automatic hammer assembly at various depths in the underlying stratum. The Standard Penetration test consists of driving a 2-inch outside diameter split-barrel sampler (split-spoon) into the soil with a 140-pound weight falling freely through a distance of 30 inches.

The sampler was driven in three successive 6-inch increments, with the number of blows per increment being recorded. The number of blows required to advance the sampler the last 12 inches is termed the Standard Penetration Resistance (N).

The project manager observed and directed the drilling operations and visually classified soil samples obtained in accordance with Unified Soil Classification System and ASTM D-2488 guidelines. Records of the conditions encountered and visual soil classification were prepared and incorporated in Subsurface Boring Logs included in the report appendix.

The Subsurface Boring Logs represent our interpretation of the conditions encountered within the soil test borings. It should be noted that strata changes may vary from those encountered within the soil test borings, transitions may be gradual or abrupt, and conditions may vary significantly at other locations. The groundwater information listed represents conditions at the time of drilling activities. Representative soil samples obtained from the boring were preserved in plastic bags, sealed and taken to the laboratory for testing.

3.0 Subsurface Conditions

3.1 Regional

According to the Kentucky Geological Survey online database, the site is underlain by the Quaternary aged loess deposits, followed by the Quaternary-Tertiary-aged continental deposits, finally underlain with Tertiary-Cretaceous aged Clayton-McNairy Formation. Each unit is described below:

Loess deposits are composed of “Silt, yellowish-brown to dark-yellowish-orange, clayey, unstratified, noncalcareous, unfossiliferous; small brown to black concretions occur locally.”

Continental deposits are composed of “Gravel and sand; yellowish-brown to reddish-brown, iron-stained; locally indurated by iron oxide. Consists mainly of subangular to rounded chert cobbles and pebbles averaging an inch in diameter and widely scattered ovoid quartz pebbles in matrix of poorly sorted argillaceous, cherty, quartzose sand. Lenses of sand or gravelly sand similar to the matrix material occur locally. Crude bedding apparent in some outcrops of topographically high gravel. Unit rests unconformably on older rocks.”

The Clayton and McNairy Formations are composed of “sand, clay, and gravel: Sand, white to brown; weathers brick red in lower part of unit; very fine to medium-grained, micaceous; contains scattered heavy minerals and thin lenses of light-colored silty clay; crossbedding and cut-and-fill structure common; locally indurated by iron oxide. Clay, light-gray to black, silty, carbonaceous; commonly contains thin laminae of very fine to fine-grained quartz sand; contains scattered ferruginous concretions; interfingered with sand within upper 90 feet of formation. Gravel, well-rounded white chert pebbles and cobbles in matrix of quartzose sand; occurs as locally indurated gravel beds and scattered pebbles within lower 60 feet.”

The Natural Resource Conservation Service's online web soil database was reviewed to determine the type of soil underlying the proposed building area. According to the database, the site is underlain by the Grenada silt loam, 4 to 6 percent slopes, severely eroded. This soil complex (Group D) has a low available water capacity, is moderately well drained, with a moderate saturated hydraulic conductivity rating. This soil is formed from thick fine-silty noncalcareous loess.

3.2 Site-specific

The area of investigation is primarily covered with topsoil, which ranges from 4-6 inches thick. Underlying the topsoil is a moist gray-brown silty clay of low to medium plasticity and soft to stiff consistency, which extends down to approximately 10 – 12 feet bgs, where the material transitions to a red-brown oxidized sandy gravel or silty sand, moist, with loose to very dense consistency. This oxidized material extends downward to approximately 35 feet bgs where the tertiary/cretaceous deposits begin. This material is composed of a light brown to tan silty sand, typically dry, ranging from a very fine-grained to medium grained, with clay lenses at various intervals. This silty sand and clay mixture extends to at least 100 feet bgs, and has a firm to very dense consistency. See soil boring logs in the appendices for more detail.

3.3 Groundwater

Groundwater measurements were taken during drilling activities. Groundwater was not identified in any of the borings advanced. The borings were backfilled with native soil cuttings and capped with asphalt at the completion of the investigation.

4.0 Laboratory Testing

Laboratory soil tests were conducted in accordance with applicable ASTM Standards. Natural moisture contents were determined for all samples collected. Liquid and Plastic Limits tests were conducted for selected soil samples to verify field classification of the soils. In addition, these tests evaluate the potential for volumetric changes in the soil. Laboratory test results are tabulated in Appendix D.

4.1 Laboratory Results

4.1.1 Natural moisture contents

Natural moisture contents were determined for the soil samples collected. The following table provides average moisture content derived from the soil samples analyzed.

Natural Moisture Contents	
Depth (feet bgs)	Soil moisture content (%)
0.0 – 1.5	23.9 – 32.1
1.5 – 3.0	25.1 – 26.9
4.0 – 5.5	19.4 – 22.6
8.5 – 10.0	20.0 – 22.3
13.5 – 15.0	14.6 – 20.4
18.5 – 20.0	11.2 – 15.5

4.1.2 Atterberg (Index) Tests

Atterberg Limits testing was conducted on a sample collected from boring B-2 at 4.0 feet bgs. From the test results, liquid limit and plastic limit values were obtained. A plasticity index was then calculated using the liquid and plastic limit values. Using the results from the Atterberg Limits tests, the soils were classified using the Unified Soil Classification System.

