

**SPECIFICATIONS FOR  
Replacement Potable Water Tank**

**for  
Calhoun County Rural Water District  
Calhoun County, Illinois**

**BOARD CHAIRMAN**

**Gary Rose**

**BOARD MEMBERS**

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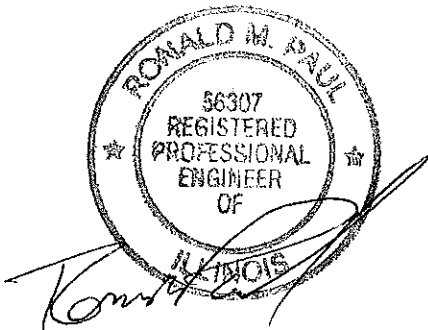
**Gary Roundcount**

**Neal Friedel**

**Adam Herter**

**Justine Schulte – Secretary/Treasurer**

**Killion Construction, Dwight Moore – Plant Operator**



**Ronald M. Paul**  
**Illinois Professional Engineer**  
**No. 56307**  
**Expires: November 30, 2019**

**Date: April 2018**  
**File: 00325-421**

*Prepared by:*



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Expires April 30, 2019



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**Calhoun County Rural Water District  
Hardin, IL  
Potable Water Storage Tank**

**ADVERTISEMENT FOR BIDS**

Sealed Bids for the construction of the Potable Water Storage Tank will be received, by Gary Rose Chairman Calhoun County Rural Water District, at 16712 Illinois River Rd, Hardin, IL, 62047, until 7:00 p.m. local time on May 15, 2018, at which time the Bids received will be publicly opened and read aloud. The Project consists of constructing a new welded steel ground storage tank to replace the existing 63,700 gallon bolted tank.

There will be NO PRE-BID meeting for this project.

Bids will be received for a single prime Contract. Bids shall be on a lump sum and unit price basis as indicated in the Bid Form.

The Issuing Office for the Bidding Documents is: Heneghan and Associates, P.C. 1004 State Highway 16, Jerseyville, IL 62052, contact Ronnie Paul – 618-498-6418 – [rmpaul@heneghanassoc.com](mailto:rmpaul@heneghanassoc.com). Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of 8:00am and 4:30pm, and may obtain copies of the Bidding Documents from the Issuing Office as described below.

Bidding Documents also may be examined at Heneghan and Associates, P.C. 1004 State Highway 16, Jerseyville, IL 62052; Southern Illinois Builders Association, 1468 Green Mount Road, O'Fallon, Illinois 62269; Dodge/Agc Plan Room, 6330 Knox Industrial Drive, St. Louis, Missouri 63139; online at Heneghan and Associates Website - [http://haengr.com/projects\\_water.html](http://haengr.com/projects_water.html) and [www.dodge.construction.com](http://www.dodge.construction.com); the office of Calhoun County Rural Water District, 16712 Illinois River Rd, Hardin, IL 62047, on Tuesdays through Fridays between the hours of 8:00a.m. and 12:00p.m.; and the office of the Engineer, Heneghan and Associates, P.C. 1004 State Highway 16, Jerseyville, IL 62052, on Mondays through Fridays between the hours of 8:00am and 4:30pm.

Bidding Documents may be obtained from the Issuing Office during the hours indicated above. Bidding Documents are available at [http://haengr.com/projects\\_water.html](http://haengr.com/projects_water.html) (as portable document format (PDF) files) for a non-refundable charge of \$ 10.00. Alternatively, printed Bidding Documents may be obtained from the Issuing Office either via in-person pick-up or via mail, upon Issuing Office's receipt of payment for the Bidding Documents. The non-refundable cost of printed Bidding Documents is \$ 50.00 per set, payable to "Heneghan and Associates, P.C.", plus a \$10.00 non-refundable shipping charge. Upon Issuing Office's receipt of payment, printed Bidding Documents will be sent via the prospective Bidder's delivery method of choice. The date that the Bidding Documents are transmitted by the Issuing Office will be considered the prospective Bidder's date of receipt of the Bidding Documents. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.



## 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. 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, after submitting its Bid and within 2 days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

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

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. Subsurface and Physical Conditions; Hazardous Environmental Conditions: None Available.

2. Geotechnical Baseline Report: No Geotechnical Baseline Report is Available.

- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

#### 4.03 *Site Visit and Testing by Bidders*

- A. Bidder 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.

#### 4.05 *Other Work at the Site*

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

### **ARTICLE 5 – BIDDER'S REPRESENTATIONS**

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

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the General Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the General Conditions, especially with respect to Technical Data in such reports and drawings;
- E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

#### **ARTICLE 6 – PRE-BID CONFERENCE – N/A**

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

## **ARTICLE 7 – INTERPRETATIONS AND ADDENDA**

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

## **ARTICLE 8 – BID SECURITY**

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.
- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

## **ARTICLE 9 – CONTRACT TIMES**

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

## **ARTICLE 10 – LIQUIDATED DAMAGES**

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

## **ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS**

- 11.01 The Contract for the Work, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt



of Bids in the case of a proposed substitute and 5 days prior in the case of a proposed "or-equal." Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner. Substitutes and "or-equal" materials and equipment may be proposed by Contractor in accordance with Paragraphs 7.04 and 7.05 of the General Conditions after the Effective Date of the Contract.

- 11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.
- 11.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

## **ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS**

- 12.01 If required by the General Conditions, certain Subcontractors, suppliers, individuals or entities to perform work specified in the project shall be identified by the apparent Successful Bidder, and any other Bidder so requested, within five days after Bid opening, and submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work if requested by Owner. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, without an increase in the Bid amount.
- 12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.
- 12.03 Contractor shall not be required to employ any Subcontractor, Suppliers, individuals, or entity against whom Contractor has reasonable objection.
- 12.04 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.06.

## **ARTICLE 13 – PREPARATION OF BID**

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

- B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."
- 13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.
- 13.03 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The partnership's address for receiving notices shall be shown.
- 13.04 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the firm's address for receiving notices shall be shown.
- 13.05 A Bid by an individual shall show the Bidder's name and address for receiving notices.
- 13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture's address for receiving notices shall be shown.
- 13.07 All names shall be printed in ink below the signatures.
- 13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.10 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

#### **ARTICLE 14 – BASIS OF BID**

##### **14.01 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.

## **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 Gary Rose.
- 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 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 19.04 In evaluating 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 sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

#### **ARTICLE 21 – SIGNING OF AGREEMENT**

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

#### **ARTICLE 22 – SALES AND USE TAXES**

- 22.01 Owner is exempt from Illinois state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Bid.

#### **ARTICLE 23 – CONTRACTS TO BE ASSIGNED**

- 23.01 Not Applicable.

#### **ARTICLE 24 – WAGE RATE REQUIREMENTS**

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

# **BID FORM**

**Calhoun County Rural Water District**

**Replacement Potable Water Tank**

**00325-421**

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## ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

***Gary Rose, Chairman***

***Calhoun County Rural Water District***

***RR 1 Box 25, Hardin, IL, 62047***

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

## ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

## ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

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

**Addendum No.**

**Addendum, Date**

_____	_____
_____	_____
_____	_____
_____	_____

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

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

D. 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, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. 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):**



TABULATION OF BIDS - CLEARWELL REPLACEMENT				
DATE & TIME: May 15, 2018 at 7:00 p.m.				
LOCATION: Calhoun County Rural Water District, Hardin, IL 62047				
PROJECT: Replacement Potable Water Tank				
H&A FILE NO.: 00325-421				
ITEMS		QUANTITY	UNIT	TOTAL PRICE
1	Bonding and Insurance	1	LS	\$
2	Shop Drawings	1	LS	\$
3	Mobilization and Demobilization	1	LS	\$
4	Site Work	1	LS	\$
5	Foundation	1	LS	\$
6	78,000 Gallon Welded Steel Tank	1	LS	\$
7	Demolition of Existing Clearwell	1	LS	\$
8	Disinfection and Sampling	1	LS	\$
<b>TOTAL BID AMOUNT</b>				<b>\$ -</b>

**Dollars**

**(In Words)**

#### **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.
- 6.03 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. Noncollusion Affidavit of Prime Bidder;
  - C. List of Proposed Subcontractors;

D. Required Bidder Qualification Statement with supporting data; and

## ARTICLE 8 – DEFINED TERMS

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

## ARTICLE 9 – BID SUBMITTAL

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

By:

*[Signature]*

*[Printed name]*

*[If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.]*

Attest:

*[Signature]*

*[Printed name]*

Title:

Submittal Date:

Address for giving notices:

Telephone Number:

Fax Number:

Contact Name and e-mail address:

Bidder's License No.:

*(where applicable)*

## BID BOND

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

BIDDER (*Name and Address*):

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

OWNER (*Name and Address*):

Calhoun County Rural Water District  
16712 Illinois River Rd, Hardin, IL, 62047

### BID

Bid Due Date:

Description (*Project Name— Include Location*): Replacement Potable Water Tank: Construction of a new welded steel ground storage tank to replace the existing 63,700 gallon bolted tank

### BOND

Bond Number:

Date:

Penal sum \_\_\_\_\_ \$ \_\_\_\_\_  
(Words) (Figures)

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

**BIDDER**

**SURETY**

(Seal)

(Seal)

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

By:

Signature

By:

Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest:

Signature

Attest:

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.

## QUALIFICATIONS STATEMENT

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

**1. SUBMITTED BY:**

Official Name of Firm:

Address:

**2. SUBMITTED TO:**

**3. SUBMITTED FOR:**

Owner:

Project Name:

**TYPE OF WORK:**

**4. CONTRACTOR'S CONTACT INFORMATION**

Contact Person:

Title:

Phone:

Email:

**5. AFFILIATED COMPANIES:**

Name:

Address:

**6. TYPE OF ORGANIZATION:**

☐ SOLE PROPRIETORSHIP

Name of Owner:

Doing Business As:

Date of Organization:

☐ PARTNERSHIP

Date of Organization:

Type of Partnership:

Name of General Partner(s):

☐ CORPORATION

State of Organization:

Date of Organization:

Executive Officers:

- President:

- Vice President(s):

- Treasurer:

- Secretary:

☐ LIMITED LIABILITY COMPANY

State of Organization:

\_\_\_\_\_

Date of Organization:

\_\_\_\_\_

Members:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

☐ JOINT VENTURE

Sate of Organization:

\_\_\_\_\_

Date of Organization:

\_\_\_\_\_

Form of Organization:

\_\_\_\_\_

Joint Venture Managing Partner

- Name:

\_\_\_\_\_

- Address:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Joint Venture Managing Partner

- Name:

\_\_\_\_\_

- Address:

\_\_\_\_\_

\_\_\_\_\_

Joint Venture Managing Partner

- Name:

\_\_\_\_\_

- Address:

\_\_\_\_\_

\_\_\_\_\_

**7. LICENSING**

Jurisdiction: \_\_\_\_\_

Type of License: \_\_\_\_\_

License Number: \_\_\_\_\_

Jurisdiction: \_\_\_\_\_

Type of License: \_\_\_\_\_

License Number: \_\_\_\_\_

**8. CERTIFICATIONS**

**CERTIFIED BY:**

Disadvantage Business Enterprise: \_\_\_\_\_

Minority Business Enterprise: \_\_\_\_\_

Woman Owned Enterprise: \_\_\_\_\_

Small Business Enterprise: \_\_\_\_\_

Other ( \_\_\_\_\_ ): \_\_\_\_\_

**9. BONDING INFORMATION**

Bonding Company: \_\_\_\_\_

Address: \_\_\_\_\_

Bonding Agent: \_\_\_\_\_

Address: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Aggregate Bonding Capacity: \_\_\_\_\_

Available Bonding Capacity as of date of this submittal: \_\_\_\_\_

EJCDC® C-451, Qualifications Statement.

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and American Society of Civil Engineers. All rights reserved.



**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 Name: Address: Telephone:	Design Engineer Name: Company: Telephone:	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

## SCHEDULE B

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

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

# SCHEDULE B

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

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





# NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of \_\_\_\_\_)

County of \_\_\_\_\_) ss.

\_\_\_\_\_, being first duly sworn, deposes and says that:

1. He is \_\_\_\_\_ of \_\_\_\_\_  
the Bidder that has submitted the attached Bid;
2. He is fully informed respecting the preparation and contents of the attached Bid  
and of all pertinent circumstances respecting such Bid;
3. Such Bid is genuine and is not a collusive or sham Bid;
4. Neither the said Bidder nor any of its officers, partners, owners, agents,  
representatives, employees or parties in interest, including this affiant, has in any  
way colluded, conspired, connived, or agreed, directly or indirectly, with any other  
Bidder, firm or person to submit a collusive or sham Bid in connection with the  
Contract for which the attached Bid has been submitted or to refrain from bidding  
in connection with such Contract, or has in any manner, directly or indirectly,  
sought by agreement or collusion or communication or conference with any  
other Bidder, firm or person to fix the price or prices in the attached Bid or of any  
other Bidder, or to fix any overhead, profit or cost element of the Bid price or the  
Bid price of any other Bidder, or to secure through any collusion, conspiracy,  
connivance or unlawful agreement any advantage against the Calhoun County  
Rural Water District (Local Public Agency) or any person interested in the  
proposed Contract; and
5. The price or prices quoted in the attached Bid are fair and proper and are not  
tainted by any collusion, conspiracy, connivance or unlawful agreement on the part  
of the Bidder or any of its agents, representatives, owners, employees or parties in  
interest, including this affiant.

(Signed) \_\_\_\_\_

\_\_\_\_\_  
(Name & Title)

Subscribed and sworn to before me this

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_

\_\_\_\_\_  
(Notary Public)

My Commission Expires: \_\_\_\_\_



## NOTICE OF AWARD

---

Date of Issuance:

Owner: Calhoun County Rural Water District      Owner's Contract No.:  
Engineer: Heneghan and Associates, P.C.      Engineer's Project No.: 00325-421  
Project: Replacement Potable Water Tank      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:

Replacement Potable Water Tank: Construction of a new welded steel ground storage tank to replace the existing 63,700 gallon bolted tank.

The Contract Price of the awarded Contract is: \$            [note if subject to unit prices, or cost-plus]

Two (2) 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.

0 sets 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 receipt of this Notice of Award:

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

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

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

---

Owner:

Authorized Signature

By:

Title:

Copy: Engineer



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

THIS AGREEMENT is by and between Calhoun County Rural 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:

**ARTICLE 2 – THE PROJECT**

- 2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Replacement Potable Water Tank: Construction of a new welded steel ground storage tank to replace the existing 63,700 gallon bolted tank.

**ARTICLE 3 – ENGINEER**

- 3.01 The Project has been designed by Heneghan and Associates, P.C.
- 3.02 The Owner has retained Heneghan and Associates, P.C. ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

**ARTICLE 4 – CONTRACT TIMES**

- 4.01 *Time of the Essence*
- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 4.02 *Contract Times: Dates*
- A. The Work will be substantially completed within 120 days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and the work will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before \_\_\_\_.
- 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 \$800.00 or actual damages whichever is greater 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 Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$800.00 or actual damages whichever is greater 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. Milestones: Contractor shall pay Owner \$800.00 or actual damages whichever is greater for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved.

#### 4.04 *Special Damages*

[Deleted]

### ARTICLE 5 – CONTRACT PRICE

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

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

### ARTICLE 6 – PAYMENT PROCEDURES

#### 6.01 *Submittal and Processing of Payments*

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

#### 6.02 *Progress Payments; Retainage*

- A. Owner shall review and act upon progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 3<sup>rd</sup> Tuesday 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. 90 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 of the entire construction to be provided under the Contract Documents, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 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 maximum legal rate.

### 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. Contractor 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 General Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the General Conditions, especially with respect to Technical Data in such reports and drawings.
  - 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; and 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 [REDACTED], inclusive).
  - 2. Performance bond (pages [REDACTED] to [REDACTED], inclusive).
  - 3. Payment bond (pages [REDACTED] to [REDACTED], inclusive).
  - 4. Other bonds.
    - a. [REDACTED] (pages [REDACTED] to [REDACTED], inclusive).
  - 5. General Conditions (pages [REDACTED] to [REDACTED], inclusive).
  - 6. Specifications as listed in the table of contents of the Project Manual.
  - 7. Drawings (not attached but incorporated by reference) consisting of [REDACTED] sheets with each sheet bearing the following general title: [REDACTED] [or] the Drawings listed on the attached sheet index.
  - 8. Addenda (numbers [REDACTED] to [REDACTED], inclusive).
  - 9. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid (pages [REDACTED] to [REDACTED], 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.

### 10.02 *Assignment of Contract*

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

### 10.03 *Successors and Assigns*

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

### 10.04 *Severability*

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

### 10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
  - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
  - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

#### 10.06 *Other Provisions*

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

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.)*



## PERFORMANCE BOND

CONTRACTOR *(name and address):*

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

OWNER *(name and address):*

Calhoun County Rural Water District  
16712 Illinois River Rd, Hardin, IL, 62047

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):* Construction of a new welded steel ground storage tank to replace the existing 63,700 gallon bolted tank

### 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

\_\_\_\_\_  
Surety's Name and Corporate 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:





## PAYMENT BOND

CONTRACTOR *(name and address)*:

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

OWNER *(name and address)*:

Calhoun County Rural Water District  
16712 Illinois River Rd, Hardin, IL, 62047

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: Construction of a new welded steel ground storage tank to replace the existing 63,700 gallon bolted tank

### 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

\_\_\_\_\_  
Surety's Name and Corporate 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;
    7. The total amount of previous payments received by the Claimant; and
  - 16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
  - 16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
  - 16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
  - 16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
18. Modifications to this Bond are as follows:
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.



**NOTICE TO PROCEED**

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Owner:	Calhoun County Rural Water District	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:	Heneghan and Associates, P.C.	Engineer's Project No.:	00325-421
Project:	Replacement Potable Water Tank	Contract Name:	
		Effective Date of Contract:	

---

**TO CONTRACTOR:**

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

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, [the date of Substantial Completion is \_\_\_\_\_, and the date of readiness for final payment is \_\_\_\_\_] *or* [the number of days to achieve Substantial Completion is \_\_\_\_\_, and the number of days to achieve readiness for final payment is \_\_\_\_\_].

Before starting any Work at the Site, Contractor must comply with the following:  
*[Note any access limitations, security procedures, or other restrictions]*

---

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer



# 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. [The Change Order form to be used on this Project is EJCDC C-941.](#)
  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. §§5501 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.~~ N/A
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 these Standard General Conditions~~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. A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

49. Abnormal Weather Conditions—Conditions of extreme or unusual weather for a given region, elevation, or season as determined by Engineer. Extreme or unusual weather that is typical for a given region, elevation, or season should not be considered Abnormal Weather Conditions.

## 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 Standard General Conditions~~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 Standard General Conditions~~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 Documents(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~~; 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. No Reports of explorations or tests of subsurface conditions at or adjacent to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to the Owner.~~

~~B.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.

~~C.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.

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

1. ~~Report dated-[ DATE ]. The Technical Data contained in such report upon whose accuracy Contractor may rely are [here indicate any such Technical Data, or state "none."] [or] [those indicated in the definition of Technical Data in the General Conditions.]~~



~~Report dated [May 2, 2000, prepared by Ecks, Wye and Tsze, Inc., Baltimore, Md., entitled: "Tests of Water Quality in Mixer River at Pembrig, NJ", consisting of 26 pages.] The Technical Data contained in such report upon whose accuracy Contractor may rely are [here indicate any such Technical Data, or state "none."] [or] [as indicated in the definition of Technical Data in the General Conditions.]~~

- D. The following drawings of physical conditions relating to existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities) are known to Owner:
- a. Drawings dated [March 2, 2000, of Route 24A Overpass Abutment, prepared by Dea & Associates, Inc., Wilmington, Del., entitled: "Record Drawings: Route No. 24A Overpass Abutment", consisting of 12 sheets numbered 001 to 012, inclusive.] None of the contents of such drawings is Technical Data on whose accuracy Contractor may
- E. may examine copies of reports and drawings identified immediately above that were not included with the Bidding Documents at [redacted] [insert location] during regular business hours, or may request copies from Engineer, at the cost of reproduction

#### 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 Standard General Conditions~~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: No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

B. Reliance by Contractor on Technical Data Authorized: Not Used.

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

Technical Data contained in such reports and drawings.