The sample classified as a lean clay with a classification of (CL) with a plasticity index (PI) of 7. Soil samples that have a Plasticity Index <20 have a low potential for soil volume change due to changing moisture contents.

4.1.3 Standard Penetration Tests

Field and laboratory tests were conducted to evaluate the soil strength characteristics on site. Standard Penetration Tests (SPTs) conducted in the field in the soils encountered produced low “N” values (blow counts) in the range of 3 to 12 in the upper loess deposits, 8 to 50+ in the continental deposits, and 9 to 50+ in the lower tertiary/cretaceous deposits.

The “N” values are roughly correlated with the average soil consistency and an unconfined compressive strength. The “N” values indicate that the soil consistencies are soft to stiff in the upper loess deposits, and loose to very dense in the lower continental and tertiary/cretaceous deposits. SPT results are provided on the Subsurface Boring Logs located in the appendix.

5.0 Geotechnical Considerations and Recommendations

Based on the results of the subsurface exploration, current site conditions observed, and laboratory results, items of geotechnical interest and considerations are discussed in the following sections.

5.1 Basis for Recommendations

The following recommendations are based on data from this exploration and the stated project information. In our evaluations, we have utilized both subsurface data from this exploration and our experience with similar structures and subsurface conditions. If the structural information is incorrect or changed subsequent to our reporting, if the siting or building components have been changed, or if the subsurface conditions encountered during the construction vary from those reported, our recommendations should be reviewed in light of the changed conditions.

Experience indicates that the actual subsoil conditions at a site could vary from those generalized on the basis of soil test borings made at specific locations. Therefore, it is essential that a geotechnical engineer be retained to provide soil-engineering services during the site preparation, excavation, and foundation construction phases of the proposed project. The geotechnical engineer should observe compliance with the design concepts, specifications, and recommendations, and to allow design changes in the event subsurface conditions differ from those anticipated prior to the start of construction.

5.2 General Geotechnical Considerations

5.2.1 Softer Upper Soils

As discussed in the Stratigraphy section of this report, the upper soils (approx.. <12 feet) were generally softer in consistency across site than the lower sandy gravel and silty sand stratum. The upper softer soil zones extend to a depth of approximately 12 feet below ground surface. The proposed multicolumn elevated water tower foundations will need to extend to a depth of at least 12 feet below ground surface

5.2.2 Silty Soils / Construction Traffic / Subgrade Degradation

The in-situ soils consist of low plasticity silty clay loams and clayey silts. It should be noted that silty clays loams are very susceptible to degrade to unsuitable soils in the presence of moisture and construction traffic. In addition, silty soils are typically difficult to properly compact when wet of optimum moisture content as determined by a Standard Proctor test. The importance of these characteristic of silty soils cannot be overstated. The contractor must fully understand the causes and effects of moisture versus compaction for silty soil and the detrimental effect of construction traffic on soil subgrades. A discussion of silty soils and some of the potential negative effects of moisture and construction traffic are provided below.

The silty clay and clayey silts soils need to be close to its optimum moisture content (as determined by the Standard Proctor) before it can be properly compacted to the required density. If the silty clay soils are too dry or wet (above or below the optimum moisture content) then the soils will typically not compact properly even with above normal

compaction efforts. If the soils are too dry then water can be easily added on site during the compaction activities. However, if the soil moistures are too high, as typically the case in the spring and winter months, then the silts must be manipulated to accelerate drying by discing and aerating or by other means that would require above routine efforts.

The contractor should understand that aerating the silty soil requires a concerted effort to overturn, disc and manipulate the soils multiple times during the drying process. Typically, overturning the soils and discing once or twice will not be sufficient effort to dry the soils. It is the process of continually overturning and exposing the soils to the sun and wind that actually causes the drying process. However, this process is less effective during the wet seasons of the year and would typically require longer drying times. If the project time constraints do not allow for aeration, then additional drying methods, such as lime stabilization or other methods may be needed.

It is also important to note that at the end of each day or prior to any rainfall events that the soil must be smoothed and rolled to minimize any surface water infiltration. The site grading should always provide for positive site drainage away from the project site even during construction activities. Surface water / storm water should not be allowed to pond on the surface or in tire ruts.

Another significant characteristic of the silty clay soils is the high potential of subgrade degradation in the presence of elevated moistures and construction traffic. As is common construction knowledge, extremely large tire loadings are typically present on construction sites from dump trucks, concrete trucks, masonry block and brick/masonry block forklifts (Pettybone). The tire loadings from these vehicles are usually the most significant concentrated loadings that the soil subgrades will most likely encounter. In many cases these tire loadings will exceed the overall shear strength of the in-situ soils and rutting and pumping will occur as a result. This is especially true during repeated heavy tire loadings occur when the soil subgrade wet or above its optimum moisture content. To reiterate, the contractor should be aware that repeated heavy construction traffic loadings will cause significant damage to the soil subgrade especially when the soils are wet or saturated.

5.3 Multicolumn Water Tower Foundation Recommendations

5.3.1 Shallow Spread / Pier Type Foundations

The following foundation recommendations are based on the current site conditions encountered and the anticipated designs loads. Shallow individual spread /pier type foundations are recommended and should bear at a minimum of 12 feet below ground surface in the sandy gravels/silty sand soil stratum.

A net allowable soil bearing pressures of 4,000 pounds per square feet (psf) for spread foundations. Isolated footings should have minimum widths of at least 60 inches respectively. It is recommended that the foundation bearing seats be observed by a geotechnical engineer prior to concrete placement. Water should not be allowed to accumulate in the foundation excavation prior to concrete placement.

Provided the above recommendations are followed, total shallow foundation settlements are not anticipated to exceed about 1-inch. Differential settlement should not exceed 50 percent of the total settlement.

5.3.2 Lateral Design Parameters

The resistance of lateral forces should be based on the allowable sliding resistance and passive bearing pressures. An Equivalent Fluid Pressure of 200 pounds per cubic foot (pcf) for the passive case and a lateral sliding resistance of 150 pound per square feet should be used for design for the upper silty clays.

5.3.3 Seismic Site Class (2012 International Building Code)

Based on requirements of the 2012 International Building Code, site classification are required for the design of seismic elements of structures. Upon review of subsurface soil data obtained in the 100 feet boring and the requirements of the 2012 International Building Code, a Site Class D is recommended for use in design.

5.4 General Site Preparation Recommendations

5.4.1 Clearing / Grubbing / Stripping

Each area of construction on the subject site should be cleared, stripped and grubbed of topsoil / organics, fill material, deleterious materials, existing concrete and any soft/unsuitable soils. Under no circumstances should the stripped material (ie. old fill, trees, topsoil) be used as fill for any excavations, low-lying areas, or for any subsurface structural element.

5.4.2 Engineered Fill Placement

Prior to any fill activities taking place, it is recommended that representative samples of the proposed fill material be collected (minimum 5-gallon container of material) and tested to determine the laboratory compaction characteristics, plasticity and natural moisture contents. The tests should be conducted to determine the suitability of proposed fill material. Based on the subsurface data obtained, the in-situ soils should be acceptable for use as engineered fill material once stripped of topsoil / organics and rootballs.

Proposed fill materials should be free of organics, deleterious debris, or rocks larger than 3 inches in diameter. Suitable fill soil should have a plasticity index (PI) of less than 20 and a maximum dry density according to the standard Proctor compaction test of at least 100 pounds per cubic foot (pcf). All fill soils and fill pads should be properly compacted and tested.

The fill should be compacted to at least 98 percent of the soil maximum dry density (ASTM D-698 "Standard Proctor") under structures, building slabs and 95 percent under proposed paved areas. Fill materials in lawn area should be compacted to at least 92 percent of the soils maximum dry density. Moisture contents of the fill materials should be maintained to within ± 2 percent of the soils optimum moisture.

The soil should be placed in lifts of 8 inches or less for materials compacted by heavy equipment and not more than 4 inches loose depth for hand compaction equipment. Each lift should be compacted and tested by nuclear density gauge methods prior to placing additional lifts every 2,500 square feet. All fill pads should extend laterally at least 10 feet beyond the building before sloping down. In-place density testing should be conducted for each lift placed to check the compaction achieved.

Positive surface drainage should be maintained to prevent water from ponding on the surface during all earthwork operations. It is important that after each day's work or prior to any anticipated rainfall, the subgrade should be rolled with a rubber-tired or steel-drummed roller to improve surface runoff. The geotechnical engineer should be notified if the subgrade soils become excessively wet, dry or frozen.

As is common construction knowledge, extremely large tire loadings are typically present on construction sites from dump trucks, concrete trucks, masonry block and brick/masonry block forklifts (Pettybone). The tire loadings from these vehicles are usually the most significant concentrated loadings that the soil subgrades will most likely encounter. In many cases these tire loadings will exceed the overall shear strength of the in-situ soils or recently placed engineered fill and rutting and pumping will occur as a result. This is especially true during repeated heavy tire loadings occur when the soil subgrade wet or above its optimum moisture content. It is important that the site subgrade be properly maintained by the contractor for the extent of the entire project. The site should not be allowed to become rutted or water allowed to pond.

5.4.3 Surface Water Control

Surface water should not be allowed to pond on the building subgrade surfaces. This is especially true during construction activities. Proper erosion and sedimentation control plans must be developed as per the City and State requirement.

5.5 Other Design Considerations

5.5.1 Project Specifications

Specifications for this project should meet local building codes and OSHA guidelines. The observations, recommendations, and considerations presented in this report should be fully read and understood by the owner, project designer(s) and contractor(s) prior to final submittal of project plans and specifications.

5.5.2 Construction Monitoring

The implementation of a soil and concrete quality testing program aids in assuring that the end product is that which was designed. Thorough testing also allows opportunity for correction before major problems develop. For these reasons, Bacon Farmer Workman Engineering & Testing, Inc. (BFW), recommends the retainage of a qualified testing laboratory (by the Owner) to conduct quality tests on structural fill, aggregate base course, and concrete placement.