The following reports regarding Hazardous Environmental Conditions at the Site are known to Owner:

Report dated December 10, 2012, prepared by Eph Environmental Consultants, Princeton, N.J., entitled: "Results of Investigation of Conditions at Iron Foundry at South and Front Streets, Pembrig, NJ", consisting of 27 pages. The Technical Data contained in such report upon whose accuracy Contractor may rely are [here indicate any such Technical Data or state "none."]

The following drawings regarding Hazardous Environmental Conditions at the Site are known to Owner:

Drawings dated November 27, 2002, prepared by Eph Environmental Consultants, Princeton, N.J., entitled: "Iron Foundry Site Conditions", consisting of 5 sheets numbered [ ] to [ ], inclusive.

- 1) All of the information in such drawings constitutes Technical Data on whose accuracy Contractor may rely, except for [ ] appearing on Drawing No. [ ] and [ ] appearing on Drawing No. [ ].

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.H 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~~ 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.
- 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>1,000,000</u>
Bodily injury by disease, aggregate	\$ <u>1,000,000</u>
Employer's Liability:	
Bodily injury, each accident	\$ <u>100,000</u>
Bodily injury by disease, each employee	\$ <u>100,000</u>
Bodily injury/disease aggregate	\$ <u>500,000</u>
<del>For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either</del>	<del>\$ _____</del>

~~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 \$ 1,000,000

Personal and Advertising Injury \$ 1,000,000

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

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:

Each person \$ 1,000,000

Each accident \$ 1,000,000

Property Damage:

Each accident \$ 1,000,000

~~for~~

~~Combined Single Limit of~~ \$ \_\_\_\_\_

4. Excess or Umbrella Liability:

Per Occurrence \$ 5,000,000

General Aggregate \$ 5,000,000

5. Contractor's Pollution Liability:

Each Occurrence \$ 1,000,000

General Aggregate \$ 1,000,000



If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract

6. Additional Insureds: Owner and Engineer

7. Contractor's Professional Liability:

Each Claim	\$ <u>N/A</u>
Annual Aggregate	\$ <u>N/A</u>

8. *Waiver of Subrogation – ~~{OWNER}~~Calhoun County Rural Water District and Heneghan and Associates, P.C. shall be additional insured on a direct primary basis on the Waiver of Subrogation*

#### 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; and 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.

B.C. 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 under Article 15.

#### 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-; and
      - 5) Must be compatible with existing components and equipment.



- 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 consider 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. The Contractor shall not award work valued at more than fifty percent of the Contract Price to Subcontractor(s), without prior written approval of the 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.
- B. Owner is exempt from payment of sales and compensating use taxes of the State of Illinois and of cities and counties thereof on all materials to be incorporated into the Work.
  - 1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
  - ~~1-2.~~ Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by the Contractor, or to supplies or materials not incorporated into 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 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~~.

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.
- 1-8. Authorize Owner to occupy the Project in whole or in part.

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 11.01.C.2.a and 11.01.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.
- B.C. The Contractor shall be responsible for the cost of any additional expenses occurred by the Owner as a result of the time extension, including but not limited to Engineering Services, Resident Project Representative, Owner's Representative, Legal, Administrative, any other costs incurred, etc.

#### 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. ~~[Deleted]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. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions: 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. If the extended price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 25 percent from the quantity of such item indicated in the Agreement; and 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. If there is no corresponding adjustment with respect to any other item of Work; and there is no corresponding adjustment with respect to any other item of Work; and
  - 3. If Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may submit a Change Proposal, or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, Owner may make a Claim, seeking an adjustment in the Contract Price. 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 special 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. No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage, or invest the retainage for the benefit of the Contractor. The Application for Payment form to be used on this Project is EJCDC C-620.
- 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.~~
1. The Application for Payment with Engineer's recommendations will be presented to the Owner and Agency for consideration. If both the Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become due twenty (20) days after the application is approved at the Owner's regular meeting, and the Owner will make payment to the 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.~~ no later than 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.

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.

- B-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.

- ~~C-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.
- ~~D-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.
- ~~E-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 these Standard General Conditions~~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 these Standard General Conditions~~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.

#### 18.09 Tribal Sovereignty

- A. No provision of this Agreement will be construed by any of the signatories as abridging or debilitating any sovereign powers of the {insert name of Tribe} Tribe; affecting the trust-beneficiary relationship between the Secretary of the Interior, Tribe, and Indian landowner(s); or interfering with the government-to-government relationship between the United States and the Tribe.

### ARTICLE 19 – FEDERAL REQUIREMENTS

#### 19.01 Agency Not a Party

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

#### 19.02 Contract Approval

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

#### 19.03 Conflict of Interest

- A. Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer. Owner's officers, employees, or agents shall not engage in the

award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

#### 19.04 Gratuities

- A. If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.
- B. In the event this Contract is terminated as provided in paragraph 19.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

#### 19.05 Audit and Access to Records

- A. Owner, Agency, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the Engineer which are pertinent to the Agreement, for the purpose of making audits, examinations, excerpts, and transcriptions. Engineer shall maintain all required records for three years after final payment is made and all other pending matters are closed.

#### 19.06 Small, Minority, and Women's Businesses

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

#### 19.07 Anti-Kickback

- A. Contractor shall comply with the Copeland Anti-Kickback Act (18 USC 874 and 40 USC 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or

Grants of the United States"). The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

#### 19.08 Clean Air and Pollution Control Acts

- A. If this Contract exceeds \$100,000, Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h) and 42 USC 7401et. seq.), section 508 of the Clean Water Act (33 U.S.C. 1368) and Federal Water Pollution Control Act (33 USC 1251 et seq.), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15) is required. Contractor will report violations to the Agency and the Regional Office of the EPA.

#### 19.09 State Energy Policy

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

#### 19.10 Equal Opportunity Requirements

- A. If this Contract exceeds \$10,000, Contractor shall comply with Executive Order 11246, "Equal Employment Opportunity," as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."
- B. Contractor's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical area where the Contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting Contractor's goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.
- C. Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the Contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the Contract is to be performed.

#### 19.11 Restrictions on Lobbying

- A. Contractor and each subcontractor shall comply with Restrictions on Lobbying (Public Law 101-121, Section 319) as supplemented by applicable Agency regulations. This Law applies to the recipients of contracts and subcontracts that exceed \$100,000 at any tier under a Federal loan that exceeds \$150,000 or a Federal grant that exceeds \$100,000. If applicable, Contractor must complete a certification form on lobbying activities related to a specific

Federal loan or grant that is a funding source for this Contract. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 USC 1352. Each tier shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Certifications and disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

#### 19.12 Environmental Requirements

When constructing a Project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental conditions:

- A. Wetlands – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.
- B. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.
- C. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the State Historic Preservation Officer (SHPO).
- D. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.
- E. Mitigation Measures – If the project had an Environmental Report, Environmental Assessment, or Environmental Impact Statement to meet the requirements of the National Environmental Policy Act, compliance with the mitigation measures, if any, in that document are hereby included as a condition of this contract. {These mitigation measures are as follows: **None.**}

### ARTICLE 20 – STATE OF ILLINOIS REQUIREMENTS

#### 20.01 State Prevailing Wage Rate Requirements

- A. The Contractor shall be required to pay a minimum of the State Prevailing Wage Rates for the project area, in accordance with Illinois State Law.

#### 20.02 Employment of Illinois Workers on Public Works

- A. If at the time this contract is executed, or if during the term of this contract, there is excessive unemployment in Illinois as defined in the employment of Illinois Workers on Public Works Act,

30ILCS 570-0.01 et seq., as two consecutive months of unemployment exceeding 5%, the Contractor agrees to employ Illinois Laborers. An Illinois Laborer is defined as any person who has resided in Illinois for at least thirty (30) days and intends to become or remain an Illinois resident.

20.03 Substance Abuse Prevention on Public Works Projects Act

- A. The Contractor shall be required to comply with the Substance Abuse Prevention on Public Works Projects Act (Public Act 095-0635; HB 1855). As such, the Contractor may be required to sign the Owner's Substance Abuse Prevention Program Certification.

**ARTICLE 21 – OTHER REQUIREMENTS**

21.01 Certified Payroll

- A. Contractor shall submit Certified Payroll to the Owner with each pay request.

**Prevailing Wage rates  
for Calhoun County  
effective Sept. 1, 2017**

Trade Title	Region	Type	Class	Base Wage	Fore- man Wage	M-F OT	OSA	OSH	H/W	Pension	Vacation	Training
ASBESTOS ABT-GEN	ALL	ALL		31.09	31.59	1.5	1.5	2	6.30	14.15	0.00	0.80
ASBESTOS ABT-MEC	ALL	BLD		31.56	32.56	1.5	1.5	2	8.25	3.00	0.00	0.00
BOILERMAKER	ALL	BLD		34.34	36.84	1.5	1.5	2	7.07	22.13	1.50	0.71
BRICK MASON	ALL	BLD		32.73	34.65	1.5	1.5	2	8.35	11.24	2.00	0.80
CARPENTER	ALL	ALL		37.35	38.85	1.5	1.5	2	7.00	9.25	0.00	0.50
CEMENT MASON	ALL	ALL		33.25	34.25	1.5	1.5	2	9.90	13.50	0.00	0.30
CERAMIC TILE FNSHER	ALL	BLD		27.48	0.00	1.5	1.5	2	6.45	5.70	0.00	0.58
ELECTRIC PWR EQMT OP	ALL	ALL		42.62	0.00	1.5	1.5	2	7.25	11.94	0.00	0.43
ELECTRIC PWR GRNDMAN	ALL	ALL		27.68	0.00	1.5	1.5	2	7.25	7.75	0.00	0.28
ELECTRIC PWR LINEMAN	ALL	ALL		49.98	52.35	1.5	1.5	2	7.25	14.00	0.00	0.50
ELECTRIC PWR TRK DRV	ALL	ALL		32.04	0.00	1.5	1.5	2	7.25	8.97	0.00	0.32
ELECTRICIAN	ALL	ALL		41.15	43.40	1.5	1.5	2	9.00	11.14	0.00	0.21
ELECTRONIC SYS TECH	ALL	BLD		30.85	32.85	1.5	1.5	2	9.00	6.70	0.00	0.40
FLOOR LAYER	ALL	BLD		32.33	33.08	1.5	1.5	2	7.00	9.25	0.00	0.50
GLAZIER	ALL	BLD		35.91	37.91	1.5	1.5	2	6.25	9.16	0.00	0.68
HT/FROST INSULATOR	ALL	BLD		38.42	39.42	1.5	1.5	2	9.65	12.11	3.90	0.64
IRON WORKER	ALL	ALL		33.43	34.93	1.5	1.5	2	9.46	14.65	0.00	0.60
LABORER	ALL	ALL		30.59	31.09	1.5	1.5	2	6.30	14.15	0.00	0.80
MACHINIST	ALL	BLD		45.35	47.85	1.5	1.5	2	7.26	8.95	1.85	0.00
MARBLE FINISHERS	ALL	BLD		27.48	0.00	1.5	1.5	2	6.45	5.70	0.00	0.58
MILLWRIGHT	ALL	ALL		37.35	38.85	1.5	1.5	2	7.00	9.25	0.00	0.50
OPERATING ENGINEER	ALL	BLD	1	37.70	40.70	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	BLD	2	36.57	40.70	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	BLD	3	32.09	40.70	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	BLD	4	32.15	40.70	1.5	1.5	2	12.35	18.00	0.00	1.00

OPERATING ENGINEER	ALL	BLD	5	31.82	40.70	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	BLD	6	40.25	40.70	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	BLD	7	40.55	40.70	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	BLD	8	40.83	40.70	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	BLD	9	38.70	40.70	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	HWY	1	36.20	39.20	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	HWY	2	35.07	39.20	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	HWY	3	30.59	39.20	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	HWY	4	30.65	39.20	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	HWY	5	30.32	39.20	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	HWY	6	38.75	39.20	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	HWY	7	39.05	39.20	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	HWY	8	39.33	39.20	1.5	1.5	2	12.35	18.00	0.00	1.00
OPERATING ENGINEER	ALL	HWY	9	37.20	39.20	1.5	1.5	2	12.35	18.00	0.00	1.00
PAINTER	ALL	BLD		31.25	32.75	1.5	1.5	2	5.90	10.52	0.00	0.70
PAINTER	ALL	HWY		32.45	33.95	1.5	1.5	2	5.90	10.52	0.00	0.70
PAINTER OVER 30FT	ALL	BLD		32.25	33.75	1.5	1.5	2	5.60	9.77	0.00	0.70
PAINTER PWR EQMT	ALL	BLD		32.25	33.75	1.5	1.5	2	5.90	10.52	0.00	0.70
PAINTER PWR EQMT	ALL	HWY		33.45	34.95	1.5	1.5	2	5.90	10.52	0.00	0.70
PILEDRIIVER	ALL	ALL		37.35	38.85	1.5	1.5	2	7.00	9.25	0.00	0.50
PIPEFITTER	ALL	BLD		41.41	43.48	1.5	2	2	5.00	8.75	0.00	0.35
PLASTERER	ALL	BLD		31.75	32.75	1.5	1.5	2	9.90	9.40	0.00	0.30
PLUMBER	ALL	BLD		41.41	43.48	1.5	2	2	5.00	8.75	0.00	0.35
ROOFER	ALL	BLD		32.00	34.00	1.5	1.5	2	9.00	8.15	0.00	0.39
SHEETMETAL WORKER	ALL	BLD		28.13	30.13	1.5	1.5	2	7.14	12.21	0.00	0.59
SPRINKLER FITTER	ALL	BLD		42.31	45.31	1.5	2	2	8.72	12.95	0.00	1.10
TERRAZZO FINISHER	ALL	BLD		31.24	0.00	1.5	1.5	2	6.45	4.37	0.00	0.42
TERRAZZO MASON	ALL	BLD		32.53	32.83	1.5	1.5	2	6.45	5.87	0.00	0.45
TRUCK DRIVER	ALL	ALL	1	36.26	40.15	1.5	1.5	2	12.16	6.10	0.00	0.25
TRUCK DRIVER	ALL	ALL	2	36.77	40.15	1.5	1.5	2	12.16	6.10	0.00	0.25
TRUCK DRIVER	ALL	ALL	3	37.05	40.15	1.5	1.5	2	12.16	6.10	0.00	0.25

TRUCK DRIVER	ALL	ALL	4	37.36	40.15	1.5	1.5	2	12.16	6.10	0.00	0.25
TRUCK DRIVER	ALL	ALL	5	38.35	40.15	1.5	1.5	2	12.16	6.10	0.00	0.25
TRUCK DRIVER	ALL	O&C	1	29.01	32.12	1.5	1.5	2	12.16	6.10	0.00	0.25
TRUCK DRIVER	ALL	O&C	2	29.42	32.12	1.5	1.5	2	12.16	6.10	0.00	0.25
TRUCK DRIVER	ALL	O&C	3	29.64	32.12	1.5	1.5	2	12.16	6.10	0.00	0.25
TRUCK DRIVER	ALL	O&C	4	29.89	32.12	1.5	1.5	2	12.16	6.10	0.00	0.25
TRUCK DRIVER	ALL	O&C	5	30.68	32.12	1.5	1.5	2	12.16	6.10	0.00	0.25

#### Legend

M-F OT Unless otherwise noted, OT pay is required for any hour greater than 8 worked each day, Mon through Fri. The number listed is the multiple of the base wage.

OSA Overtime pay required for every hour worked on Saturdays

OSH Overtime pay required for every hour worked on Sundays and Holidays

H/W Health/Welfare benefit

#### Explanations CALHOUN COUNTY

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day and Veterans Day in some classifications/counties. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration. If in doubt, please check with IDOL.

Oil and chip resealing (O&C) means the application of road oils and liquid asphalt to coat an existing road surface, followed by application of aggregate chips or gravel to coated surface, and subsequent rolling of material to seal the surface.

#### EXPLANATION OF CLASSES

ASBESTOS- GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

ASBESTOS- MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.



#### CERAMIC TILE FINISHER AND MARBLE FINISHER

The handling, at the building site, of all sand, cement, tile, marble or stone and all other materials that may be used and installed by [a] tile layer or marble mason. In addition, the grouting, cleaning, sealing, and mixing on the job site, and all other work as required in assisting the setter. The term "Ceramic" is used for naming the classification only and is in no way a limitation of the product handled. Ceramic takes into consideration most hard tiles.

#### ELECTRONIC SYSTEMS TECHNICIAN

Installation, service and maintenance of low-voltage systems which utilizes the transmission and/or transference of voice, sound, vision, or digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, background/foreground music, intercom and telephone interconnect, field programming, inventory control systems, microwave transmission, multi-media, multiplex, radio page, school, intercom and sound burglar alarms and low voltage master clock systems.

Excluded from this classification are energy management systems, life safety systems, supervisory controls and data acquisition systems not intrinsic with the above listed systems, fire alarm systems, nurse call systems and raceways exceeding fifteen feet in length.

#### OPERATING ENGINEER - BUILDING

GROUP I. Cranes, Dragline, Shovels, Skimmer Scoops, Clamshells or Derrick Boats, Pile Drivers, Crane-Type Backhoes, Asphalt Plant Operators, Concrete Plant Operators, Dredges, Asphalt Spreading Machines, All Locomotives, Cable Ways or Tower Machines, Hoists, Hydraulic Backhoes, Ditching Machines or Backfiller, Cherrypickers, Overhead Cranes, Roller - Steam or Gas, Concrete Pavers, Excavators, Concrete Breakers, Concrete Pumps, Bulk Cement Plants, Cement Pumps, Derrick-Type Drills, Boat Operators, Motor Graders or Pushcats, Scoops or Tournapulls, Bulldozers, Endloaders or Fork Lifts, Power Blade or Elevating Graders, Winch Cats, Boom or Winch Trucks or Boom Tractors, Pipe Wrapping or Painting Machines, Asphalt Plant Engineer, Journeyman Lubricating Engineer, Drills (other than Derrick Type), Mud Jacks, or Well Drilling Machines, Boring Machines or Track Jacks, Mixers, Conveyors (Two), Air Compressors (Two), Water Pumps regardless of size (Two), Welding Machines (Two), Siphons or Jets (Two), Winch Heads or Apparatuses (Two), Light Plants (Two), All Tractors regardless of size (straight tractor only), Fireman on Stationary Boilers, Automatic Elevators, Form Grading Machines, Finishing Machines, Power Sub-Grader or Ribbon Machines, Longitudinal Floats, Distributor Operators on Trucks, Winch Heads or Apparatuses (One), Mobil Track air and heaters (two to five), Heavy Equipment Greaser, Relief Operator, Assistant Master Mechanic and Heavy Duty Mechanic, self-propelled concrete saws of all types and sizes with their attachments, gob-hoppers, excavators all sizes, the repair and greasing of all diesel hammers, the operation and set-up of bidwells, water blasters of all sizes and their clutches, hydraulic jacks where used for hoisting, operation of log skidders, iceolators used on and off of pipeline, condor cranes, bow boats, survey boats, bobcats and all their attachments, skid steer loaders and all their attachments, creter cranes, batch plants, operator (all sizes), self propelled roto mills, operation of conveyor systems of any size and any configuration, operation, repair and service of all vibratory hammers, all power pacs and their controls regardless of location, curtains or brush burning machines, stump cutter

machines, Nail launchers when mounted on a machine or self-propelled, operation of con-cover machines, and all Operators except those listed below).

GROUP II. Assistant Operators.

GROUP III. Air Compressors (One), Water Pumps, regardless of Size (One), Waterblasters (one), Welding Machine (One), Mixers (One Bag), Conveyor (One), Sphon or Jet (One), Light Plant (One), Heater (One), Immobile Track Air (One), and Self Propelled Walk-Behind Rollers.

GROUP IV. Asphalt Spreader Oilers, Fireman on Whirlies and Heavy Equipment Oilers, Truck Cranes, Dredges, Monigans, Large Cranes - (Over 65-ton rated capacity) Concrete Plant Oiler, Blacktop Plant Oiler, and Creter Crane Oiler (when required).

GROUP V. Oiler.

GROUP VI. Operators on equipment with Booms, including jibs, 100 feet and over, and less than 150 feet long.

GROUP VII. Operators on equipment with Booms, including jibs, 150 feet and over, and less than 200 feet long.

GROUP VIII. Operators on Equipment with Booms, including jibs, 200 feet and over; Tower Cranes; and Whirlie Cranes.