6.0 Qualifications of Recommendations

Our evaluation of foundation and pavement design and construction conditions has been based on our understanding of the site and on conditions encountered in the borings at the time of investigation. The general subsurface conditions used were based on our interpolation of the subsurface data between the borings. Regardless of the thoroughness of a subsurface investigation, there is the possibility that conditions between borings will differ from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, experienced geotechnical engineers should observe earthwork and foundation construction to confirm that the conditions anticipated in design are noted. Otherwise, Bacon Farmer Workman Engineering & Testing, Inc. (BFW), assumes no responsibility for construction compliance with the design concepts, specifications, or recommendations.

The design recommendations in this report have been developed on the basis of the previously described project characteristics and subsurface conditions. If project criteria or locations change, a qualified geotechnical engineer should be permitted to determine whether the recommendations must be modified. The findings of such a review will be presented in a supplemental report.

The nature and extent of variations between the borings may not become evident until the course of construction. If such variations are encountered, it will be necessary to reevaluate the recommendations of this report after on-site observations of the conditions.

Our professional services have been performed, our findings derived, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. Bacon Farmer Workman Engineering & Testing, Inc. (BFW), is not responsible for the conclusions, opinions, or recommendations of others based on this data.

Appendix A

Boring Log / Laboratory Procedure Guide

BORING LOG / LABORATORY PROCEDURE GUIDE

SUBSURFACE EXPLORATION

Bacon Farmer Workman Engineering & Testing, Inc., conducts soil test borings, field sampling and laboratory analysis in general accordance with methods of the American Society for Testing Materials (ASTM) and generally accepted engineering practices. Soil test borings were advanced with truck or track mounted rotary-type drilling rig equipment. Hollow stem or solid flight augers were used to advance soil test borings (ASTM D 1452). A series of soil samples are typically obtained for visual inspection and laboratory analysis during drilling activities. The samples collected may include disturbed, undisturbed or auger cutting samples.

BORING LOCATIONS / ELEVATIONS

Boring Locations are either selected by our project manager or have been selected by the client. The borings are typically located in the field by estimating right angles and measuring distances from site landmarks. Because of the locating methods used, the boring locations indicated on the Boring Location Plan (In Appendix) are approximate unless specifically noted. When topographic plans of the site are provided, the project engineer estimates the surface elevation of the boring locations using available information. Surveying to determine the locations and elevations of the borings is typically beyond the scope of the typical geotechnical study. Therefore, the boring locations and elevations should be considered approximate unless specifically noted.

BORING LOGS / RECORDS

The Subsurface Boring Logs included in this report are our interpretation of the conditions encountered at each boring location. The Subsurface Boring Logs are prepared on the basis of the field crew's observations during drilling, engineering review of the soil samples obtained, and laboratory testing on selected samples. Soil descriptions are made using the Unified Soil Classification System and ASMT D 2488 as guides. The depths designating strata changes on the Boring Records are estimations. In many geologic settings, the transition between strata is gradual.

GROUNDWATER LEVEL READINGS

Groundwater levels are monitored in each borehole upon the completion of drilling. In low permeability soils such as silts and clays, the groundwater level in the boreholes may take several or more hours to stabilize. Therefore, when possible, water level readings are also made at least 24-hours after drilling activities cease. Groundwater levels may be dependent upon recent rainfall activity and other site specific factors. Since these conditions may change with time, the water level information presented on the Subsurface Boring Logs represents the conditions only at the time each measurement is taken.

SAMPLING TECHNIQUES

Soil samples are typically obtained at selected depths during the drilling activities. Representative portions of the soil samples obtained are placed in sealed containers, labeled, and transported to the laboratory. The soil samples obtained are used for visual classification, and for strength, index and consistency testing. Samples obtained from the drilling activities include: Disturbed, undisturbed and bulk samples. Disturbed samples are collected during the Standard Penetration Tests using a split spoon sampler and hammer as described in the following section. Undisturbed samples are obtained by advancing a thin-walled Shelby tube with hydraulic pressure as described in the following section. Bulk samples are obtained from the auger cuttings generated during the advancement of the augers.

The **STANDARD PENETRATION TEST (ASTM D 1586)** is a method to obtain disturbed soil samples for examination and testing and to obtain relative density and consistency information. A standard 1.4-inch I.D. / 2-inch O. D. split-barrel (split spoon) sampler is driven three 6-inch increments with a 140 lb. hammer falling 30 inches. The hammer can either be of a trip, free-fall design or actuated by a rope and cathead. The hammer blows required to drive the sampler the final foot is the *standard penetration resistance (N-value)*. Standard penetration resistance, when properly evaluated, is an index to the soil's strength, consistency and density. Upon completion of each standard penetration test, the sampler is brought to the surface and the tube is split open to expose the soils penetrated. Our project manager / engineer examines the soil and places a representative portion of the soil into a sealed container for transportation to our laboratory.