GROUP IX. Master Mechanic

OPERATING ENGINEERS- Highway

GROUP I. Cranes, Dragline, Shovels, Skimmer Scoops, Clamshells or Derrick Boats, Pile Drivers, Crane-Type Backhoes, Asphalt Plant Operators, Concrete Plant Operators, Dredges, Asphalt Spreading Machines, All Locomotives, Cable Ways or Tower Machines, Hoists, Hydraulic Backhoes, Ditching Machines or Backfiller, Cherrypickers, Overhead Cranes, Roller - Steam or Gas, Concrete Pavers, Excavators, Concrete Breakers, Concrete Pumps, Bulk Cement Plants, Cement Pumps, Derrick-Type Drills, Boat Operators, Motor Graders or Pushcats, Scoops or Tournapulls, Bulldozers, Endloaders or Fork Lifts, Power Blade or Elevating Graders, Winch Cats, Boom or Winch Trucks or Boom Tractors, Pipe Wrapping or Painting Machines, Asphalt Plant Engineer, Journeyman Lubricating Engineer, Drills (other than Derrick Type), Mud Jacks, Well Drilling Machines, Boring Machines, Track Jacks, Mixers, Conveyors (Two), Air Compressors (Two), Water Pumps regardless of size (Two), Welding Machines (Two), Sphons or Jets (Two), Winch Heads or Apparatuses (Two), Light Plants (Two), All Tractors regardless of size (straight tractor only), Fireman on Stationary Boilers, Automatic Elevators, Form Grading Machines, Finishing Machines, Power Sub-Grader or Ribbon Machines, Longitudinal Floats, Distributor Operators on Trucks, Winch Heads or Apparatuses (One), Mobil Track air and heaters (two to five), Heavy Equipment Greaser, Relief Operator, Assistant Master Mechanic and Heavy Duty Mechanic, self-propelled concrete saws of all types and sizes with their attachments, gob-hoppers, excavators all sizes, the repair and greasing of all diesel hammers, the operation and set-up of bidwells, water blasters of all sizes and their dutches, hydraulic jacks where used for hoisting, operation of log skidders, iceolators used on and off of pipeline,

condor cranes, bow boats, survey boats, bobcats and all their attachments, skid steer loaders and all their attachments, creter cranes, batch plants, operator (all sizes), self propelled roto mills, operation of conveyor systems of any size and any configuration, operation, repair and service of all vibratory hammers, all power pacs and their controls regardless of location, curtains or brush burning machines, stump cutter machines, Nail launchers when mounted on a machine or self-propelled, operation of con-cover machines, and all Operators (except those listed below).

GROUP II. Assistant Operators.

GROUP III. Air Compressors (One), Water Pumps, regardless of Size (One), Waterblasters (one), Welding Machine (One), Mixers (One Bag), Conveyor (One), Sphon or Jet (One), Light Plant (One), Heater (One), Immobile Track Air (One), and Self Propelled Walk-Behind Rollers.

GROUP IV. Asphalt Spreader Oilers, Fireman on Whirlies and Heavy Equipment Oilers, Truck Cranes, Dredges, Monigans, Large Cranes - (Over 65-ton rated capacity) Concrete Plant Oiler, Blacktop Plant Oiler, and Creter Crane Oiler (when required).

GROUP V. Oiler.

GROUP VI. Operators on equipment with Booms, including jibs, 100 feet and over, and less than 150 feet long.

GROUP VII. Operators on equipment with Booms, including jibs, 150 feet and over, and less than 200 feet long.

GROUP VIII. Operators on Equipment with Booms, including jibs, 200 feet and over; Tower Cranes; and Whirlie Cranes.

GROUP IX. Mechanic

TRUCK DRIVER- BUILDING, HEAVY AND HIGHWAY CONSTRUCTION Class 1. Drivers on 2 axle trucks hauling less than 9 ton. Air compressor and welding machines and brooms, including those pulled by separate units, truck driver helpers, warehouse employees, mechanic helpers, greasers and tiremen, pickup trucks when hauling materials, tools, or workers to and from and on-the-job site, and fork lifts up to 6,000 lb. capacity.

Class 2. Two or three axle trucks hauling more than 9 ton but hauling less than 16 ton. A-frame winch trucks, hydrolift trucks, vactor trucks or similar equipment when used for transportation purposes. Fork lifts over 6,000 lb. capacity, winch trucks, four axle combination units, and ticket writers.

Class 3. Two, three or four axle trucks hauling 16 ton or more. Drivers on water pulls, articulated dump trucks, mechanics and working forepersons, and dispatchers. Five axle or more combination units.

Class 4. Low Boy and Oil Distributors.

Class 5. Drivers who require special protective clothing while employed on hazardous waste work.

#### TRUCK DRIVER- OIL AND CHIP RESEALING ONLY.

This shall encompass laborers, workers and mechanics who drive contractor or subcontractor owned, leased, or hired pickup, dump, service, or oil distributor trucks. The work includes transporting materials and equipment (including but not limited to, oils, aggregate supplies, parts, machinery and tools) to or from the job site; distributing oil or liquid asphalt and aggregate; stock piling material when in connectin with the actual oil and chip contract. The Truck Driver (Oil & Chip Resealing) wage classification does not include supplier delivered materials.

#### TERRAZZO FINISHER

The handling of all materials used for Mosaic and Terrazzo work including preparing, mixing by hand, by mixing machine or transporting of pre-mixed materials and distributing with shovel, rake, hoe, or pail, all kinds of concrete foundations necessary for Mosaic and Terrazzo work, all cement terrazzo, magnesite terrazzo, Do-O-Tex terrazzo, epoxy matrix ter-razzo, exposed aggregate, rustic or rough washed for exterior or interior of buildings placed either by machine or by hand, and any other kind of mixture of plastics composed of chips or granules when mixed with cement, rubber, neoprene, vinyl, magnesium chloride or any other resinous or chemical substances used for seamless flooring systems, and all other building materials, all similar materials and all precast terrazzo work on jobs, all scratch coat used for Mosaic and Terrazzo work and sub-bed, tar paper and wire mesh (2x2 etc.) or lath. The rubbing, grinding, cleaning and finishing of same either by hand or by machine or by terrazzo resurfacing equipment on new or existing floors. When necessary finishers shall be allowed to assist the mechanics to spread sand bed, lay tarpaper and wire mesh (2x2 etc.) or lath. The finishing of cement floors where additional aggregate of stone is added by spreading or sprinkling on top of the finished base, and troweled or rolled into the finish and then the surface is ground by grinding machines.

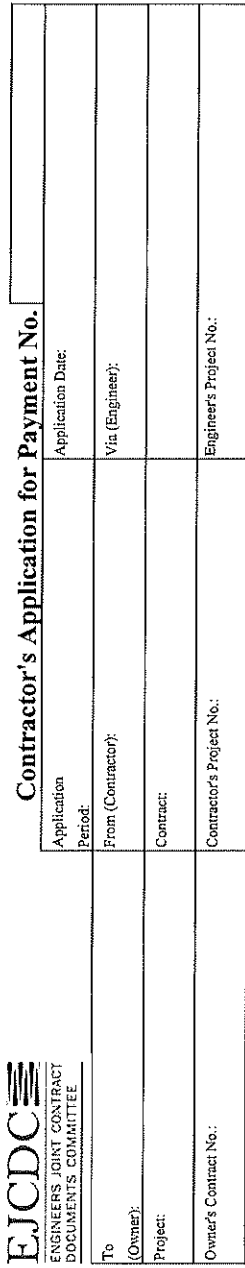
#### Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

#### LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of

equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.



ENGINEERS' JOINT CONTRACT DOCUMENTS COMMITTEE	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

[illegible]

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**











(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ — Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(1) That I pay or supervise the payment of the persons employed by

### (c) EXCEPTIONS

(Contractor or Subcontractor) \_\_\_\_\_ from the full

REMARKS:

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

— in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

[illegible]

## PARTIAL WAIVER OF LIEN

To All Whom It May Concern:

**WHEREAS**, the undersigned has been employed by (A) \_\_\_\_\_ to  
\_\_\_\_\_ to  
furnish labor and materials for (B) \_\_\_\_\_ ..under  
\_\_\_\_\_ ..under  
a contract (C) \_\_\_\_\_ for the  
improvement of the premises described as (D) \_\_\_\_\_ in the  
\_\_\_\_\_ (City-Village) of \_\_\_\_\_, County of \_\_\_\_\_, State of \_\_\_\_\_ of which  
\_\_\_\_\_ is the Owner.

**NOW, THEREFORE**, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for and in consideration of the sum of  
(E) \_\_\_\_\_ Dollars (\$\_\_\_\_\_)

paid simultaneously herewith, the receipt whereof is hereby acknowledged by the undersigned, the undersigned does hereby waive and release to the extent only of the aforesaid amount, any lien rights to, or claim of lien with respect to and on said above-described premises, and the improvements thereon, and on the monies or other considerations due or to become due from the owner, by virtue of said contract, on account of labor, services, materials, fixtures, apparatus or machinery furnished by the undersigned to or for the above-described premises, but only to the extent of the payment aforesaid.

(F) \_\_\_\_\_

(name of sole ownership, corporation or partnership)

(SEAL)

(Affix corporate  
Seal here)

(SEAL)

\_\_\_\_\_  
(Signature)

TITLE: \_\_\_\_\_

### INSTRUCTIONS FOR PARTIAL WAIVER

- (A) Name person or firm with whom you agreed to furnish either labor, or services, or materials, or both.
- (B) Fill in nature and extent of work: strike the word labor or the word materials if not in your contract.
- (C) If you have more than one contract on the same premises, describe the contract by number, if available, date and extent of work.
- (D) Furnish an accurate enough description of the improvement and location of the premises so that it can be distinguished from any other property.
- (E) Amount shown should be the amount actually received on that date.
- (F) If waiver is for a corporation, corporate name should be used, corporate seal affixed and title of officer signing waiver should be set forth; if waiver is for a partnership, the partnership name should be used, partner should sign and designate himself as partner.

Construction Industry Affairs Committee of Chicago.



## FINAL WAIVER OF LIEN

To All Whom It May Concern:

**WHEREAS**, the undersigned has been employed by (A) \_\_\_\_\_  
\_\_\_\_\_ to  
furnish labor and materials for (B) \_\_\_\_\_  
\_\_\_\_\_ under  
a contract (C) \_\_\_\_\_ for the  
improvement of the premises described as (D) \_\_\_\_\_  
\_\_\_\_\_ in the  
\_\_\_\_\_ (City-Village) of \_\_\_\_\_, County of \_\_\_\_\_, State of \_\_\_\_\_ of which  
\_\_\_\_\_ is the Owner.

**NOW, THEREFORE**, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for and in consideration of the sum of  
(E) \_\_\_\_\_ Dollars (\$\_\_\_\_\_)

paid simultaneously herewith, the receipt whereof is hereby acknowledged by the undersigned, the undersigned does hereby waive and release any lien rights to, or claim of lien with respect to and on said above-described premises, and the improvements thereon, and on the monies or other considerations due or to become due from the owner, on account of labor, services, materials, fixtures, apparatus or machinery heretofore or which may hereafter be furnished by the undersigned to or for the above-described premises, by virtue of said contract.

(F) \_\_\_\_\_ (SEAL)  
(name of sole ownership, corporation or partnership)

(Affix corporate  
Seal here)

\_\_\_\_\_  
(Signature) (SEAL)

TITLE: \_\_\_\_\_

### INSTRUCTIONS FOR FINAL WAIVER

- (A) Person or firm with whom you agreed to furnish either labor, or services, or materials, or both.
- (B) Fill in nature and extent of work: strike the word labor or the word materials if not in your contract.
- (C) If you have more than one contract on the same premises, describe the contract by number, if available, date and extent of work.
- (D) Furnish an accurate enough description of the improvement and location of the premises so that it can be distinguished from any other property.
- (E) Amount shown should be the amount actually received and equal to total amount of contract as adjusted.
- (F) If waiver is for a corporation, corporate name should be used, corporate seal affixed and title of officer signing waiver should be set forth; if waiver is for a partnership, the partnership name should be used, partner should sign and designate himself as partner.

Approved By The  
Construction Industry Affairs Committee (CIAC).



## CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: Calhoun County Rural Water District  
Contractor:  
Engineer: Heneghan and Associates, P.C.  
Project: Replacement Potable Water Tank

Owner's Contract No.:  
Contractor's Project No.:  
Engineer's Project No.: 00325-421  
Contract Name:

This [preliminary] [final] Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

### Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's  
responsibilities: ☐ None  
☐ As follows

Amendments to  
Contractor's responsibilities: ☐ None  
☐ As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

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

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____





**Work Change Directive No.**

Date of Issuance:

Effective Date:

Owner:

Owner's Contract No.:

Contractor:

Contractor's Project No.:

Engineer:

Engineer's Project No.:

Project:

Contract Name:

Contractor is directed to proceed promptly with the following change(s):

**Description:**

Attachments: *[List documents supporting change]*

**Purpose for Work Change Directive:**

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

- ☐ Non-agreement on pricing of proposed change.
- ☐ Necessity to proceed for schedule or other Project reasons.

**Estimated Change in Contract Price and Contract Times (non-binding, preliminary):**

Contract Price      \$ \_\_\_\_\_ [increase] [decrease].

Contract Time	days	[increase] [decrease].
---------------	------	------------------------

**Basis of estimated change in Contract Price:**

- ☐ Lump Sum
 ☐ Unit Price  
☐ Cost of the Work
 ☐ Other

RECOMMENDED:

AUTHORIZED BY:

RECEIVED:

By:

Engineer (Authorized Signature)

By:

Owner (Authorized Signature)

By:

Contractor (Authorized Signature)

Title:

Title:

Title:

Date:

Date:

Date:

Approved by Funding Agency (if applicable)

By:

Date:

Title:



Change Order No. \_\_\_\_\_

Date of Issuance:

Effective Date:

Owner: Calhoun County Rural Water District

Owner's Contract No.:

Contractor:

Contractor's Project No.:

Engineer: Heneghan and Associates, P.C.

Engineer's Project No.: 00325-421

Project: Replacement Potable Water Tank

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: _____	By: _____	By: _____	By: _____	By: _____	By: _____
Engineer (if required)	Owner (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)	Contractor (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____	Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____	Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Title: \_\_\_\_\_



Field Order No. \_\_\_\_\_

Date of Issuance:

Effective Date:

Owner:

Owner's Contract No.:

Contractor:

Contractor's Project No.:

Engineer:

Engineer's Project No.:

Project:

Contract Name:

Contractor is hereby directed to promptly execute this Field Order, issued in accordance with General Conditions Paragraph 11.01, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification(s)

Drawing(s) / Detail(s)

Description:

Attachments:

ISSUED:

RECEIVED:

By:

Engineer (Authorized Signature)

By:

Contractor (Authorized Signature)

Title:

Title:

Date:

Date:

Copy to: Owner



# Technical Specifications





## **General Requirement**

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## **General Requirements**

### **Section 12**

#### **12.01. SCOPE OF WORK**

The CONTRACTOR shall furnish all labor, tools, equipment, materials and perform all operations in connection with the complete new construction of the water storage tank, foundation, backfilling, rough and final grading, and miscellaneous work as necessary for a complete workable and operable installation as demonstrated in the Drawings and specified herein. In case of a conflict between the Construction Documents, the CONTRACTOR shall notify the ENGINEER prior to bidding to clarify the discrepancy and obtain a decision on which document governs. If the CONTRACTOR or any of his subcontractors fail to notify the ENGINEER prior to bidding then the CONTRACTOR shall provide and install the intended material or equipment at no additional cost to the contract price.

The CONTRACTOR shall secure all necessary permits for the operation of this project. All necessary easements, construction permits, and property will be secured by the OWNER. The CONTRACTOR shall be aware of existing utilities within the area. An attempt has been made to locate as many utilities as possible and show them on the drawings. The omission of any utility on the drawings does not relieve the CONTRACTOR of his responsibilities in regard to other existing utilities. The CONTRACTOR shall maintain, in operating condition, all active utilities encountered. Existing utilities may only be relocated with the approval of the utility owner and the ENGINEER.

Previously used tanks are not permissible.

Whenever a product is identified on the drawings or in the specifications by reference to manufacturer's name and/or trade name, it is intended merely to establish a standard, and any equipment of other manufacturers which will perform adequately the services imposed by the general design will be considered equally acceptable provided: (1) in the opinion of the ENGINEER, the function, material, and service is equal; (2) any alternate material will be given consideration, provided it is submitted in sufficient detail to the ENGINEER as detailed in the Supplemental General Conditions Section 6.05. Approved shop drawings shall be returned to the CONTRACTOR before any construction is started or equipment is installed.

The CONTRACTOR shall guarantee that the material furnished shall be properly installed, and when properly operated, shall perform the duty for which it is intended. He shall guarantee all materials, workmanship, and completed installation to be first class in every particular and shall, at his own expense, furnish and replace any part or parts that may prove defective in material, equipment, or workmanship within 5 years from the date of substantial completion, in accordance with the General Conditions of this contract.

In addition to any other permits required, which are to be obtained by the CONTRACTOR (General Conditions), this work shall be governed by an IEPA permit for construction. This permit shall be obtained for the CONTRACTOR by the OWNER before any construction operations begin. The OWNER will also obtain the necessary easements, NPDES Permits, highway permits, and railroad permits to construct the improvements. The CONTRACTOR shall familiarize himself with all requirements as to traffic control, flagmen, maintenance of trench, advance warning signs, etc., as required by state and local highway departments and railroad companies.

The CONTRACTOR is responsible for conforming with the requirements of all applicable health and safety regulations and precautions as required by local, state and federal regulatory agencies including, but not limited to OSHA and IDOL. In accordance with the requirements of the OSHA regulations for construction, the CONTRACTOR shall provide and require the use of personal protective and lifesaving equipment for all persons working in or about the project.

Losses of water due to leaks, accidental or otherwise, that are the responsibility of the CONTRACTOR, during construction or the five (5) year warranty period shall be paid by the CONTRACTOR. Leaks shall be repaired in a timely manner.

## **12.02. STRUCTURES AND UTILITIES ENCOUNTERED**

Various underground and surface utilities and related structures may or may not be present on project sites. The CONTRACTOR shall maintain in operating condition all utilities encountered in this work. Any existing utilities damaged as a result of this construction shall be repaired to the satisfaction of the utility owner at the CONTRACTOR's expense. Existing utilities may be relocated with the approval of the utility owner and the OWNER. The relocation shall be at the CONTRACTOR's expense, done according to the requirements of the utility owner and shall be sufficient to clear the work area.

Before beginning work in an area, the CONTRACTOR shall contact JULIE at 800-892-0123 and any other non-JULIE member companies maintaining utilities in the project area and request their assistance in field locating their utilities in that area. The CONTRACTOR, however, shall be solely responsible for the location of utilities. Where overhead power lines supply service to the site, the CONTRACTOR should remove poles not belonging to the utility. The CONTRACTOR is cautioned to verify with the utility ownership of poles, transformers, etc.

The CONTRACTOR shall be entirely responsible for all injuries to water pipes, electric conduits, existing drains or sewers, field tiles, sump pump drain lines, poles carrying currents, telephone or telegraph lines, railroad bridges and tracks, streets, pavements, sidewalks, curbs, fences, culverts, buildings, trees larger than 12 inches in diameter, or other structures of any kind met with during the prosecution of the work, whether on public or private property.

All such structures or utilities which are removed to allow work to be performed or damaged by it shall be restored to a condition at least equivalent to that which existed at the commencement of the work unless additional written arrangements are made satisfactory to the OWNER of said property. The CONTRACTOR shall care for and maintain all such structures or utilities encountered, and where service by them is interrupted, he shall provide and maintain temporary service until repair is complete and full service is restored. Repair of and restoration of service for essential structures or utilities shall be prompt; in these cases, if repair is unnecessarily delayed or unsatisfactory in the judgment of the ENGINEER, the OWNER or ENGINEER may have the repairs made and may deduct the cost thereof from payments due the CONTRACTOR. All costs associated with structure or utilities encountered including removal, replacement, repair, temporary service, or complications to proposed work shall be incidental to the project and shall be performed without any increase in the contract price.

Existing trees and shrubs within the project site shall be protected from damage. The CONTRACTOR shall be liable for damage to trees and shrubs which were to have been protected as directed by the ENGINEER, unless such damages are determined by the ENGINEER to have been unavoidable, and moneys due the CONTRACTOR may be withheld to cover such damages.

### **12.03.SHOP DRAWINGS**

The CONTRACTOR shall furnish for review complete shop drawings in accordance with the General Conditions before starting any work. Drawings shall be provided by the paint manufacturer and shall show the materials to be used and all colors available.

Whenever a painting manufacturer is identified on the drawings or in the specifications by reference to manufacturer or manufacturer name and/or trade names, it is intended merely to establish a standard, and any equipment of other manufacturers which will perform adequately the services imposed by the general design will be considered equally acceptable provided, in the opinion of the ENGINEER, the function, material, and service is equal. Approved shop drawings must be returned to the CONTRACTOR before any work is started.

As part of the Shop Drawing submittal a full copy of the following AWWA Standards shall be included:

AWWA D652 "Disinfection of Water Storage Facilities"

AWWA D102 "Coating Steel Water Storage Tanks"

### **12.04.SOIL BORING DATA**

Soil boring data has been acquired by the OWNER and is provided as an attachment to these specifications.

### **12.05.CLEANING UP**

During construction the CONTRACTOR shall clean up as the work proceeds. The premises, easements, and right-of-way shall be kept free of accumulations of waste materials and earth, rubbish and other debris resulting from the work. If in the judgment of the OWNER, the CONTRACTOR fails to keep the site clean as described herein above, the OWNER may halt the construction and/or construction payments until the site has been cleaned up to the satisfaction of the OWNER.

At the completion of the project, the CONTRACTOR will remove all waste materials, rubbish and debris from and about the premises as well as all tools, scaffolding and surplus materials, and will leave the site clean and ready for occupancy by the OWNER. The CONTRACTOR will restore to their original conditions those portions of the site not designated for alteration by the contract Documents.

Open burning of debris will not be permitted unless specifically authorized in writing by the OWNER, and then only following state, municipal or other local codes, ordinances, rules or regulations.

### **12.06.GUARANTEE-WARRANTY**

The suppliers and erectors of all equipment, apparatus, and work furnished and used in the construction of this project shall and hereby do warrant, and the CONTRACTOR shall and hereby does guarantee that all such equipment, apparatus, and work will satisfactorily perform the intended function as integral and coordinated units, and will remain free of defective materials and workmanship for a

period of one (1) years from date of final acceptance by the OWNER, except where longer periods are herein specified in which case they shall govern.

The CONTRACTOR shall guarantee the protective coatings against any defective material or workmanship for a period of 5 years from the date of acceptance. If any materials or workmanship prove to be defective within the 5 years, they shall be replaced or repaired by the CONTRACTOR at his own expense. The CONTRACTOR will provide an inspection of the tank in year 2 and year 5 and make all necessary repairs and touch up any painting problems as instructed by the OWNER. The inspections shall be visual from all areas accessible without special rigging equipment (i.e., inside and outside ladders, balcony, roof, bottom of bowl, etc) and shall include both the interior and exterior of the tank. The CONTRACTOR shall be responsible for coordinating with the paint manufacturer's representative to ensure the paint manufacturer is present at the 2 year and 5 year inspections. The CONTRACTOR shall coordinate with the OWNER prior to these inspections to allow the tank to be taken off line at a time that best fits the OWNER's schedule. The OWNER will be responsible for disinfecting the tank and placing the tank back on line after the 2 and 5 year inspections. If the CONTRACTOR fails to complete the inspections and repairs in a timely manner, the OWNER may choose to employ another party to complete the work and then charge the CONTRACTOR for all services.

The CONTRACTOR further agrees that he will, at his own expense and without extra cost to the OWNER, remove, repair, or replace all defective materials, equipment, apparatus and work, and all other work damaged thereby which becomes defective during the term of the Guaranty-Warranty.

#### **12.07. RIGHTS OF WAY AND EASEMENTS**

The OWNER has secured the necessary rights-of-way and/or easements necessary for the construction of the work. These documents are on file with the ENGINEER and may be reviewed by all bidders prior to the bid date. The CONTRACTOR shall be furnished copies of these documents so that he may contain his construction activities to the permissible area listed in each easement.

#### **12.08. CONTRACT RESPONSIBILITY**

The project described in these specifications is the replacement of the existing ground storage tank. The new welded steel potable water tank shall be erected and installed as shown in the Drawings. The CONTRACTOR shall coordinate use of the site for staging with the OWNER.

#### **12.09. ELECTRICAL SERVICE**

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#### **12.10. COORDINATION WITH RESIDENT PROJECT REPRESENTATIVE**

The CONTRACTOR shall notify the Resident Project Representative or ENGINEER of the proposed work schedule prior to each day. Any work accomplished without the Resident Project Representative being present due to improper notification shall be re-done, re-exposed, etc., to the satisfaction of the Resident Project Representative.

### **12.11. GROUND STORAGE TANK ACCESS ROAD**

The CONTRACTOR shall coordinate with CCRWD to determine the appropriate staging areas for the construction/demolition process. The CONTRACTOR shall repair any and all damages caused to the access road/parking areas during construction. The driveway shall be approved by the OWNER before substantial completion is given. No additional costs will be allowed.

### **12.12. NPDES PERMIT COMPLIANCE**

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### **12.13. DISINFECTION**

After all cleaning and painting work is accomplished (a minimum of 7 days following application of the final coat on the interior and/or exterior tank surfaces), the CONTRACTOR shall disinfect the tank in accordance with the AWWA Standard C652 (Disinfection of Water Storage Facilities), chlorination method 2 must be used. The chlorine solution shall be applied to all interior water surfaces above the overflow elevation as well. After disinfecting the tank using chlorination method 2 and prior to filling the tank with water, supplemental liquid chlorine should be added to bring the total chlorine concentration to a minimum of 10 ppm once the tank is completely filled. The supplemental chlorine to be added in legged tanks should be done equally in the bottom of the riser and the bottom of the bowl. The CONTRACTOR shall begin filling the tank with water immediately after the supplemental chlorine has been added. Concurrent with filling the tank with water the CONTRACTOR shall add the bio-penetrant WD-3100 manufactured by Pristine Water Solutions, Inc. Waukegan, Illinois, 60085, (847) 689-1100. The bio-penetrant shall be added via a chemical metering pump through an injection point in the fill line at a rate of 5 gallons per 100,000 gallons tank capacity. The injection rate shall be such that the total volume of bio-penetrant to be used is not completely injected until the tank is at least 75% full. The existing below-ground vault may be used for access to the fill line. It is important to note, however, that the CONTRACTOR may be required to make a new tap in the water main to inject the bio-penetrant. Once filled, the tank shall set full for no less than 12 hours and no more than 36 hours. After this time, all treated water shall be thoroughly flushed from the tank and the tank shall be refilled with potable water. The CONTRACTOR shall coordinate the entire disinfection process with the OWNER and the disinfection process cannot begin without approval from the OWNER. After disinfection, the CONTRACTOR shall obtain bacteriologic clearance from the Illinois Environmental Protection Agency (IEPA). A minimum of 2 samples collected at a minimum of 24 hours apart shall be analyzed and approved by IEPA before placing the tank into service. If results of tests indicate inadequate disinfection then the tank shall be drained and disinfected again, until IEPA approval is obtained.

The CONTRACTOR shall observe all necessary precautions when handling chemicals. Special care shall be taken when using chlorine and the bio-penetrant WD-3100 in the same environment because there does exist an acidic component in the WD-3100.

All bio-penetrant and chlorine application work shall be performed in the presence of the Resident Project Representative. All bio-penetrant and chlorine application work shall be incidental to the Contract price.

The CONTRACTOR shall provide all bacteriological analysis results to the OWNER.



Any wasted water shall be treated to neutralize the bio-penetrant and/or chlorine residual and the water shall be discharged in such manner that no damage to downstream points occur. The contractor shall be responsible for providing the necessary hoses and energy dissipators to prevent soil erosion/sediment loss while still draining the tank in the allotted time.

Filling operations shall be coordinated with the OWNER. The OWNER shall provide the permissible filling rates and times.

#### **12.14. WATER USED BY CONTRACTOR**

Water used by the CONTRACTOR to initially fill, Disinfect, chlorinate, and place the tank in service shall be furnished to the CONTRACTOR by the OWNER at no cost. Water used to re-disinfect the tank or the water used during the 2 year and 5 year inspection will not be billed to the CONTRACTOR. Losses of water due to leaks in the tank, accidental or otherwise, during construction and/or the 5 year warranty period shall be estimated and paid by the CONTRACTOR at the rate of \$3.50 per thousand gallons used.

#### **12.15. INSPECTION REPORT**

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## **Concrete**

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## **Concrete**

### **Section 21**

#### **21.01. SCOPE OF WORK**

Portland cement shall comply with the Standard Specification for Portland Cement, ASTM C150, or Standard Specification for Air-Entraining Portland Cement, ASTM C175 and shall be Type I or IA.

#### **21.02. CONCRETE AGGREGATES**

Concrete aggregates shall conform to specifications for Concrete Aggregates, ASTM C33, except that aggregates failing to meet these specifications but which have been shown by special test or actual service to produce concrete of the required quality, may be used under paragraph 21.08 of this section where authorized by the ENGINEER.

#### **21.03. WATER**

Water used in mixing concrete shall be clean and free from deleterious amounts of acids, alkalis, or organic materials.

#### **21.04. REINFORCEMENT (METAL)**

Reinforcing bars shall conform to the requirements of tentative specifications for minimum requirements for the Deformations of Deformed Steel Bars for Concrete Reinforcement, ASTM- A-615/615M, and of tentative specifications for Billet-Steel Bars for Concrete Reinforcement, ASTM-A-615/615M, or tentative specifications for Rail-Steel Bars for Concrete Reinforcement, ASTM-A-616, or tentative specification for Axle-Steel Bars for Concrete Reinforcement, ASTM-A-617/617M.

Welded wire fabric or cold-drawn wire for concrete reinforcement shall conform to the requirements of standard specifications for Cold-Drawn Steel Wire for Concrete Reinforcement, ASTM-A, or standard specifications for Welded Steel Wire Fabric for Concrete Reinforcement, ASTM-A-185.

#### **21.05. MATERIAL STORAGE**

Cement, aggregates and reinforcement shall be stored at the batch plant or work site in such a manner as to prevent deterioration or intrusion of foreign matter. Any material which has deteriorated, or which has been damaged shall not be used for concrete.

#### **21.06. CONCRETE QUALITY**

The allowable stresses for design are based on the specified minimum 28 day compressive strength of the concrete or on the specified minimum compressive strength at the earlier age at which the concrete may be expected to receive its full load. The strength of concrete, at specified ages for

which all parts of the structure were designed, are shown on the drawings. Where not specified in the drawings, minimum 28 day compressive strength of the concrete shall be 3500 psi.

#### **21.07. STRENGTH OF CONCRETE**

The determination of the proportions of cement, aggregate and water to attain the required strength, shall be made by one of the following methods.

Method I: When no preliminary tests of the materials to be used are made, the water content per sack of cement shall not exceed the values in the following table. Method II shall be employed when artificial aggregates or admixtures are used.

Assumed Strength of Concrete Mixtures

Water Content in U.S. Gals. per Sack of Cement	Assumed Compressive Strength at 28-day psi
7-3/4	2500
6-3/4	3000
6	3500
5-1/2	3750

NOTE: In interpreting this table, surface water contained in the aggregate must be included as part of the mixing water in computing the water content.

Method II: Proportions of the materials and water content, other than those shown in the above table, may be used provided that the strength quality of the concrete proposed for use, shall be established by tests, which shall be made in advance of the beginning of operations, using the consistencies suitable for the work and in accordance with Standard Method of Making Concrete Compression and Flexure Test Specimens in the Laboratory, ASTM-C-192, and with Standard Method of Test for Compressive Strength of Molded Concrete Cylinders, ASTM-C-39.

A curve representing the relation between the water content and the average 28 day compressive strength, or earlier strength at which the concrete is to receive its full working load shall be established for a range or earlier strength at which the concrete is to receive its full working load shall be established for range of values including all the compressive strengths called for on the drawings. The curve shall be established by at least 3 points, each point representing average values from at least 4 test specimens. Amount of water used in the concrete, as determined for a curve, shall correspond to a strength which is 15 percent greater than that called for on the drawings. No substitutions shall be made in the materials used on the work without additional tests in accordance, herewith, to show that the quality of the concrete is satisfactory.

#### **21.08. CONCRETE PROPORTIONS AND CONSISTENCY**

The proportions of aggregate to cement for any concrete shall be such as to produce a mixture which will work readily into the corners and angles of the forms and around reinforcement with the methods of placing employed on the work but without permitting the material to segregate or excess free water to collect on the surface.

The combined aggregates shall be of such composition of size that when separated on the No. 4 sieve (fine aggregate) shall not be less than 30 percent or more than 50 percent of the total unless otherwise required by the ENGINEER.

The method of measuring concrete materials shall be such that the proper proportions can be accurately controlled and easily checked at anytime during the work. The received measurement shall be width rather than volume. Measurements of materials for ready-mixed concrete shall conform to the Tentative Specifications for Ready-Mixed Concrete, ASTM-C.

#### **21.09. TESTS ON CONCRETE**

The CONTRACTOR shall employ and furnish an independent, qualified, testing agency, suitable to the ENGINEER and OWNER, for the purposes of all required testing of materials, certification of proper concrete placement during pour and work accomplished. All test results shall be reported to the ENGINEER and the CONTRACTOR on the same day the tests are made.

Technicians representing the testing agency shall inspect the materials and manufacture of concrete and shall report their findings to the ENGINEER and the CONTRACTOR. When it appears that the material furnished or work performed by the CONTRACTOR fails to fulfill specification requirements, the technician shall direct the attention of the ENGINEER and the CONTRACTOR to such failure.

The technician shall not act as foreman or perform other duties for the CONTRACTOR. Work will be checked as it progresses, but failure to detect any defective work or materials shall not in any way prevent later rejection when such defect is discovered, nor shall it obligate the ENGINEER for final acceptance. Technicians are not authorized to revoke, alter, relax, enlarge, or release any requirement of the specifications nor to approve or accept any portion of the work.

During the progress of the work compression test specimens shall be made and cured in accordance with Standard Method of Making and Curing concrete Compression and Flexure Test Specimens in the Field, ASTM-C-31.

Not less than 3 specimens shall be made for each test, nor less than 1 test for each day's pour or for each 50 cubic yards of concrete of each class. Specimens shall be cured under laboratory conditions except that when, in the opinion of the ENGINEER, there is a possibility of the surrounding air temperature falling below 40 degrees F the ENGINEER may require additional specimens to be cured under job conditions.

Specimens shall be tested in accordance with Standard Methods of Tests for Compressive Strength of Molded Concrete Cylinders, ASTM-C-39.

The standard age of test shall be 7 days and 28 days.

If the average strength of the laboratory control cylinders for any portion of the structure falls below the compressive strengths called for on the drawings, the ENGINEER shall have the right to require conditions of temperature and moisture necessary to secure the required strength and may require tests in accordance with Standard Method of Securing, Preparing and Testing Specimens of Hardened Concrete for Compressive and Flexural Strengths, ASTM-C-42 or order load tests to be made on the portions of structure so affected.

#### **21.10. PREPARATION OF EQUIPMENT AND PLACE OF DEPOSIT**

Before placing concrete, all equipment for mixing and transporting the concrete shall be cleaned, all debris or ice shall be removed from the places to be occupied by the concrete. Forms shall be thoroughly wetted (except in freezing weather) or oiled and masonry filler units that will be in contact with concrete shall be well drenched (except in freezing weather) and the reinforcement shall be thoroughly cleaned of ice or other coatings.

#### **21.11. MIXING OF CONCRETE**

The concrete shall be mixed until there is a uniform distribution of the materials and shall be discharged completely before the mixer is recharged.

For job mix concrete, the mixer shall be rotated at a speed recommended by the manufacturer and mixing shall be continued for at least 1 minute after all materials are in the mixer.

Ready-mixed concrete shall be mixed and delivered in accordance with the requirements set forth in Tentative Specifications for Ready-Mixed Concrete, ASTM-C-94.

#### **21.12. CONVEYING**

Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of the materials.

Equipment for chuting, pumping and pneumatically conveying concrete shall be of such size and design as to insure a practically continuous flow of concrete at the delivery end without separation of the materials.

#### **21.13. DEPOSITING**

Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to re-handling or flowing. The concreting shall be carried on at such a rate that the concrete is at all times plastic and flows readily into the space between the bars. No concrete that has partially hardened or been contaminated by foreign material shall be deposited on the work, or shall re-tempered concrete be used.

When concreting is once started, it shall be carried on as a continuous operation until the placing of the panel or level. When construction joints are necessary, they shall be made in accordance with paragraph 21.22, this section.

All concrete shall be thoroughly compacted by suitable means during the operation of placing. Whenever practical the concrete shall be compacted with an internal mechanical vibrator of such construction that 4,500 cycles per minute shall be transmitted to the concrete. The CONTRACTOR shall have, on the job site, a sufficient number of vibrators to insure that compaction can be started immediately after the concrete has been deposited in the forms.

The concrete shall be thoroughly worked around the reinforcement and embedded fixtures and into the corners of the forms.

Where conditions make compacting difficult or where the reinforcement is congested, batches of mortar containing the same proportions of cement to sand; as used in the concrete, shall first be deposited in the forms.

#### **21.14. CURING**

Provisions shall be made for maintaining concrete in a moist condition for at least 5 days after the placement of the concrete. Curing may be obtained by any one of the approved "Methods of Curing" subject to approval of the ENGINEER.

No structures, structural members, or other appurtenances shall be placed upon any foundation concrete for a minimum of 7 days after the foundation pour is completed, and the 7 day cylinder test results have been reported to the ENGINEER.

#### **21.15. COLD WEATHER REQUIREMENTS**

Adequate equipment shall be provided for heating the concrete materials and protecting the concrete during freezing or near-freezing weather. No frozen materials containing ice shall be used.

All concrete material and all reinforcement, forms, fillers, and ground with which the concrete is to come in contact shall be free from frost. Whenever the temperature of the surrounding air is below 40 degrees F all concrete placed in the forms shall have a temperature of between 50 degrees F and 70 degrees F, and adequate means shall be provided for maintaining a temperature of not less than 70 degrees F for 3 days or 50 degrees F for 5 days. The housing, covering or other protection used in connection with the curing shall remain in place and intact at least 24 hours after the artificial heating is discontinued. Salt or other chemicals shall not be used to prevent freezing.

#### **21.16. FORMS**

Forms shall conform to the shape, lines and dimensions of the members, as shown on the drawings, and shall be substantial and sufficiently tight to prevent leakage of mortar.

Forms shall be properly braced or tied together so as to maintain position and shape.

#### **21.17. REMOVAL OF FORMS**

Forms shall be removed in such a manner as to insure the complete safety of the structure. In no case shall the supporting forms or shoring be removed until the members have acquired sufficient strength to support safely their weight and the load thereon. In addition, forms shall remain in place a minimum of 24 hours after the end of the concrete pour.

#### **21.18. CLEANING AND BENDING REINFORCEMENT**

Metal reinforcement, at the time concrete is placed, shall be free from all rust, scale or other coatings that will destroy or reduce the bond.



Bends for stirrups and ties shall be made around a pin having a diameter not less than 2 times the minimum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than 6 times the minimum thickness of the bar, except that for bars larger than 1 inch, the pin shall be not less than 8 times the minimum thickness of the bar. All bars shall be bent cold.

#### **21.19. PLACING REINFORCEMENT**

Metal reinforcement shall be accurately placed in accordance with the plans and shall be adequately secured in position by concrete or metal chairs and spacers.

#### **21.20. SPLICES (REINFORCEMENT)**

In general, splices in area of critical stress shall be avoided. Splices shall provide sufficient lap to transfer the stress between bars by bond and shear.