BORING LOG / LABORATORY PROCEDURE GUIDE (Continued)

UNDISTURBED SOIL SAMPLING (ASTM D 1587) is a method used to obtain a relatively undisturbed soil sample for more precise laboratory analysis including unconfined compressive strengths, compressibility or permeability. Undisturbed soil sampling is conducted by advancing a 3-inch O. D., 16 gauge, steel tube (Shelby Tube) with a sharpened edge slowly and uniformly into the underlying soil stratum under constant hydraulic pressure to the desired sampling elevation. The tube is then removed from the ground and both ends are sealed to prevent loss of moisture. The depth at which the undisturbed samples were collected is indicated on the Subsurface Boring Logs.

SOIL LABORATORY TESTS

The **MOISTURE CONTENT (ASTM D 2216)** of soils is an indicator of various physical properties, including strength and compressibility. Each test sample is weighed and then placed in an oven ($110^{\circ}\text{C} \pm 5^{\circ}\text{C}$). The sample remains in the oven until the free moisture has evaporated. The dried sample is removed from the oven, allowed to cool and then reweighed. The moisture content is computed by dividing the weight of evaporated water by the weight of the dry sample. The results are expressed as a percent.

ATTERBERG LIMITS (ASTM D 4318) tests are used to help define the relationship between behavior changes in fine-grained soils at different moisture contents values. Depending upon the moisture content, a fine-grained soil may occur in a liquid, plastic, semi-solid, or solid state. These set of tests are used to establish the approximate moisture contents at which the soil changes its state. **LIQUID LIMIT** – a soil specimen is wetted until it is in a viscous fluid state. A portion of the soil is then placed in a standardized dimension brass cup, and a groove is made through the middle of the soil specimen with a grooving tool of standardized dimensions. The cup is attached to a cam that lifts it 10 mm, and then allows it to freefall and strike a hard rubber base. The cam is rotated at about 2 drops per second until the two halves of the soil specimen come in contact at the bottom of the groove along a distance of 13 mm. The number of blows required to close the groove is recorded, and a portion of the specimen is subjected to moisture content determination. Additional water is added to the remainder of the specimen, and the grooving process and cam action process repeated. After the third trial, the number of blows versus moisture content is plotted on semi-logarithmic graph paper. The moisture content corresponding to 25 blows is designated as the Liquid Limit.

The **Plastic Limit** is the lowest moisture content at which the soil is sufficiently plastic to be manually rolled into threads 3 mm in diameter. It is determined by taking a pat of soil remaining from the liquid limit test, and repeatedly rolling, kneading, and air drying the specimen until the soil breaks into threads about 3 mm in diameter and 3 to 10 mm long. The moisture content of these soil threads is then determined, and is designated the Plastic Limit.

A PARTICLE SIZE ANALYSIS determines the distribution of particles sizes in soils. Distribution of particle sizes larger than the No. 200 sieve is determined by the sieving process, while the distribution of particles smaller than the No. 200 sieve are determined by a sedimentation process, using a hydrometer. In the sieving process the soil is prepared by air drying and crushing, to separate clusters that clump together. A series of sieves, that consist of a square mesh woven-wire cloth having different size openings as per ASTM specifications are each weighed individually. They are stacked with the greatest size opening at the top with each successive lower sieve having smaller openings. A pan is placed on the bottom of the stack to catch soil finer than the # 200 sieve (0.75 mm). The soil is placed into the top sieve of the stack and is covered. The nest of sieves is placed and locked into a sieve shaker which is then agitated for approximately 10 minutes. Each sieve is reweighed with the retained soil. A semi-logarithmic graph is created showing the percent passing each specific sieve size.

The **UNCONFINED COMPRESSIVE STRENGTH TEST, (ASTM D 2166)** is a relatively quick method to obtain the approximate compressive strength of soils that possess sufficient cohesion to allow testing in the unconfined state. An undisturbed sample is obtained from the borehole with a Shelby Tube sampler. The tube is sealed in the field to retain natural moisture content. Once in the laboratory the undisturbed sample is extruded from the tube and cut to a specified length. The sample measurements are recorded. The sample is placed in its natural state in a compressive strength load frame. The sample is compressed under increasing load. Measurements of the load applied and the sample strain are recorded. Upon specimen failure the test is concluded and a graph of stress versus strain is plotted. The maximum stress applied is defined as the unconfined compressive strength.

Subsurface Boring Log Legend

Standard Penetration Test (N-Value Tables)

Fine Grained Soils (Silts & Clays)			Coarse Grained Soils (Sands & Gravels)	
<u>N</u>	<u>Consistency</u>	<u>Qu, (KSF) Estimate Only</u>	<u>N</u>	<u>Relative Density</u>
0 - 1	Very Soft	0 - 0.25	0 - 4	Very Loose
2 - 4	Soft	0.25 - 0.5	5 - 10	Loose
5 - 8	Firm	0.5 - 1.0	11 - 20	Firm
9 - 15	Stiff	1.0 - 2.0	21 - 30	Very Firm
16 - 30	Very Stiff	2.0 - 4.0	31 - 50	Dense
Over 30	Hard	> 4.0	Over 50	Very Dense