#### **21.21. CONCRETE PROTECTION OF REINFORCEMENT**

The reinforcement shall be protected by the thickness of concrete as shown on the drawings. Where not otherwise shown, the thickness of concrete over the reinforcement shall be as follows:

- A. Where concrete is deposited against the ground without the use of forms, not less than 3 inches.
- B. Where concrete is exposed to the weather, or exposed to the ground, but placed in forms, not less than 2 inches for bars more than 5/8 inches in diameter and 1-1/2 inches for bars 5/8 inches or less in diameter.
- C. In slabs and walls not exposed to the ground or to the weather, not less than 3/4 inch.
- D. In beams, girders and columns not exposed to the ground or to the weather, not less than one and 1-1/2 inches. In all cases the thickness of concrete over the reinforcement shall be in accordance with ACI 318, or its latest revision. Exposed reinforcement bars intended for future use shall be protected from corrosion by concrete or other adequate coverings.

#### **21.22. CONSTRUCTION JOINTS**

Joints not indicated on the drawings shall be so made and located as to not impair the strength of the structure. Where a joint is to be made, the surface of the concrete shall be thoroughly cleaned. In addition, vertical joints shall be thoroughly wetted and coated with a neat cement grout immediately before placing new concrete.

When deemed appropriate by the ENGINEER, the CONTRACTOR will dowel construction joints. The ENGINEER will specify the size, location, and placement.

#### **21.23. CLEAN-UP OF FINAL SURFACES**

The surface of the concrete shall be free of spalling and holes. The CONTRACTOR shall be responsible for filling in the holes with a method and materials approved by the ENGINEER and

OWNER. Any mortar that leaks through or around a form shall be mechanically removed to provide a smooth surface matching the surround concrete surface.



## **SURFACE REPLACEMENT AND SITE WORK**

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## **SURFACE REPLACEMENT AND SITE WORK**

### **Section 31**

#### **31.01. SCOPE OF WORK**

Surface restoration shall be as specified in Section 21 of the Standard Water and Sewer Specifications. All surfaces shall be restored to at least the original condition prior to construction. All lawn, pasture, and timber areas that are disturbed shall be final graded, fertilized, and seeded as specified (Section 31.06.B Permanent Seeding), and shall be incidental to the total contract price. A rubber-tired bobcat or similar utility tractor shall be utilized for both initial and final grading work in residential yard areas to minimize property damage; backhoes, dozers, etc., will not be allowed in yards.

Temporary seeding will be paid as specified in Section 31.09.A.6. Clean-Up for all service lines is incidental to the Contract Price.

Payment for clean-up will be incidental to the unit price of water main installation. To ensure that Final Clean-up/Seeding progresses in a timely manner, the OWNER shall withhold a sum equal to 12 percent of the installed cost of all water main, until all final Clean-Up/Seeding work is satisfactory. This Clean-Up retainage is in addition to the standard overall project retainage and shall be used to hire a local contractor to complete any unsatisfactory work. Final Payment of the clean-up retainage will only be approved when the OWNER is satisfied with Final Clean-up/Seeding work.

Materials used for repair of driveway surfaces shall be incidental to the unit price of water main installation.

Backfill for all gravel driveways, gravel parking lots, and gravel field entrances (unless otherwise shown on the Plans) shall be made for the full depth and width of the trench with material specified for SELECT GRANULAR BACKFILL (CA-6 or equal). Only SELECT GRANULAR BACKFILL shall be allowed in the trench. This work shall be incidental to the unit price of water main installation.

In cases where water mains are crossing open areas where early settlement is not critical, backfill, from the centerline of the pipe to the surface, shall be made by any acceptable method which will not dislodge or damage the pipe or cause bridging action in the trench. Only select excavated materials free from clods or stones (larger than 3 inches) shall be used in backfilling up to 12 inches above the top of the pipe. Excess material shall be neatly rounded over the top of the trench to allow settlement of the trench. In final clean-up operations, the CONTRACTOR shall reshape the surface to level out any uneven settlement that has occurred. This shall be the case unless otherwise shown on the plans or as directed by the ENGINEER.

Due to the location of much of the work around private property and within public thoroughfares, the CONTRACTOR's attention is called to the General Conditions of these specifications. It is imperative that the project sites be promptly maintained in a reasonably clean condition and that it not present any hazard or prolonged inconvenience to individual property owners or the public in general.

All areas trenched/disturbed between May 1 and December 31 shall be cleaned up, final graded, and permanent seeded by May 21 of the following year. All areas trenched/disturbed between January 1 and April 30 shall be cleaned up, final graded, and permanent seeded by September 30 of the same year. Failure to meet these guidelines will result in Liquidated Damages being assessed against the CONTRACTOR, at the established daily rate.

During construction the CONTRACTOR shall clean up as the work proceeds. The premises shall be kept free of accumulations of waste materials and earth, rubbish and other debris resulting from the work. If in the judgement of the OWNER the CONTRACTOR fails to keep the site clean as described hereinabove, the OWNER may halt the construction and/or construction payments until the site has been cleaned up to the satisfaction of the OWNER.

At the completion of the project, the CONTRACTOR will remove all waste materials, rubbish and debris from and about the premises as well as all tools, and surplus materials, and will leave the site clean and ready for occupancy by the OWNER. The CONTRACTOR will restore to their original conditions those portions of the site not designated for alteration by the Contract Documents.

Open burning of debris will not be permitted unless specifically authorized in writing by the OWNER, and then only following state, municipal or other local codes, ordinances, rules or regulations.

The CONTRACTOR shall be responsible for obtaining all material storage locations and where not stored on OWNER's property, for providing the OWNER with a signed copy of a lease agreement naming landowner as Owner and CONTRACTOR as Tenant, for any vandalism (graffiti, etc.), damage, or contamination (due to crop spraying or otherwise) that may occur and for clean-up at said sites; all incidental to the Contract price.

At the completion of all final clean-up operations, the CONTRACTOR shall place a marking flag at every gate valve, air release valve, and meter pit, for ease of identification for the OWNER, meter reader, and system operator. This work shall be incidental to the contract price.

Compacted Rock Backfill - Longitudinal Installation: The rock used shall be SELECT GRANULAR BACKFILL as specified in this section. Where water main installation is performed longitudinally within 2 feet of the edge of roadway surfaces (excluding driveways unless called out on plans), initial backfill in the trench shall be compacted rock, but the top 6 inches of the trench shall be filled with compacted earth backfill. If the trench is under the roadway, then the backfill in the trench shall be compacted rock for the full depth of the trench/excavation. This work will be paid for at the contract unit price per lineal foot for Compacted Rock Backfill – Longitudinal Installation, measured in place. The price shall include all excavation, equipment, labor, materials, traffic safety control, placement and compaction of granular backfill, placement and compaction of earth backfill, and other miscellaneous work as necessary.

### **31.02. RIGHT-OF-WAY CLEARING**

All necessary work involved in the clearing of the water line R.O.W. of trees, stumps, fences, brush, and other miscellaneous and various items of work as needed or as called for on the Drawings, or directed by the ENGINEER, shall be performed by the CONTRACTOR in a satisfactory manner and no additional compensation will be allowed over and above the unit bid price per lineal foot for water main installed of the various diameters, materials, and class as specified. All trees, stumps, fences, brush, and other miscellaneous material removed during Right-of-Way clearing shall be properly disposed of off-site unless an agreement can be worked out between the property owner and CONTRACTOR. All arrangements made between the CONTRACTOR and landowner shall be done so in writing, signed by both the CONTRACTOR and the property owner, and a signed copy of the written arrangement shall be given to the ENGINEER. Disposal operations shall be continuous with the clearing work.

### **31.03. EARTHWORK**

#### **A. Site Excavation**

1. General - Excavation shall be done to the lines and slopes shown on the Drawings. Unstable or unsuitable materials shall be removed and replaced with approved material if, in the opinion of the ENGINEER, it would be a detriment to the excavation. The CONTRACTOR will be allowed a negotiated compensation for removal and replacement of unsuitable existing earth materials below natural topsoil. The quantity for this work shall be as determined by the ENGINEER; in determining the pay quantity for this work, natural topsoil shall be considered as 12 inches thick and no additional compensation will be allowed for removal of topsoil. Unstable or unsuitable material shall be disposed of by the CONTRACTOR.
2. Topsoil Excavation - The CONTRACTOR shall remove topsoil and soil with a high organic content from the area of immediate construction and shall stockpile it on the site for use in finish grading in accordance with Section 31.03.F
3. Borrow Excavation - Any soil in addition to that excavated at the site required to complete fill area shall be furnished by the CONTRACTOR at his own expense. Borrow excavation shall not be placed in fills until the material is approved by the ENGINEER. See Section 31.03.B, Earth Fill.
4. Waste - Any excess excavated material shall be removed from the site by the CONTRACTOR, or if permitted by the ENGINEER, wasted on the site. Areas of wasted soil shall be compacted in accordance with Section 31.03.B.4 and finish graded in accordance with Section 31.03.F.
5. Dewatering - The CONTRACTOR shall have on hand at the site at all times, the necessary pumps, hoses, and other accessories necessary for keeping the excavations dewatered.

If well pointing or the installation of temporary drains are required to complete the work, they shall be provided by the CONTRACTOR.

No additional compensation shall be made to the CONTRACTOR for any dewatering techniques, equipment or labor.

#### **B. Earth Fill**

1. General - This work shall consist of the construction of fills by the placement and compaction of specified or suitable materials above the natural ground or other surface.
2. Subgrade Preparation - The area upon which a fill is to be placed shall be prepared by removing all topsoil containing roots, vegetation and other deleterious materials. The surfaces of each portion of the foundation, immediately prior to placing the earth fill, shall have all water removed from depressions and shall be properly moistened and sufficiently clean to obtain a suitable bond with the earth fill. When directed by the ENGINEER, the subgrade shall be benched where fill is to be placed on a slope.

No material shall be placed in any section of the earth fill until the foundation for that section has been dewatered and suitably prepared and has been approved by the ENGINEER. When the existing earth foundation materials are determined by the ENGINEER to be suitable, the area shall subsequently be disced or otherwise scarified to a depth of at least 6 inches and recompacted in accordance with Section 31.03.B.4 so as to assure compaction, bonding with successive lifts, and insure against a potential plane of seepage. If the existing earth foundation materials are determined by the ENGINEER to be unsuitable, the CONTRACTOR shall remove



these materials and replace them with approved material as directed by the ENGINEER. The CONTRACTOR will be allowed compensation for such "Removal and Replacement of Existing Unsuitable Soils" in accordance with Section 31.03.A.1. Excessive moisture content shall not in itself form the basis for classifying a material as "unsuitable"; suitability shall be judge on the physical and chemical makeup of the material, i.e., any material which contains excessive moisture but would otherwise be suitable shall not be eligible for additional compensation.

3. Earth Fill Materials - The material for fill construction shall consist of soil which is free of roots, vegetation, frozen material, material with high organic content, and other deleterious materials. Materials determined by the ENGINEER to be unsuitable for earth fill shall be disposed of in accordance with Section 31.03.A.4. The ENGINEER shall determine which materials are suitable for earth fill and shall have the authority to designate where in the fill certain earth materials shall be placed even to the extent of locating the placement of individual loads.
4. Placing Earth Fills - To achieve uniform compaction, fill material should be deposited in horizontal lifts extending the entire width and length of the fill, as far as practical, having a thickness compatible with the equipment utilized. It is presumed the lift thickness shall not exceed 8" in loose condition unless demonstrated by the CONTRACTOR to the satisfaction of the ENGINEER that the stated compaction can be uniformly achieved with a greater thickness. Lifts shall be disked to thoroughly mix and blend the different soils or to obtain a uniform moisture content.

The moisture content of the soil, when placed, shall be within  $\pm 3\%$  of the optimum moisture content of the material except as otherwise approved by the ENGINEER and shall be compacted to a density no less than 90% of the maximum dry density at optimum moisture content as determined by "Tests for Moisture-Density Relations of Soils", ASTM D698. The density of the compacted fill shall be determined by the independent testing agency at regular intervals; "regular intervals" is a variable and shall be as determined by the ENGINEER for each specific fill site, depending upon the site and method of the fill operation and the degree of difficulty expected in obtaining compaction. The services, testing, and reports of the independent testing agency shall be furnished by the CONTRACTOR to the ENGINEER incidental to the cost of the contract.

If the natural water content of the fill material does not fall within the range previously described, the CONTRACTOR shall mix, dry or moisten as necessary to achieve the specified moisture content.

The CONTRACTOR shall maintain the fill in an approved manner until the final completion and acceptance of all the work under the contract.

5. Earth Fill Equipment - During all earth fill operation, the CONTRACTOR shall have at the site the following pieces of equipment:
  - a. Disk Harrow of the tandem type.
  - b. Sheep's Foot Roller having a minimum weight of 4,000 lbs per foot of roller length when fully loaded.
  - c. Hand Tamper of either the pneumatic or mechanical variety. All earth fill equipment shall meet the approval of the ENGINEER.
6. Hand Compaction - Fill inaccessible to compaction equipment adjacent to pipes or structures shall be compacted by hand. The soil shall meet the requirements under Section 31.03.B.3 and

shall have a moisture content, when thoroughly mixed, corresponding to that specified under Section 31.03.B.4.

The soil shall be deposited in lifts not to exceed 4 inches loose measure and thoroughly compacted over the entire lift area with a pneumatic or mechanical tamping hammer. Special precautions shall be taken to achieve the compaction required without damage to the pipe or structure. Tamping equipment shall be subject to approval by the ENGINEER.

### C. Backfill

1. General - This work shall consist of the construction of fills by the placement and compaction of select materials where located on the Drawings or specified herein with material previously excavated from the site or its equivalent.
2. Backfill Material - Except for specific fill materials (e.g., filter media fill), backfill materials shall be material previously excavated from the site, or equivalent material, which can be compacted to the specified densities. Soft or organic soils will not be acceptable material for backfill. All backfill material shall be free from lumps, clods, stones greater than the specified size, or frozen material. All material shall be from an approved source.

Coarse aggregate specified in the following paragraphs shall consist of tough, durable particles, reasonably free from objectionable material. Fine aggregate shall be reasonably free from an excess of soft and unsound particles and other objectionable matter.

All material used, regardless of the source of supply, shall meet the gradation limits specified. The gradation of material from any one source shall be reasonably parallel to the gradation specified and shall not be subject to the extreme percentages of gradation represented by the tolerance limits for the various sieve sizes.

Prior to ordering any select backfill materials, the CONTRACTOR shall furnish the ENGINEER written verification from an independent testing laboratory stating the material to be used is in compliance with these Specifications.

3. Drainage Granular Backfill - This shall be gravel, crushed gravel, pit run gravel, or crushed stone and shall conform to the following gradation requirements:

Sieve Size	Percent Passing
3/4"	100
1/2"	97±3
3/8"	80±10
No. 4	35±15
No. 16	3±3

4. Structural Granular Backfill (Types I and II) - Type I structural granular backfill, not less than 4" in compacted thickness, shall be used under concrete slabs and shall be gravel or crushed stone, conforming to the following requirements:
  - a. Sodium Sulfate, Soundness Five Cycle Test, ASTM C88, maximum percent loss - 20%
  - b. Los Angeles Abrasion Test, ASTM C131, maximum percent loss - 40%
  - c. Minus #200 Material, ASTM C117, maximum percent - 2.5%
  - d. Deleterious Materials -

- (1) Shale, maximum percent - 4%
- (2) Clay, lumps, maximum percent - 0.5%
- (3) Soft and unsound fragments, maximum percent - 8%
- (4) Total deleterious material, maximum percent - 10%

e. Gradation -

Sieve Size	Percent Passing
1-1/2"	100
1"	95±5
1/2"	45±15
No. 4	5±5

5. Type II structural granular backfill for use around structures or for filling deep areas beneath structures shall be stone, stone sand, stone screen, chat, wet bottom boiler slag, or slag sand. It shall be reasonably free from an excess of soft and unsound particles, shale, clay, etc., and shall conform to the following quality requirements:

- a. Sodium Sulfate, Soundness Five Cycle Test, ASTM C88 Maximum percent loss -20%
- b. Minimum No. 200 Material, ASTM C117, maximum percent - 10%

c. Gradation -

Sieve Size	Percent Passing
No. 4	92±8
No. 100	10±10
No. 200	5±5

6. Compaction - Granular materials shall be compacted by vibratory compactors of sufficient capacity to obtain the specified degree of compaction. Vibratory compactors will not be acceptable for compaction of cohesive soils. No compaction by water soaking will be permitted unless authorized by the ENGINEER.

Special care shall be taken in backfill adjacent to waterproofing or foundation walls to avoid damage to the waterproofing. Pipes and drains entering and leaving the structure shall be protected from settlement.

All backfill shall be compacted according to the following classifications:

- a. Class A Compaction: Class A compaction shall consist of compacting the material to a density no less than 95% of the maximum dry density at optimum moisture content as determined by "Moisture-Density Relations of soils", ASTM D698. Class A compaction shall be used for all drainage granular backfill, structural granular backfill, and all other backfill except under lawn areas. Material shall be placed in lifts of such thickness that uniform compaction of the degree specified above will be obtained.
- b. Class B Compaction: Class B compaction shall consist of compacting the material to a density not less than 85% of the maximum dry density at optimum moisture content as determined by ASTM D698. Class B compaction shall be used for all backfill under lawn

areas. Material shall be placed in lifts of such thickness that uniform compaction for the degree specified above will be obtained.

#### D. Structural Excavation and Backfill

1. Structural Excavation - All footing shall be founded on firm undisturbed soil, and a 6 inch minimum thickness of structural granular backfill shall be placed under all concrete bottom slabs of structures. Excavations shall be carried deep enough to permit the minimum thickness of granular material to be placed or until firm undisturbed soils are encountered, whichever requires greatest depth. For requirements for granular material, see Section 31.03.C.

In no case shall any footings be founded above those elevations shown on the Drawings. If soft or unsuitable soil is encountered at elevations where footings are to be founded, the ENGINEER may direct the CONTRACTOR to remove the unstable materials and bring the excavation to grade with fill concrete or structural granular backfill (see Section 31.03.C). Additional compensation will be made to the CONTRACTOR for such removal and replacement work as described in Section 31.03.A.1.

Excavations carried below depths shown on the Drawings shall be brought to grade by the CONTRACTOR with fill concrete or structural granular backfill. No additional compensation will be allowed for excavations carried below depth shown on the Drawings unless such excavations are ENGINEER approved "Removal and Replacement of Existing Unsuitable Soils" which will be compensated for in accordance with Section 31.03.A.1.

The excavation will be large enough to allow for installation and removal of forms. Side forms will not be required for footings or edges of base slabs below grade, provided the soil is stable and square corners and straight and plumb sides are maintained until concrete is placed and approval of the ENGINEER is obtained. All other excavation shall allow for placement and removal of forms and inspection.

Special care shall be taken not to disturb the bottom of excavations where the soil is to provide bearing for slabs, footing, etc. If the presence of subsurface water or other conditions, which may decrease the bearing strength of the foundation material, prevail then soil adequate to protect the foundation material shall not be excavated until just before reinforcing steel and concrete are to be placed. The bottom of all excavations shall be inspected and approved by the ENGINEER before the placement of any granular material, reinforcing steel, or concrete.

2. Shoring - The CONTRACTOR shall furnish, install and remove all shoring, bracing, sheet piling or other required work necessary to retain banks of excavation, prevent cave-in of adjacent ground, and support and prevent displacement of adjacent structures of piping.

All shoring shall be maintained in good condition and removed when no longer required. The CONTRACTOR shall make good any injury or damage resulting from failure of the shoring system or from not observing these requirements.

3. Dewatering - The CONTRACTOR shall, at all times, during construction, provide and maintain ample means and devices with which to promptly remove and properly dispose of all water entering the excavation in a manner that will keep the excavation dry and foundation bearing areas undisturbed until the structure is complete and all backfill has been placed. No extra compensation for dewatering or drainage necessary to meet this specification will be allowed.

Sumps, if used, shall be located outside of load bearing areas and at such distance that the bearing surfaces will not be damaged. Water containing silt in suspension shall not be pumped into any sewer lines or discharged to state waters.

4. Structural Backfill - No backfilling shall begin without the approval of the ENGINEER. Unless otherwise shown on the Drawings or specified herein, backfill shall be structural granular backfill except for structures on or in earthen dikes, then backfill shall be Class A compacted, select excavated earthen materials.

All form work, rubbish, bracing, and sheeting shall be removed from the excavation before any backfill is placed. The placement of backfill around structures or walls shall be done simultaneously on opposite sides in even lifts. No backfill shall be placed behind any wall until the entire main structure of which that wall is a part is complete and until all concrete in the main structure has reached its specified 28 day strength, unless approved otherwise in writing by the ENGINEER. Small flow channels and other such appurtenances will not be considered as being part of the main structure. Sloping sides of the excavation which would be liable to cause wedging action shall be stepped or serrated. Under no circumstances shall backfill be placed in water.

Around all structures where adjacent finished grade is to be exposed to the weather, backfill shall be carried to 2 feet 6 inches below finished grade. A 2 foot layer of clayey soil approved by the ENGINEER shall be placed over the full area of the excavated space outside the structure, compacted, and pitched to drain water away from the structure. The area shall then be finish graded in accordance with Section 207 of the Illinois Standard Specifications for Road and Bridge Construction, unless amended herein.

#### E. Roadway Grading

The grading of roadways or drives on the site shall be done in accordance with Article 202.04 (for excavation) or Section 207 (for embankment) of the Illinois Standard Specifications for Road and Bridge Construction, and shall be built to the lines and grades shown on the Drawings. No payment will be made for overhaul of any material to or from any source.

#### F. Finish Grading

The CONTRACTOR shall grade all areas to the finish grade elevation shown on the Drawings, or as directed by the ENGINEER. If the existing surface has become hardened or crusted, it shall be disced or raked so it will blend with the topsoil.

The CONTRACTOR shall place a 6 inch layer of topsoil on all areas to be seeded. The top 3 inches of topsoil shall be worked to break it up into particles no larger than 2 inches. The surface shall then be alternately raked and rolled until the soil is friable and the grades are smooth and continuous.

#### G. Soil Treatment

Soil treatment shall be applied to all areas beneath concrete floor slabs on grade or fill and along the interior and exterior sides of all foundation walls and grade beams as follows: 2 gallons per 5 lineal feet each side, inside and outside perimeter walls, 2 gallons per square foot three feet each side all construction joints and around all conduit, plumbing, duct work, etc., perforating floor slabs and 1 gallon per 10 square feet of remainder of building. Soil treatment shall be applied after finished sub-grade and prior to the installation of rock fill and vapor barrier. Solutions shall be only water-based emulsion, uniform composition, synthetic dye to permit visual identification of treated soil, of the generic chemical aldrin. Chemicals used in the Soil Treatment Work shall not be in conflict with the latest local, state or federal regulation.

### **31.04. PAVING AND SURFACING**

A. General

Construction of all paved surfaces shall be in accordance with the State of Illinois Standard Specifications for Road and Bridge Construction. In case of conflict with the Standard Specifications, these Specifications shall govern.

B. Roads, Drives and Parking Areas

1. General - Base courses and surface courses shall be constructed to the lines, grades and dimensions shown on the Drawings.
2. Base Course - The base course shall be aggregate base course, Type B, of the thickness shown on the Drawings, and shall be constructed in accordance with The Standard Specifications.
3. Aggregate Surface Course - Aggregate surface course shall be of the type and thickness shown on the Drawings, and shall be constructed in accordance with the Standard Specifications.
4. Bituminous Surface Treatment - Bituminous surface treatment shall be Class A-1, A-2, or A-3 as shown on the Drawings, and shall be constructed in accordance with the Standard Specifications.
5. Bituminous Concrete - Bituminous concrete binder and surface courses shall be Class I, and shall be constructed in accordance with the Standard Specifications.
6. Concrete Pavement - Concrete for concrete pavement shall be proportioned and mixed as specified in Section 21 of these Specifications. Concrete pavement shall be constructed in accordance with the Standard Specifications.
7. Soil Stabilization Fabric - The CONTRACTOR shall furnish and install on the earth subgrade where shown on the Drawings, a nylon, polypropylene non-woven fabric to stabilize the ground surface beneath the base course aggregate as specified in Section 31.04.C.

C. Walks and Steps

Concrete for walks and steps shall be proportioned and mixed as specified in Section 21 of these Specifications. Concrete walks and steps shall be constructed in accordance with the Standard Specifications and the details shown on the Drawings.

Unless otherwise shown on the Drawings, concrete walks shall be 4 feet wide. Walks shall be 4 inches thick, except those at driveways which shall be 6 inches thick. Walks shown on slopes 10:1 or steeper shall be constructed with steps conforming the slope. The steps shall have a 6 inch riser and a 12 inch minimum tread.

**31.05. SITE IMPROVEMENTS**

A. Pipe Culverts

The CONTRACTOR shall furnish and install pipe culverts as shown on the Drawings in accordance with the Illinois Standard Highway Specifications. All pipe culverts shall be corrugated steel culvert pipe of the gage require in said specifications.

Metal end sections shall be furnished and installed where required in accordance with the Illinois Standard Highway Specifications.

Any existing pipe culverts damaged by the Contractor shall be repaired or replaced in accordance with the Illinois Standard Highway Specifications and no additional compensation will be allowed.

B. Riprap

Riprap shall consist of clean stone or clean broken concrete. It shall be free of shale, shaly stone, and other imperfections. The majority of the riprap shall be sized between 1-1/2 inches to 6 inches. The largest stones shall not exceed 6 to 8 inches.

Riprap shall be placed uniformly and, unless otherwise shown on the Drawings, all void spaces shall be filled with smaller stones. Rip-rap shall, at a minimum, be placed where shown on the Drawings and as directed by the Engineer. Rip-rap shall be installed as shown on the Drawings, except that, when not shown on the Drawings, width and length dimensions shall be as required for field conditions and installation methods but shall not be less than 8 feet wide by 4 feet long.

C. Soil Stabilization Fabric

The CONTRACTOR shall furnish and install on the earth subgrade where shown on the Drawings, a nylon-polypropylene non-woven fabric to stabilize the ground surface. The fabric shall be Mirafi 500X as manufactured by Celanese Fibers Marketing Company, New York, N.Y.; Typar, Style 3401 by DuPont Company Explosives Products, Wilmington, Delaware, or equal.

Prior to placing the fabric, the subgrade shall be cleared of sharp objects which might damage the fabric. The fabric shall be unrolled directly on top of the earth subgrade. If overlapping is required to cover the area, the overlap shall be at least 3 feet. Should the fabric be damaged during any step of installation, the torn or punctured section shall be covered by another piece of fabric cut large enough to cover the damaged area and meet the 3 foot overlap requirement. At curves, intersections or other areas where fabric is overlapped, care shall be taken to spread the base course aggregate in the same direction as the fabric overlap. Metal tracked machinery shall not come in direct contact with the fabric.

### **31.06. LANDSCAPING**

A. General

The CONTRACTOR shall be responsible for the repair of any damage to structures or equipment resulting from landscaping operations, and shall remove excess soil and other debris from the site before final acceptance of the project.

The CONTRACTOR is responsible for keeping all plants in good growing condition until final acceptance of the project, including watering as necessary for seed germination and continued plant growth. Non-potable water may be used.

Plants that die before final acceptance must be replaced. The cost of replacement plants shall be borne by the CONTRACTOR except for replacement for loss from vandalism or physical damage by animals, fire, etc., or losses due to "Acts of God".

B. Permanent Seeding

The work shall consist of furnishing all labor, equipment, and materials for seeding a permanent grass mixture on all road ditches, structure sites, yards, permanent pasture, and all CRP acreage within the work area limits which are disturbed during completion of work. The surfaces of earthen embankments shall also be seeded when necessary. Permanent seeding will only be performed during the following periods:

Fall: August 1 - September 30

Spring: March 1 - May 21

All areas trenched between May 1 and December 31 shall be permanent seeded by May 21 of the following year. All areas trenched between January 1 and April 30 shall be permanent seeded by September 30 of the same year. Failure to meet these guidelines will result in Liquidated Damages being assessed against the CONTRACTOR, at the established daily rate.

1. Fertilizer - Immediately prior to seeding preparation, fertilizer shall be placed over the areas to be seeded. The fertilizer shall be a complete commercial fertilizer of organic base containing, in available form by weight, 6% Nitrogen, 12% Phosphorous, and 12% Potash. It shall be free flowing and suitable for application with approved equipment, delivered to the site in bags or other convenient containers, each fully labeled with the following:
  - a. Name and address of manufacturer.
  - b. Name brand or trademark.
  - c. Number of net pounds of ready mixed materials in the package.
  - d. Chemical composition of analysis.
  - e. Producer's guarantee of composition.

Fertilizer shall be evenly distributed with an approved mechanical spreader at a rate of 500 pounds per acre.

If a heavy or long rain (as judged by the ENGINEER) should fall on the plant site after fertilizer has been applied but before the seedbed has been prepared, the CONTRACTOR shall re-fertilize those areas affected, at no additional compensation.

2. Seedbed Preparation - All gullies and washes shall be filled to conform to the desired shape and the entire area to be seeded shall be reasonably smooth before actual seedbed preparation is begun. Stones larger than 4 inches in diameter, sticks, stumps, and other debris will be removed. At this point, the required fertilizer shall be applied uniformly. Immediately after application of the fertilizer, the area to be seeded shall be finely pulverized to a minimum depth of 3 inches either by spading and raking or by plowing, discing, harrowing, or other methods approved by the ENGINEER. The CONTRACTOR shall suspend operations when the soil is too wet, too dry, frozen or otherwise untillable. Seeded areas shall not be compacted through their use for such purposes as access roads or parking areas after seedbed preparation is completed. If rain should pack the seedbed prior to seeding, it shall be prepared again at no additional compensation.
3. Seed - Seeding shall be done immediately after seedbed preparation. The seed shall be applied at a uniform rate over the entire area. Grass seed shall be fresh, clean, and new crop seed composed of the following varieties mixed in the proportion by weight as shown, and testing the minimum percentages of purity and germination indicated. All seed used shall be labeled in accordance with U.S. Department of Agriculture Rules and Regulations under the Federal Act in effect at the time of the installation of the work involved under seeding operations. All seed shall be furnished in sealed standard containers. Seed may be mixed by dealer or by an approved method on the site. Weed seed shall not exceed .35% by weight of the total amount supplied. If seed is mixed on the site, dealer's guaranteed analysis for each variety must be furnished. Individual varieties must be delivered in separate unopened original containers should the CONTRACTOR desire to mix the seed on the site.



The mixture of grass seed used for seeding areas flatter than 3:1 slopes shall consist of the following proportions by weight per acre:

Name	Lbs Per Acre	Percent Purity	Percent Germination
Turf Type			
Fescue	75	98	85
Perennial			
Ryegrass	20	98	90

Areas with slopes 3:1 or steeper shall have an additional seeding of the following kind and quantity of seed:

Name	Lbs per acre	Percent Purity	Percent Germination
Perennial			
Ryegrass	30	98	90

The mixture of grass seed used for seeding the inside area of the earthen water retaining structures shall consist of the following proportions by weight per acre:

Name	Lbs per acre	Percent Purity	Percent Germination
Reed Canary			
Grass	15	98	90
Tall Fescue	15	98	90

4. Seeding Materials - No seed shall be sown during high winds or when the ground is not in proper condition for seeding (as judged by the ENGINEER). The ENGINEER shall examine and approve any equipment to be used. Prior to starting work, seeders shall be calibrated and adjusted to sow seeds at the proper seeding rate. The ENGINEER shall be notified 48 hours prior to beginning the seeding operations so the trial seeding runs can be made to insure the proper seeder calibration.

Within 12 hours after seeding, the area shall be rolled at right angles to the runoff with an approved type roller or cultipacker to compact the seedbed and place the seed in contact with the soil.

5. Mulching - Immediately after rolling of the seedbed, mulch shall be applied to all the earthen embankments, road ditches, drainage swales and any slopes of 3:1 or steeper. Mulching will not be required on the remaining areas of the site. Mulch shall be straw of wheat, rye, oats, or other approved stalks and shall be air dried. Hay will not be permitted. Mulch shall be hand or machine applied in a loose enough layers to permit air to circulate but compact enough to

reduce erosion. If baled mulch is used, care shall be taken that the material is in a loosened condition and contains no lumps or knots of compacted material.

6. Watering - Immediately after the seeding operation is complete, the CONTRACTOR shall maintain a daily sprinkling schedule of several hours until such time as the seed commences to grow. Sprinklers approved by the ENGINEER will be used. Dosing with open ended or nozzled hoses will not be permitted.
7. Reseeding and Maintenance - Seeding operations shall be repeated until a satisfactory uniform stand of grass is secured. Damage resulting from erosion, gulleys, washouts, or other causes shall be repaired by filling with topsoil, tamping, refertilizing and reseeding by the CONTRACTOR at no additional compensation. The CONTRACTOR shall mow and maintain all seeded areas until final acceptance of the project.
8. Crop Reduction Plan (CRP) Seeding - The CONTRACTOR shall contact the local SCS office and receive approval of grass seed and fertilizer mixtures prior to placing any seed or fertilizer on any CRP land.

#### C. Planting

1. General - Planting shall be as specified in the Illinois Standard Specifications for Road and Bridge Construction except as amended herein. In case of conflict with the Standard Specifications, these Specifications shall govern.

Ball rooted plants are designated BR, and balled and burlapped plants B&B. When plants of the kinds or sizes specified are not available within a reasonable distance, substitutions may be made upon request by the CONTRACTOR, if approved by the OWNER or the ENGINEER. Plants larger than specified in the plant list may be used if approved by the ENGINEER, but the contract unit price may not be increased. If larger plants are approved, the spread of roots or ball of earth shall be increased in proportion to the size of the plant.

2. Fertilizing - Fertilizing shall conform to the Illinois Standard Specifications for Road and Bridge Construction, and shall contain 6% Nitrogen, 12% Phosphorous, and 12% Potash by weight.
3. Planting Materials - Materials used for planting trees shall be as follows:
  - a. Bracing - materials used for staking, bracing, or guying shall conform to the Illinois Standard Specifications for Road and Bridge Construction except as amended herein. Buying and staking trees shall be done as directed by the ENGINEER.
  - b. Hose - Hose, if used, shall be two-ply fiber-bearing garden hose, not less than 1/2 inch inside diameter.
  - c. Wrapping Material - Wrapping material shall be first quality, heavy waterproof crepe paper manufactured for tree wrapping.
  - d. Mulch - Mulch shall be wood chips or ground bark.
4. Pruning - Each tree and shrub shall be pruned in accordance with AAN Standards of the Illinois Standard Specifications for Road and Bridge Construction.
5. Maintenance - Plant care shall be in accordance with the Illinois Standard Specifications for Road and Bridge Construction and as specified herein. The CONTRACTOR shall be responsible for maintenance of each plant immediately after planting until final acceptance of the project.

### **31.07. FENCING**

Intentionally Blank if not needed

### **31.08. DEMOLITION, SALVAGE, AND ABANDONMENT**

Intentionally Blank if not needed.

### **31.09. EROSION CONTROLS**

The CONTRACTOR shall install all erosion controls shown on the Drawings. The CONTRACTOR shall exercise all precautions and take whatever measures necessary to prevent soil erosion. Earthwork operations shall be planned so that the exposure of bare soil is minimized, both as to extent and duration. The CONTRACTOR will be responsible for installing and maintaining the erosion control measures as specified Drawings and as necessitated by field conditions and construction methods. Erosion control measures shall generally adhere to this specification section. All costs associated for the erosion control measures implemented will be included in the CONTRACTOR'S unit bid price for Site Work. Additionally, maintenance of the erosion control measures, as required, will be incidental to the total contract price.

If, in the opinion of the OWNER or ENGINEER, excessive soil erosion is occurring due to construction methods or other factors that are controllable by the CONTRACTOR, the CONTRACTOR shall immediately remedy the problem under the ENGINEER's direction; remedial measures may include, but not be limited to the following: installation of straw bale drainage ditch checks, silt retention fences, construction of temporary sediment ponds, reseeding, intermediate mulching, regrading, and removal of earth stockpiles. In such instances, all remedial measures required to prevent soil erosion and the associated maintenance of such measures shall be incidental to the total contract price.

#### **A. Trench Stabilization**

When slopes exhibit excessive erosion, and as directed by the ENGINEER or OWNER or as shown on the Drawings, and described in the SWPPP, erosion checks shall be installed at necessary intervals to prevent ditch washout.

Erosion checks shall be of the following types and payment will be as indicated:

1. Planks, 8 inches to 10 inches wide, shall be placed with 2 inches to 4 inches exposed. Planks shall be approximately 3 feet wider than the trench or ditch and shall be staked into solid ground at both ends. A sufficient number of plank, shall be supplied to serve as a sediment barrier for the entire width of the trench or ditch. The CONTRACTOR will be paid the unit bid price for each ditch check regardless of the number of planks needed.
2. Crushed gravel shall be placed in the top 15 inches of the trench for sufficient trench length to prevent washout and shall be paid for at the CONTRACTOR's unit bid price per lineal foot.
3. Rip rap berm, 6 inches in depth (sized and placed as described in Section 31.05.B), covering the entire slope. Where a rip-rap berm is shown on the Drawings for ditch crossings, either with

other erosion control measures or as a standalone measure, the CONTRACTOR shall bid a price for EACH berm. The CONTRACTOR shall visit each site as necessary to determine the amount of material and labor required. The CONTRACTOR'S bid price for each berm shall hold true if additional berms are added at ditch crossings during construction. Where rip-rap berms are required due to large slopes in pastures and/or timbers, the rip-rap berms shall be paid for at the CONTRACTOR'S unit bid price per square foot. Rip-rap berms that are paid per square foot must be approved by the ENGINEER.

4. Mulch, straw, hay bales, or some other material approved by the ENGINEER shall be spread along trench surface to provide protection for uncompacted earth, and shall be paid for at the CONTRACTOR'S unit bid price per lineal foot.
5. Pre-manufactured Check Dams shall be installed perpendicular to the trench or ditch as per the manufacturers recommendations straw bales can be used in lieu of the pre-manufactured check dams. A sufficient number of check dams or bales shall be supplied to serve as a sediment barrier for the entire width of the trench or ditch. The CONTRACTOR will be paid the unit bid price for each ditch check regardless of the number of check dams or straw bales needed.
6. Temporary seeding of the trench lines may be used to control erosion provided the temporary seeding activity corresponds with effective seeding/germination time periods. Where temporary seeding is shown on the Drawings for ditch crossings, either with other erosion control measures or as a standalone measure, the CONTRACTOR shall bid a price for EACH site. The CONTRACTOR shall visit each site as necessary to determine the amount of material and labor required. The CONTRACTOR'S bid price for each site shall hold true if additional sites are added during construction. Where temporary seeding is required due to slopes in pastures and timbers, the temporary seeding shall be paid for at the CONTRACTOR'S unit bid price per lineal foot. Temporary seeding that is paid per lineal foot must be approved by the ENGINEER.

Should erosion checks installed not be adequate, additional erosion checks shall be installed until the trench is stabilized. All NECESSARY erosion checks will be paid for as set forth in the CONTRACTOR'S unit bid prices.

#### B. Slope Stabilization

Where slope stabilization cannot be maintained due to steepness of the grade and/or physical limitations encountered (flowing water at ditch crossing), erosion controls shall be installed as directed by the ENGINEER and/or as shown on the Drawings and described in the SWPPP:

1. Rip rap berm, 6 inches in depth (sized and placed as described in Section 31.04 B.), covering the entire slope. Where a rip-rap berm is shown on the Drawings for ditch crossings, either with other erosion control measures or as a standalone measure, the CONTRACTOR shall bid a price for EACH berm. The CONTRACTOR shall visit each site as necessary to determine the amount of material and labor required. The CONTRACTOR'S bid price for each berm shall hold true if additional berms are added at ditch crossings during construction. Where rip-rap berms are required due to large slopes in pastures and/or timbers, the rip-rap berms shall be paid for at the CONTRACTOR'S unit bid price per square foot. Rip-rap berms that are paid per square foot must be approved by the ENGINEER.
2. Erosion control blanket constructed of 70% agricultural straw, 30% coconut fiber, encased between two natural fiber, biodegradable nets, installed per the manufacturer's recommendation. This blanket is to be used where rip rap is not an option. Erosion blanket is

to be North American Green SC 150 BN, or equal. Placement of erosion blanket will be paid at the CONTRACTOR's unit bid price per lineal foot.

3. Silt fence shall be installed as per the NRCS specifications and shall be placed along slopes as necessary to prevent loss of sediment. Silt fence shall be paid at the CONTRACTORS unit bid price per lineal foot.
4. Temporary seeding of the trench lines may be used to control erosion provided the temporary seeding activity corresponds with effective seeding/germination time periods. Where temporary seeding is required due to slopes in pastures and timbers, the temporary seeding shall be paid for at the CONTRACTOR'S unit bid price per lineal foot. Temporary seeding that is paid per lineal foot must be approved by the ENGINEER.