Particle Sizes

Boulders	Greater than 300 mm (12 in)
Cobbles	75 mm to 300 mm (3 to 12 in)
Gravel	4.74 mm to 75 mm (3/16 to 3 in)
Coarse Sand	2 mm to 4.75 mm
Medium Sand	0.425 mm to 2 mm
Fine Sand	0.075 mm to 0.425 mm
Silts & Clays	Less than 0.075 mm

Relative Proportions

<u>Descriptive Term</u>	<u>Percent</u>
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

Boring Log Symbols / Abbreviations

- N: Blows per foot of a 140 lb. hammer falling 30-inches on a 2 inch O. D. split spoon
- Qp: Unconfined compressive strength, hand penetrometer, tsf
- Qu: Unconfined compressive strength, Shelby tube sample, ksf
- Mc: Percent of water in sample (%)
- Dd: Sample Dry Density, pcf
- LL: Liquid Limit
- PL: Plastic Limit
- PI: Plasticity Index
- # 200: Percent of sample passing a # 200 sieve (0.075mm)
- #4: Percent of sample passing a # 4 sieve



Appendix B

Maps



Adapted from Bing® Maps (<http://www.bingmaps.com>) Not to scale (Note: boring locations are approximate)

Boring Location Map

BFW Project No. 13330

Palma Water Tower
Raceway Lane, Marshall County, Kentucky



Appendix C
Subsurface Boring Log

Geotechnical Exploration Report
Palma Water Tower
Marshall County, Kentucky

BFW Project: 13330





BACON | FARMER | WORKMAN ENGINEERING & TESTING INC.
 500 SOUTH 17TH STREET
 PADUCAH, KY 42003
 Telephone: 270-443-1995
 Fax: 270-443-1904

BORING NUMBER B-01

CLIENT Paul Cloud Engineering PROJECT NAME Palma Water Tower
 PROJECT NUMBER 13330 PROJECT LOCATION Marshall Co. Kentucky
 DATE STARTED 9/4/13 COMPLETED 9/4/13 GROUND ELEVATION _____ HOLE SIZE 4.25 inches
 DRILLING CONTRACTOR BFW GROUND WATER LEVELS:
 DRILLING METHOD Hollow Stem Auger 6.25" OD AT TIME OF DRILLING ---
 LOGGED BY Bret Watkins CHECKED BY Chris Farmer AT END OF DRILLING ---
 NOTES _____ AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
								20	40	60	80
								PL	MC	LL	
								20	40	60	80
								□ FINES CONTENT (%) □			
								20	40	60	80
0		TOPSOIL - approximately 4 to 6 inches thick									
0		(CL) SILTY CLAY - gray-brown, changing to red-brown and gray with depth, moist, low plasticity, firm consistency	SS 01	89	3-3-3 (6)		95				
			SS 02	100	2-4-5 (9)						
5			SS 03	100	2-3-6 (9)		101				
10			SS 04	100	3-5-7 (12)		100				
15		(GP) SANDY GRAVEL - reddish brown, moist, poorly graded, with gray clay, loose to dense in consistency	SS 05	78	3-5-9 (14)						
20			SS 06	89	3-16-28 (44)						

Bottom of borehole at 20.0 feet.

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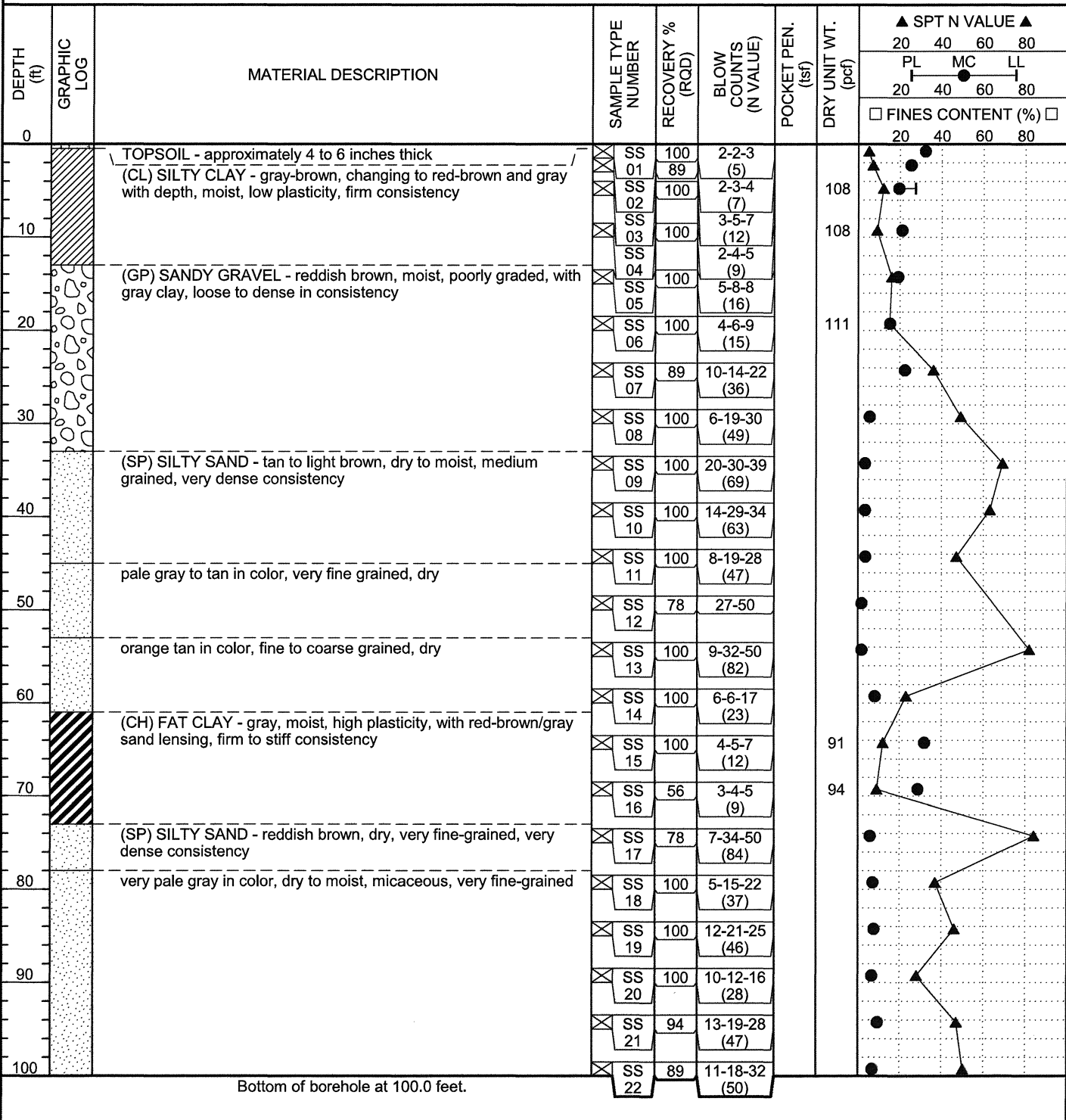


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BORING NUMBER B-02

CLIENT Paul Cloud Engineering PROJECT NAME Palma Water Tower
 PROJECT NUMBER 13330 PROJECT LOCATION Marshall Co. Kentucky
 DATE STARTED 9/5/13 COMPLETED 9/5/13 GROUND ELEVATION _____ HOLE SIZE 4.25 inches
 DRILLING CONTRACTOR BFW GROUND WATER LEVELS:
 DRILLING METHOD Hollow Stem Auger 6.25" OD AT TIME OF DRILLING --
 LOGGED BY Bret Watkins CHECKED BY Chris Farmer AT END OF DRILLING --
 NOTES _____ AFTER DRILLING --

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 500 SOUTH 17TH STREET
 PADUCAH, KY 42003
 Telephone: 270-443-1995
 Fax: 270-443-1904

BORING NUMBER B-03

CLIENT Paul Cloud Engineering PROJECT NAME Palma Water Tower
 PROJECT NUMBER 13330 PROJECT LOCATION Marshall Co. Kentucky
 DATE STARTED 9/5/13 COMPLETED 9/5/13 GROUND ELEVATION _____ HOLE SIZE 4.25 inches
 DRILLING CONTRACTOR BFW GROUND WATER LEVELS:
 DRILLING METHOD Hollow Stem Auger 6.25" OD AT TIME OF DRILLING ---
 LOGGED BY Bret Watkins CHECKED BY Chris Farmer AT END OF DRILLING ---
 NOTES _____ AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
								PL	MC	LL	
								□ FINES CONTENT (%) □			
								20	40	60	80
0		TOPSOIL - approximately 4 to 6 inches thick									
0 - 4		(CL) SILTY CLAY - gray-brown, changing to red-brown and gray with depth, moist, low plasticity, firm consistency	SS 01	100	2-1-2 (3)						
4 - 7			SS 02	100	3-3-4 (7)						
7 - 10			SS 03	100	3-3-5 (8)						
10 - 14			SS 04	100	3-3-4 (7)						
14 - 16		(SP) SILTY SAND - reddish brown, moist, coarse-grained, poorly graded, firm to very firm consistency	SS 05	100	3-7-13 (20)						
16 - 20			SS 06	100	3-4-4 (8)						

Bottom of borehole at 20.0 feet.

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Appendix D
Soil Laboratory Data



Laboratory Testing Summary

Project No: 13330

Project Name: Palma Water Tower

Date: September 12, 2013

Minimum & Maximum Moisture Content

Depth	Minimum	Maximum
0'	23.9	32.1
1.5'	25.1	26.9
4.0'	19.4	22.6
8.5'	20.0	22.3
13.5'	14.6	20.4
18.5'	11.2	15.5
23.5'	22.3	-
28.5'	5.5	-
33.5'	3.3	-
38.5'	3.4	-
43.5'	3.5	-
48.5'	1.7	-
53.5'	1.8	-
58.5'	8.0	-
63.5'	31.8	-
68.5'	28.6	-
73.5'	5.8	-
78.5'	7.1	-
83.5'	7.6	-
88.5'	6.6	-
93.5'	9.3	-
98.5'	6.7	-