#### C. Perimeter Protection

Where required by the site and/or construction practices, and as shown on the Drawings and described in the SWPPP, perimeter protection measures shall be implemented to prevent the migration of sediment off site.

1. Silt fence shall be installed as per the NRCS specifications and shall be placed along slopes or the perimeter of the property as necessary to prevent loss of sediment. Silt fence shall be paid at the CONTRACTORS unit bid price per lineal foot.
2. Temporary sediment basins shall be constructed as shown on the drawings or as directed by the ENGINEER and shall be paid at the CONTRACTOR'S lump sum bid price.

Additional erosion control practices may be used with prior approval from the ENGINEER and OWNER. [Payment for additional erosion control practices will be negotiated as necessary. Maintenance of all erosion control structures must be in accordance with the NPDES permit and the SWPPP (See Section 11.20).]

### **31.10. ROCK EXCAVATION**

Rock excavation includes removal and disposal of rock material encountered that cannot be removed by conventional methods. Rock material includes boulders 1/2 Cu. Yd. or more in volume, and rock in beds, ledges, unstratified masses, and conglomerate deposits. When excavation of the rock material requires systematic use of pneumatic or hydraulic tools or a rock trencher, rock excavation shall be allowed under guidelines of this section of Specifications and Section 20-2.05 of the Standard Specifications, and paid for at the rate specified in the Bid Schedule. Shale, boulders (less than 1/2 Cu.Yd. in size), sandstone, gravel, and similar rocky material that can be removed by conventional methods **WILL NOT** be considered as rock excavation nor allowed for payment. Where blasts are made, the excavation shall be covered with brush, timber, or matting to prevent danger to life and property, and the CONTRACTOR shall secure a special permit from the local governmental authorities for blasting when required. Care shall be taken not to damage adjacent structures, property, or site improvements; or weaken the bearing capacity of rock subgrade when using explosives. Before starting work in areas where rock excavation will be required, the existing condition of adjoining properties shall be verified. Photographs shall be taken to record any existing settlement or cracking of structures, pavements, and other improvements. A list of such damages shall be prepared, verified by dated videos and signed by the CONTRACTOR and others conducting the investigation.

For water main excavations for PVC pipe up to 12 inches in diameter, rock shall be excavated to a width of at least 18 inches more than the inside diameter for PVC pipe, for the entire depth of the

excavation. Rock excavation for pipe will be at least 6 inches below the bottom of the pipe and at least 3 inches below the bottom of the bell of a joint. For water main excavations for PVC pipe 14 inches in diameter and greater, rock shall be excavated to a width of at least 24 inches more than the inside diameter for PVC pipe, for the entire depth of the excavation. Rock excavation for pipe will be at least 9 inches below the bottom of the pipe and at least 6 inches below the bottom of the bell of a joint. Before the pipe is laid, the base of the excavation shall be replaced with a cushion of SELECT GRANULAR BACKFILL. All irregularities of the rock are to be filled with compacted granular backfill as well. In addition, "soft" rock (i.e., rock not allowed for payment as rock excavation, but that can be removed by conventional methods) shall be properly bedded with a cushion of SELECT GRANULAR BACKFILL, to avoid rough edges or other irregularities from damaging the water pipe.

The CONTRACTOR, on encountering rock via the trenching/open cut method, shall sufficiently uncover various spot locations to assure the overall extent of rock in that particular location. The CONTRACTOR, on encountering rock via the directional boring method, shall sufficiently prove the overall extent of rock in that particular location by either accurate records of the pressure at the bore head or uncovering spot locations as directed by the ENGINEER/OWNER. In either case he shall immediately notify the ENGINEER/OWNER, who either (1) will approve rock excavation in that area as necessary, or (2) will provide the CONTRACTOR with an alternate water line routing which could produce a location that eliminates the necessity of all/part of the rock excavation.

The CONTRACTOR must understand that if it is the ENGINEER'S/OWNER'S decision to relocate the water main to avoid the encountered rock, a reasonable time lapse to obtain alternate routing would be necessary. All direct costs involved in re-routing of the water line to a different location to avoid rock excavation will be borne by the OWNER.

It shall be the CONTRACTOR's responsibility to dispose of all excavated rock off site, to clean up debris, and to provide earthen or granular backfill to replace that rock material removed. This work is included in the unit price for Rock Excavation. The CONTRACTOR has five working days from original excavation to remove the rock off site. If after this period of time the rock is not removed from the site, the OWNER has the right to hire an outside agency to remove the rock in a timely manner and these costs shall be withheld from the final Clean-Up/Seeding retainage funds.

Rock excavation by the trenching/open cut method shall be paid for at the contract unit price per cubic yard determined by measuring the average length, width, and depth of the area of rock removal. However, the OWNER will pay for no more than 18 inches plus the I.D. of the water main for trench width and 48 inches plus the ID of the water main for trench depth, for water main up to 12 inches; or 24 inches plus the I.D. of the water main for trench width and 60 inches plus the I.D. of the water main for trench depth for water main 14 inches in diameter and greater; whether in rock or in a combination of rock and earth. In addition, only Rock Excavation as defined above will be included in the measurement for a particular vertical and/or horizontal profile (i.e., soil or soil/rock material overlaying, intermixed with, or underlaying solid rock will not be included), even if a rock trencher is utilized for the area of removal in question.

Rock Excavation by the directional boring method shall be paid for at the contract unit price per cubic yard determined by measuring/estimating the average volume (diameter of rock cutter & estimated length of rock) of the rock removal. However, the OWNER will pay for no more than 1.3 times the diameter of the pipe. In addition, only Rock Excavation as defined above will be included in the measurement for a particular vertical and/or horizontal profile (i.e., soil or soil/rock material overlaying, intermixed with, or underlaying solid rock will not be included), even if a rock cutter is utilized for the area of removal in question. Once the quantity for rock excavation for a particular area has been measured in the field and submitted by the CONTRACTOR and approved for payment by the

OWNER, the CONTRACTOR waives any and all rights to request a change in the quantity in the future.

### **31.11. UNSUITABLE BACKFILL MATERIAL**

All backfill material up to a height of 16 inches above the pipe shall be free from rocks greater than 3 inches in diameter and 5 inches in length, frozen material, clubs, stumps, debris, etc.

Where there is a deficiency of suitable backfill material due to a rejection of part or all of the excavated material as unsatisfactory for backfill purposes, the CONTRACTOR shall furnish satisfactory backfill material wasted from trench excavation in other locations or from other sources furnished by the CONTRACTOR.

Where creek gravel, shelf rock, boulders, etc., removed by conventional methods, are encountered in the pipe installation process, all loose rock shall be removed from the bottom of the trench before the pipe is laid. The pipe shall be bedded in 6 inches of suitable backfill material. The initial backfill up to a depth of 16 inches above the pipe shall consist of suitable backfill.

The CONTRACTOR shall be responsible for disposal (hauling away) of any/all unsuitable backfill material that may not be utilized on the job site. The CONTRACTOR has 5 working days from original excavation to remove the unsuitable backfill material off site. If after this period of time the unsuitable backfill material is not removed from the site, the OWNER has the right to hire an outside agency to remove the unsuitable backfill material in a timely manner and these costs shall be withheld from the final Clean-Up/Seeding retainage funds.

Backfill furnished and work performed (including disposal operations) under these circumstances shall be paid for at the contract unit price per linear foot for "Unsuitable Backfill Material", as determined by measurement in the field.

# **INSTALLATION OF WATER MAIN AND APPURTENANCES**

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# **INSTALLATION OF WATER MAIN AND APPURTENANCES**

## **Section 41**

### **41.01. SCOPE OF WORK**

The work to be performed under this section shall include all materials, labor, equipment, and all other facilities necessary for the installation of the water mains by the trench method and for the installation of appurtenances as shown on the drawings and/or herein specified.

### **41.02. CONSTRUCTION METHODS**

Construction methods recommended in the current edition of the Standard Specifications for Water and Sewer Main Construction in Illinois, as far as applicable, shall be followed. In case of conflict with the Standard Water and Sewer Specifications, these Technical Provisions shall govern. Installation methods shall also conform to the manufacturer's recommendations for the type of pipe being installed, unless specified differently in this Section. All construction and installation shall also comply with the most recent version of the Illinois State Plumbing Code.

For installation criteria specific to the material type of water main to be utilized, refer to Section 51 "Water Main, Fittings, and Appurtenances" of these Specifications.

### **41.03. EXCAVATION (TRENCH METHOD)**

The trench shall be excavated so that the water main will have a minimum of 42 inches of cover, unless a road or railroad permit requires a greater depth. Where a firm foundation is not encountered at the grade established, due to soft, spongy or other unsuitable soil, all such unsuitable soil under the pipe and for the width of the trench shall be removed and replaced with well compacted select granular backfill, hereafter referred to as "trench backfill".

The cost of furnishing and placing trench backfill for the purpose as described above, will be considered as incidental work and no additional compensation will be allowed.

### **41.04. BACKFILLING (TRENCH METHOD)**

Where water mains are crossing open areas where early settlement is not critical, backfill shall be made by any acceptable method which will not dislodge or damage the pipe or cause bridging action in the trench. Excavated material or material from other sources furnished by the CONTRACTOR free from clods (larger than 3 inches) or rock/stones shall be used in backfilling up to 12 inches above the top of the pipe (initial backfill). Excess material shall be neatly rounded over the top of the trench as directed by the ENGINEER to allow for settlement of the trench. In final cleanup operations, the CONTRACTOR shall reshape the surface to level out any uneven settlement that has occurred.

For backfilling under rigid and non-rigid surfaces, including sidewalks, streets, roadways, gravel driveways, and gravel field entrances, initial backfill shall be with the material described above. The initial backfill material shall be worked around and beneath the water pipe and properly compacted

in suitable quantities until the pipe is completely covered and stabilized, before the final backfill is permitted. The final backfill shall be SELECT GRANULAR BACKFILL (CA-6 or equal) deposited for the remaining depth of the trench/excavation and compacted to the satisfaction of the ENGINEER.

Backfilling shall not be done in freezing weather without the permission of the ENGINEER, and it shall not be made with frozen materials. No backfill shall be made where the materials already in the trench are frozen.

Backfilling operations at fittings, gate valves, and hydrant locations shall not occur until all materials and work have been viewed by the OWNER, ENGINEER, or the Resident Project Representative.

No wood shall be allowed in the trench to shim or block out the water main, control the bend of a pipe, or discarded in the trench.

Compacted Rock Backfill - Longitudinal Installation: Where water main installation is performed longitudinally within 2 feet of the edge of roadway surfaces (excluding driveways unless called out on plans), initial and final backfill in the trench shall be as specified in the above paragraph, but the top 6 inches of the trench shall be filled with compacted earth backfill. If the trench is under the roadway, then the initial and final backfill in the trench shall be as specified in the above paragraph. This work will be paid for at the contract unit price per lineal foot for Compacted Rock Backfill – Longitudinal Installation, measured in place. The price shall include all excavation, equipment, labor, materials, traffic safety control, placement and compaction of granular backfill, placement and compaction of earth backfill, loading and disposing of unsuitable material or earth, and other miscellaneous work as necessary.

#### **41.05. DRAINAGE DITCH / CREEK CROSSINGS**

Where water mains cross drainage ditches or creeks, the main shall be installed within the easement under the drainage ditch bed or creek bed avoiding obstructions such as culverts, concrete wingwalls, paved ditches, etc. Where restrained-joint (RJ) PVC pipe for drainage ditch or creek crossings is NOT specified, the CONTRACTOR shall excavate across all drainage ditches or creeks called for in the plans to a sufficient depth to still maintain a minimum of forty-eight inches (48”) of cover between the top of the pipe and the bed of the drainage ditch or streambed of the creek. The PVC pipe shall then be laid in the trench and weighted down with sufficient numbers of sandbags filled with sand to keep the pipe from springing (or floating) upward. The trench shall then be backfilled per the specification. This method of drainage ditch or creek crossing work shall be incidental to the contract price.

Where indicated on the Drawings for the larger creeks, the CONTRACTOR shall install a meter and valve set to allow any leaks under the creek to be metered, as required by the “10-State Standards”. The CONTRACTOR’s bid price for installing the creek crossing meter and valve set of the specified size shall include 2 gate valves with boxes, 2 saddles, 1 residential service meter and pit, other associated connection details as shown on the Drawings, and other appurtenances necessary for complete connection; pressure testing and disinfection as appropriate; and all other associated tasks.

Where a directional bore is specified on the Drawings, all RJ PVC pipe, tracer wire, set-up time, mobilization, etc. shall be incidental to the lump sum cost of the specific bore.

#### **41.06. WATER MAINS AND WATER SERVICE LINES NEAR SEWERS**

Per 35 Illinois Administrative Code, 653.119, water mains and water service lines shall be protected from sanitary sewers, storm sewers, combined sewers, house sewer service connections, and drains, as follows:

##### **A. Horizontal Separation**

1. Water mains shall be laid at least ten feet horizontally from any existing or proposed drain, storm sewer, sanitary sewer, combined sewer, or sewer service connection.
2. Water mains may be laid closer than ten feet to a sewer line when:
  - a. Local conditions prevent a lateral separation of 10 feet;
  - b. The water main invert is at least 18 inches above the crown of the sewer; and
  - c. The water main is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.
3. Both the water main and drain or sewer shall be constructed of slip-on or mechanical joint cast or ductile iron pipe, asbestos-cement pressure pipe, prestressed concrete pipe, or PVC pipe meeting the requirements of 35 Illinois Administrative Code, 653.111 when it is impossible to meet 41.06.A or 41.06.B above. The drain or sewer shall be pressure tested to the maximum expected surcharge head before backfilling.

##### **B. Vertical Separation**

1. A water main shall be laid so that its invert is 18 inches above the crown of the drain or sewer whenever water mains cross storm sewers, sanitary sewers, or sewer service connections. The vertical separation shall be maintained for that portion of the water main located within 10 feet horizontally of any sewer or drain crossed. A length of water main pipe shall be centered over the sewer to be crossed with joints equidistant from the sewer or drain.
2. Both the water main and sewer shall be constructed slip-on or mechanical joint cast or ductile iron pipe, asbestos-cement pressure pipe, prestressed concrete pipe, or PVC pipe meeting the requirements of 35 Illinois Administrative Code, 653.111 when:
  - a. It is impossible to obtain the proper vertical separation as described in 41.06.B.1 above;  
or
  - b. The water main passes under a sewer or drain.
3. A vertical separation of 18 inches between the invert of the sewer or drain and the crown of the water main shall be maintained where a water main crosses under a sewer. Support the sewer or drain lines to prevent settling and breaking the water main.
4. Construction shall extend on each side of the crossing until the normal distance from the water main to the sewer or drain line is at least 10 feet.

##### **C. Water Service Lines**

1. The horizontal and vertical separation between water service lines and all storm sewers, sanitary sewers, combined sewers, or any drain or sewer service connection shall be the same as water main separation described in 41.06.A and 41.06.B above.

D. Special Conditions

Alternate solutions shall be presented to the Illinois Environmental Protection Agency when extreme topographical, geological, or existing structural conditions make strict compliance with 41.06.A or 41.06.B above technically and economically impractical. Alternate solutions will be approved provided watertight construction structurally equivalent to approved water main material is proposed.

- E. Water mains shall be separated from septic tanks, disposal fields, and seepage beds by a minimum of 25 feet. Separation from sewage lagoons shall be 57 feet.
- F. Water mains and water service lines shall be protected against entrance of hydrocarbons through diffusion through any material used in construction of the line.

**41.07. PRESSURE TESTING OF WATER MAIN AND EQUIPMENT**

All tests and testing equipment, including a pressure gauge with maximum graduations of 5 psi and approved by the RPR, shall be provided by the CONTRACTOR at no cost to the OWNER. Prior to performance of the test all air shall be expelled from the pipeline to the satisfaction of the ENGINEER. This may be accomplished by means of hydrants or other means. If required, taps shall be made at high points where air relief valves are not called for on the drawings. Such taps shall be plugged after testing is complete. Pressure test and leakage test procedures should comply with the Standard Specifications, Section 41-2.14, except for the following "A key criterion for the pressure test is that the measured water pressure within the main(after reaching the required test pressure) should not vary by more than 5 psi during the duration of the test." shall be replaced with the following: "A key criterion for the pressure test is that the measured water pressure within the main(after reaching the required test pressure) should not vary from starting pressure during the duration of the test.". The leakage test is not an acceptable formal test for passing a water main, only the pressure test is allowable.

Pressure 50% in excess of working pressure, as measured at the point of lowest elevation, shall be applied for not less than 1 hour, and all pipe, fittings, valves, hydrants, and joints shall be carefully examined for defects. Leaking joints shall be remade and then retested.

The CONTRACTOR shall have the full test pressure applied to the water main segment, and verify that the water main segment is holding pressure, prior to notifying the resident project representative to observe the formal 1 hour pressure test. Pressure test observation requests after 3:30 P.M. will be performed the next working day.

In the event air is admitted to the pipeline after being expelled for the hydrostatic tests, such air shall be removed prior to completion of the system and acceptance by the OWNER. The air may be removed by the methods described in above. In no case shall the system be placed in operation prior to the removal of the air.

**41.08. DISINFECTION OF WATER MAIN AND EQUIPMENT**

A. Preliminary Flushing -

Per Section 41 of the Standard Specifications, disinfection of all water mains shall be carried out in accordance with AWWA C651. The main shall be flushed as thoroughly as possible with the water pressure and outlets available. The CONTRACTOR shall remove all of the internals of

any hydrant during initial flushing of the water main, in order to prevent rocks, dirt, etc., from damaging the working parts of the hydrants. Flushing shall be done after the pressure test has been made. Even with utilizing these flushing procedures, care should be used in laying the pipe to keep heavier solids and foreign material out of the pipe. All flushing operations shall be coordinated with the OWNER's licensed operator and may be regulated by the OWNERS licensed operator to prevent water loss/pressure to their customers. The CONTRACTOR may not be able to flush multiple hydrants simultaneously, and should bid this portion of the work accordingly.

In addition, 2 "pigs" shall be flushed through each segment of water main to aid in the removal of any solids, air, and foreign material. The pigs shall be marked for easy identification and inserted at the point of connection for each line segment, and an additional two pigs shall be inserted at each branch of the main line (i.e., all new water main installed shall be pigged). Retrieval of the pigs and discharge of the water from the initial flushing operation shall be located a minimum of 20 feet away from the water main trench and in such a location that ensures all of the flushed water travels away from the water main. The discharge end of the pipe shall be a minimum of 18 inches above the ground before and during flushing. The pigs shall not be reused. Used pigs shall be provided to the Owner. The CONTRACTOR shall devise a labeling plan and a diagram for the routing of the pigs and submit the plan to the OWNER's Operator/ENGINEER for review/approval before the installation of any water main. All pigs shall be inserted and retrieved in the presence of the Resident Project Representative. All work associated with "Pigging" shall be included in the bid price per lineal foot for PVC water main and no additional compensation will be allowed.

During flushing operations, the CONTRACTOR shall use fire hose(s) to direct the flush water to the nearest natural drainage ditch or waterway. Dissipaters, splash blocks, and/or other appropriate measures shall be incorporated in the flushing procedure to prevent excessive soil erosion as required by the NPDES permit for construction site activities (See Section 11.21). The CONTRACTOR will not be permitted to flush without the use of fire hose and shall bid this portion of the work accordingly.

#### B. Bio-Penetrant Application

Concurrent with filling and chlorinating the new mains, the CONTRACTOR shall add the bio-penetrant as specified in Section 10.04.a.25. The bio-penetrant shall be used per manufacturer's recommendation. The bio-penetrant shall be NSF 60 approved.

The point of application for the bio-penetrant shall be the beginning of the pipeline extension, or any valve section of it, and through a corporation stop inserted in the top of the newly laid pipe.

Water from the existing distribution system or other source of supply shall be controlled so as to flow slowly into the newly laid pipeline during the application of the bio-penetrant. Once the new mains have been filled, the treated water shall remain in the pipeline for 24 hours prior to flushing. After this time, all treated water shall be thoroughly flushed from the newly laid pipeline at its extremities until the replacement water throughout its length is proved comparable in quality to the water served the public from the existing water supply.