Atterberg Limits

Boring	Depth	LL	PL	PI	Classification
B-02	4.0'	27	20	7	CL



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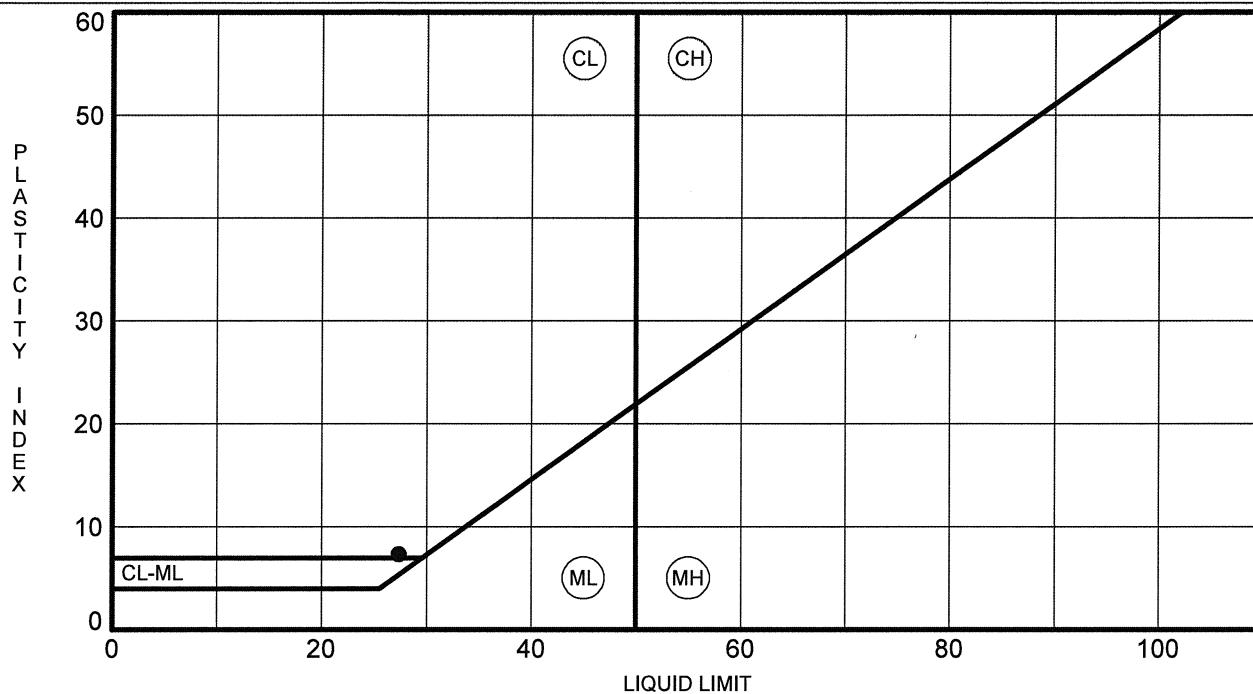
ATTERBERG LIMITS' RESULTS

CLIENT Paul Cloud Engineering

PROJECT NAME Palma Water Tower

PROJECT NUMBER 13330

PROJECT LOCATION Marshall Co. Kentucky



BOREHOLE	DEPTH	LL	PL	PI	Fines	Classification
● B-02	4.0	27	20	7		

ATTERBERG LIMITS - GINT STD US LAB.GDT - 9/12/13 08:01 - J:\2013 PROJECTS\13330 - PALMA WATER TOWER\GTY13330.GPJ





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 500 S 17th Street
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SUMMARY OF LABORATORY RESULTS

CLIENT Paul Cloud Engineering

PROJECT NAME Palma Water Tower

PROJECT NUMBER 13330

PROJECT LOCATION Marshall Co. Kentucky

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Classification	Water Content (%)	Dry Density (pcf)	Saturation (%)	Void Ratio
B-01	0.0							26.0	94.7		
B-01	1.5							25.1			
B-01	4.0							19.9	100.8		
B-01	8.5							22.3	99.7		
B-01	13.5							20.4			
B-01	18.5							15.5			
B-02	0.0							32.1			
B-02	1.5							25.2			
B-02	4.0	27	20	7				19.4	108.3		
B-02	8.5							21.0	107.6		
B-02	13.5							19.1			
B-02	18.5							15.2	111.3		
B-02	23.5							22.3			
B-02	28.5							5.5			
B-02	33.5							3.3			
B-02	38.5							3.4			
B-02	43.5							3.5			
B-02	48.5							1.7			
B-02	53.5							1.8			
B-02	58.5							8.0			
B-02	63.5							31.8	91.0		
B-02	68.5							28.6	93.9		
B-02	73.5							5.8			
B-02	78.5							7.1			
B-02	83.5							7.6			
B-02	88.5							6.6			
B-02	93.5							9.3			
B-02	98.5							6.7			
B-03	0.0							23.9			
B-03	1.5							26.9			
B-03	4.0							22.6			
B-03	8.5							20.0			
B-03	13.5							14.6			
B-03	18.5							11.2			

LAB SUMMARY - GINT STD US LAB.GDT - 9/12/13 08:03 - J:\2013 PROJECTS\13330 - PALMA WATER TOWER\GTY13330.GPJ