All bio-penetrant application work shall be performed in the presence of the Resident Project Representative. All bio-penetrant application work shall be included in the unit bid price for bacteriological sampling.

#### C. Requirements of Chlorination –

Before being placed in service, all new mains or extensions to existing mains, shall be chlorinated, so that a chlorine residual of not less than 25 ppm remains in the water after 24 hours of standing in the pipe.

D. Point of Application –

The preferred point of application of the chlorinating agent is at the beginning of the pipeline extension, or any valve section of it, and through a corporation stop inserted in the top of the newly laid pipe.

E. Rate of Application –

Water from the existing distribution system or other source of supply, shall be controlled so as to flow slowly into the newly laid pipeline during the application of chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the pipe that the chlorine dose applied to the water entering the newly laid pipe shall meet the requirements listed in Section 41.08.C above. This may be expected with an application of 50 ppm, although some conditions may require more.

F. Preventing Reverse Flow –

Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water.

G. Disinfection of Valves and Hydrants –

In the process of disinfecting newly laid pipe, all valves, or other appurtenances, shall be operated while the pipeline is filled with the chlorinating agent.

H. Disinfection of Booster Pumps, Pressure Reducing Valves, etc. –

In the process of disinfecting newly laid pipe, all booster pumps, pressure reducing valves, or other equipment or appurtenances, shall be operated while the pipeline is filled with the chlorinating agent.

I. Final Flushing and Testing –

Following disinfection, all treated water shall be thoroughly flushed from the newly laid pipeline at its extremities until the replacement water throughout its length shall, upon test, be proved comparable in quality to the water served the public from the existing water supply system. All flushing operations shall be coordinated with the OWNER's licensed operator and may be regulated by the OWNERS licensed operator to prevent water loss/pressure to their customers.

After flushing, water samples collected on 2 separate days, at least 48 hours apart, from the treated piping systems at the designated testing points (indicated on the Sampling Plan included with the plan sheets), shall show satisfactory bacteriological results. The OWNER shall be present to witness the collection of all samples. Continuous flushing between the two samples shall not be allowed. Bacteriological analysis must be performed by a laboratory approved by the Illinois Environmental Protection Agency. The CONTRACTOR shall perform all testing and provide all bacteriological analysis results to the ENGINEER.

Once the CONTRACTOR has successfully obtained the 2 required new construction bacteriological samples, the OWNER, at their discretion and within 48 hours, will collect routine bacteriological samples from the same sample point for analysis. If the OWNER's test fails, then the CONTRACTOR shall repeat the new construction sample testing process for that

specific location until both the CONTRACTOR's and the OWNER's samples pass. Any re-testing work by the CONTRACTOR shall be incidental to the Contract price.

All disinfection work and bacteriological sampling work shall be performed in the presence of the Resident Project Representative. Payment for bacteriological sampling will be made to the CONTRACTOR based on his line item bid price for each sample location. The CONTRACTOR's bid price for each sampling location shall include all necessary materials and labor to obtain 2 consecutive passing samples as described above.

#### **41.09. THRUST BLOCKS**

All bends of 11-1/4 degrees or greater, and all tees, plugs, reducers, fire hydrants, and flushing hydrants shall be thrust protected to prevent movement of the lines under pressure. Blocking shall be Portland Cement Concrete poured in accordance with Section 41.-2.09 of the Standard Specifications, or precast, solid blocking for small diameter pipe where the undisturbed soil is extremely firm and stable. Thrust blocking shall extend from the fitting to the undisturbed soil. Pipe and fitting joints shall remain accessible for repairs. Where unstable soil conditions exist, all deflections in the pipe from a straight line shall be provided thrust blocking in accordance with the manufacturer's recommendations. Concrete for reaction or thrust blocks shall have a 28 day compressive strength of not less than 3,000 psi. No wooden wedges, treated or otherwise, shall be allowed for shims for the blocking in any circumstance. PVC pipe may not be used in lieu of concrete blocks. Where a fitting is used to make a vertical bend, the fitting shall be anchored to a thrust block braced against undisturbed soil. The thrust block should have enough resistance to withstand upward thrusts at fitting.

#### **41.10. DEWATERING**

The CONTRACTOR shall at all times during construction provide and maintain ample means and devices with which to promptly remove and properly dispose of all water entering the trenches or excavation. All trenches or excavation shall be kept dry until construction is complete. No foreign water shall be allowed to enter any pipe which has been laid. No water shall be allowed to stand over concrete until the concrete has set for at least 24 hours. This refers to thrust blocks, anchorages, foundations, etc..

If well pointing or the installation of temporary drains are required to complete the work, they shall be provided by the CONTRACTOR.

No additional compensation shall be made to the CONTRACTOR for any dewatering techniques, equipment or labor.

#### **41.11. ADJUSTING UTILITIES**

All utilities, including wiring, light standards, signal lights, sewers, private water lines, buried telephone cable, underground gas lines, etc., affecting the construction of the proposed improvement shall be adjusted at the CONTRACTOR's expense. It shall be the CONTRACTOR's responsibility to determine the exact location of all utilities. All adjustments shall be done as specified by the OWNER of the utility. If the CONTRACTOR damages any utility not requiring adjustment, he



shall replace or repair it as required by the OWNER and no additional compensation will be allowed. No attempt has been made on the drawings to show all utilities or their exact locations.

#### **41.12. REMOVING FIRE/FLUSHING HYDRANTS**

Where indicated on the drawings or requested by the OWNER or ENGINEER, existing fire/flushing hydrants shall be removed where an existing water main is to be extended/connected. The CONTRACTOR shall remove and dispose of the existing fire/flush hydrant, unless it is to be salvaged and the contractor shall leave it in a convenient location for pick up by the water system's operator. This work shall be incidental to the Contract Price.

#### **41.13. CUTTING-IN TEES, VALVES, AND CAPS**

Where indicated on the drawings or requested by the OWNER or ENGINEER, tees, gate valves and/or caps of the appropriate size shall be cut-in to the existing water main. The CONTRACTOR's bid price for "Connections/Caps with Line Stops" shall include locating the existing water main (and other appropriate utilities); shutting off the flow of water at nearby valves or with line stops as necessary, and as indicated on the Drawings; installation at the new location complete with all necessary appurtenances; pressure testing and disinfection as appropriate; and all other associated tasks. CONTRACTOR shall coordinate the schedule of each line stop with the OWNER/ENGINEER.

#### **41.14. INSTALLING OFFSET FIRE/FLUSHING HYDRANTS WITH GATE VALVE**

Where indicated on the Drawings or requested by the OWNER or ENGINEER, fire/flushing hydrants shall be installed "offset" from the main line. As shown in detail on the Drawings, a tee or cross with anchor coupling, gate valve, and blind flange shall be utilized at the end of the water main "run" and/or second "branch" unless continuing with water main. From the branch, the CONTRACTOR shall install an anchor coupling(s), with lengths as shown on the general fitting detail in the plans, gate valve, and hydrant. In general, the offset is requested in areas likely to be extended in the future, for ease of construction, or in areas for future ease of maintenance. The CONTRACTOR'S bid price for installing offset fire/flushing hydrants shall include the tee, blind flange, gate valve(s), anchor couplings, and fire/flushing hydrant (with locking mechanism when specified or indicated on drawings); complete with blocking, gravel, all necessary reducers and/or enlargers, and other appurtenances necessary for complete connection; pressure testing and disinfection as appropriate; and all other associated tasks.

#### **41.15. WATER MAIN CONNECTION TO STRUCTURES**

The CONTRACTOR specified shall furnish all labor, materials, fittings, tools, and equipment necessary for the complete installation of the necessary piping, valves, and appurtenances to physically connect the proposed water main to the proposed or existing structure (elevated tank, ground storage tank, booster pump station, etc.), as shown on the Drawings.

#### **41.16. FIELD TILE REPAIR**

The bid item for "Field Drain Repair", will be paid to the CONTRACTOR only when a tile is not located or is improperly located, and the CONTRACTOR then damages and properly fixes the tile. If a tile is located to within 18 inches on either side of the mark (as for JULIE locates) and the CONTRACTOR damages the tile, then the CONTRACTOR shall fix the tile and no payment will be allowed under this bid item. In addition, no payment will be allowed for CONTRACTOR down time to hand dig or otherwise search for a marked field tile, whether accurately located or not.

The bid price for "Field Drain Repair" shall include all necessary gravel backfill/support as shown on the Drawings.

#### **41.17. OPEN-CUT STEEL CASING**

Where the proposed water main will be located within the limits of the proposed IDOT roadways, the water main shall be installed in steel casing (see Section 54.07.B for material requirements) of the size shown on the Construction Drawings. The limits of the steel casing areas shall be staked by the OWNER as described previously in this section. In areas where there are currently no known structures or other limiting factors, the steel casing may be installed in an open trench. Where it is necessary to weld 2 sections of casing pipe together in the trench, the CONTRACTOR shall ensure that the joint is not below a proposed IDOT FAP 310 traveled surface. After the steel casing has been installed in the trench, the CONTRACTOR shall backfill portions of the trench with SELECT GRANULAR BACKFILL as specified in Section 31.01. The CONTRACTOR shall bid a lineal foot price for installing steel casing of the size specified on the Construction Drawings. Earth backfill for Open-Cut Steel Casing Pipe will be incidental to the unit price of the steel casing pipe installation and no additional compensation will be allowed. Measurement in lineal feet shall be made along the centerline of the steel casing as installed.

The Water main installed through the casing pipe shall be RJ as specified in Section 51 of these specifications and sized as shown on the Drawings. Casing spacers shall be used for the full length of the casing. Also, either end seals or a method approved by the OWNER shall be used to seal the end of the casing. All RJ pipe placed in steel casing pipe shall utilize casing spacers as specified in Section 51.07.13. Payment for the restrained joint pipe through the casing shall be as specified in Section 54.07.



# **WATER MAIN, FITTINGS, AND APPURTANENCES**

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## **WATER MAIN, FITTING, AND APPURTANENCES**

### **Section 51**

#### **51.01. SCOPE OF WORK**

The CONTRACTOR shall furnish all equipment, material, labor, standard fittings, skills, special fittings, couplings, etc., for the satisfactory installation of waterline.

The CONTRACTOR shall bid a lineal foot price for the various different sizes, diameters and pressure ratings as indicated on the bidding proposal. All ductile iron fittings, couplings, adaptors, lubricants, gaskets, restrainers, and similar items shall be included in the bid price per lineal foot for water main and no additional compensation will be allowed for these items.

#### **51.02. GENERAL INFORMATION**

- A. All pipe shall meet the specifications of the National Sanitation Foundation (NSF). The pipe manufacturer shall furnish certification in sufficient copies that the pipe supplied is in compliance with all requirements as specified herein.
- B. Any bend in the water main greater than 11-degrees will require a mechanical joint, ductile iron elbow fitting with restrainers.
- C. Samples of pipe, physical and chemical data sheets, shall be submitted to the ENGINEER, upon request, for approval and his approval shall be obtained before pipe is purchased.
- D. The pipe shall be homogeneous throughout and free from cracks, holes, foreign inclusions or other defects. The pipe shall be as uniform as commercially practical in color.
- E. Pipe must be delivered to the job site by means which will adequately support it and not subject it to undue stresses. In particular, the load shall be so supported that the bottom rows of pipe are not damaged by crushing. Pipe shall be unloaded carefully and strung or stored as close to the final point of placement as is practical. Pipe strung for installation in the field may not be placed more than 3 days in advance on the installation process.
- F. Pipe shall be protected from truck exhaust during transportation.
- G. Pipe shall be protected from crop spraying while stored on-site, or strung for installation, prior to installation.
- H. The workmanship, pipe dimensions, and tolerances, outside diameters, wall thickness, eccentricity, sustained pressures, burst pressures, flattening, extrusion quality, marking and all other requirements of the Commercial Standards, CS 256-63.
- I. At all times when work is not in progress, all open ends of pipe and fittings shall be securely closed with metal plugs or caps so that no trench water, earth, animal, or other substances may enter the pipe or fittings.
- J. Ductile iron pipe shall not be pushed through bore holes at highway and railroad crossings. The CONTRACTOR may install ductile iron pipe inside of steel casing that has been bored and jacked provided:

1. That the highway or railroad to be crossed amends the permit to allow ductile iron pipe as the carrier.
2. The CONTRACTOR, at his own expense, provides the increased casing pipe size required.

### **51.03. WATER MAIN PIPE – PVC SLIP JOINT**

- A. This section of the specifications covers rigid polyvinyl chloride pipe, hereinafter called PVC pipe.
  1. The water main shall be Polyvinyl Chloride (PVC) pipe and push-on gasketed joints, in accordance with Section 40 of the Standard Water and Sewer Specifications.
  2. ASTM Specification D 1784, shall be conformed with in all respects.
  3. Freedom pipe will not be allowed on this project.
- B. PVC Pipe (3 to 12 inch)
  1. SDR-DR-PR PVC Pipe: SDR (Standard Dimension Ratio) –DR (Dimension Ratio)- PR (Pressure Rated) PVC pipe shall be Type I, grade 1 or 2, with a hydrostatic design stress of 2,000 psi for water at 73.4°F, designated as PVC 1120 or PVC 1220.
  2. PVC pipe with SDR ratings of 13.5, 17, 21, and 26 are to be used or as indicated on the bidding schedule, and shall conform to the latest revision of ASTM Specification D2241. PVC pipe with DR ratings of 14, 18, and 25 shall conform to the latest revision of AWWA C900. PVC pipe with PR (Pressure Rating) shall conform to the latest revision of AWWA C905
  3. Miscellaneous lengths of pipe can also be supplied plain end and joints made with the use of a double gasket coupling. These couplings shall be provided with pipe stops and have a pressure rating of 200 psi working pressure.
- C. PVC Pipe (14 to 48 inch)
  1. DR-PR PVC Pipe: DR (Dimension Ratio) - PR (Pressure Rated) PVC pipe shall be manufactured from unplasticized PVC compounds having a minimum cell classification of 12454, as defined in ASTM D 1784, providing a hydrostatic design stress of 4,000 psi for water at 73.4°F in accordance with the requirements of ASTM D 2837. PVC pipe shall be made to iron pipe size (IPS) diameters OR cast iron outside diameters (CIOD).
  2. For CIOD PVC pipe with DR rating of 18 (PR 235), 21 (PR 200), and 25 (PR 165) are to be used as indicated on the bidding schedule, and shall conform to the latest revision of AWWA Specification C905.
  3. For IPS PVC Pipe: SDR (Standard Dimension Ratio) - PR (Pressure Rated) PVC pipe shall be Type I, grade 1 or 2, with a hydrostatic design stress of 2,000 psi for water at 73.4°F, designated as PVC 1120 or PVC 1220. PVC pipe with SDR ratings of 21 (200 psi) and 26 (160 psi) are to be used or as indicated on the bidding schedule, and shall conform to the latest revision of ASTM Specification D2241.

#### **51.04. WATER MAIN PIPE – RESTRAINED JOINT PVC**

- A. This section of the specifications covers rigid restrained-joint polyvinyl chloride pipe, hereinafter called RJ pipe.
1. The CONTRACTOR must use PVC RJ pipe for drainage ditch crossings, road crossings, and creek crossings as well as all directional bores (including water main inside of steel casing pipe), as shown on the contract drawings.
  2. The RJ pipe shall be furnished with twin gasket couplings, nylon splines, rubber rings and lubricant. The rubber rings shall be shipped in place in the coupling.
  3. For 3 inch to 12 inch RJ pipe, the transition from RJ pipe to PVC or ductile iron pipe shall be made by the use of a manufacturer supplied expansion coupling. This coupling shall be restrained-joint by IPS. Only the installation of full sticks of RJ pipe with factory grooves shall be permitted.
  4. For 14 inch and larger, the CONTRACTOR shall use either the manufacture's expansion joint or a 24 inch ductile iron sleeve, with the end towards the RJ connected with a UFR joint restraint, and the other end with a UFA. The UFR and UFA shall be manufactured by Ford Meter Box Co.

#### **51.05. WATER MAIN PIPE – DUCTILE IRON PIPE**

All ductile iron pipe shall be manufactured in accordance with all requirements of AWWA Standard C-151. Standard laying length is either 18 feet or 20 feet. All pipe shall meet the following thickness requirements:

Pipe Size (Nominal I.D.)	Minimum Thickness	Thickness Class	Pressure Class
3 inch	0.25 inch	51	
4 inch	0.26 inch	51	
6 inch	0.25 inch	50	
8 inch	0.27 inch	50	
12 inch	0.28 inch		350
16 inch	0.34 inch		350

The inside of the pipe shall be cement lined in accordance with AWWA Specification C-104, ANSI A 21.4, with a bituminous seal coat. All exterior surfaces of ductile iron pipe shall have a bituminous coating of either coaltar or asphalt base at least one mil thick.

Where/if the water main crosses an existing petroleum pipeline, slip-joint ductile iron pipe with hydrocarbon resistant gaskets shall be used for a length as required to obtain at least 25 feet clear distance from the water main to the petroleum pipeline.

Pipe joints shall be manufactured in accordance with the following specifications:

- A. Mechanical joint pipe shall be furnished with applicable gaskets, glands, and bolts. Bolts shall be of Cor Blue or an equivalent ASTM A 242 material. Joint shall be in accordance with AWWA Standard C 110 and C 111.



- B. Slip-joint pipe shall be furnished with gaskets and lubricant, and be in accordance with AWWA Standard C 111.
- C. Restrained-Joint pipe joint shall be furnished with gaskets, restraining ring, and lubricant, and be in accordance with AWWA Standard C 153 and C 111 per Section 10.03.01.10.e.
- D. River Crossing Pipe shall be ductile iron manufactured in accordance with the requirements of ANSI/AWWA C151/A21.51. Push-on joints for such pipe shall meet the requirements of ANSI/AWWA C111/A21.11, allow deflection of up to 15°, and be per Section 10.03.01.10.f. Pipe thicknesses shall be equal to manufacturer's standard.

Polyethylene encasement shall be used on all ductile iron pipes and the polyethylene encasement shall conform to ANSI/AWWA C 105/A21.5 Standards. Polyethylene material will deteriorate rapidly when exposed to direct sunlight. Store all polyethylene encasement out of the sunlight. If during the installation period it is anticipated that the polyethylene encasement will be exposed to sunlight for more than two weeks (ie. Open trench) Type C (black) polyethylene material must be used.

Where/if the water main crosses an existing petroleum pipeline, slip-joint ductile iron pipe with hydrocarbon resistant gaskets shall be used for a length as required to obtain at least 25 feet clear distance from the water main to the petroleum pipeline.

#### **51.06. HDPE PIPE**

The water main shall be High Density Polyethylene (HDPE) pipe, DR 9 for PC 200 (or other classes and materials as called out on the Drawings). Any bend in the water main shall have a minimum radius of curvature of 30 pipe diameters. Sharper bends shall require a fitting. Fittings shall be made of the same material as the pipe and shall be capable of being fused or mechanically joined to the water main.

- A. DR-PC HDPE Pipe: DR (Outside Dimension Ratio) - PC (Pressure Class) HDPE pipe shall be grade PE3408. The pipe shall be of the Ductile Iron Pipe Size Outer Diameter. Materials shall meet the following physical property requirements:

PROPERTY	UNIT	Test Method	Nominal Value
Material designation	—	PPI/ASTM	PE3408
Cell classification		D3350	345464C
<i>Further, the material must have a:</i>			
Density	gm/10 min	D1505	0.957 <sup>(2)</sup>
Melt Index	gm/10 min.	D1238-E	0.08
Flow Rate (190/21.6)	gm/10 min.	D1238-F	8.5

Flexural modulus	psi	D790	135,000
Tensile strength @ yeild	psi	D638	3,500(2)
ESCR	Failure%/hrs.	D1693	F <sub>0</sub> >10,000
	----	F1248	F <sub>0</sub> >10,000
Carbon Black	%	D1603	2.5 <sup>(2)</sup>
Elastic modulus	psi	D638	125,000 <sup>(2)</sup>
Brittleness temperature	°F	D746	<-180 <sup>(2)</sup>
Melting point	°F	D789	261 <sup>(2)</sup>
Vicat softening temperature	°F	D1525	255 <sup>(2)</sup>
Hardness	Shore D	D2240	64
Thermal expansion	in/in/°F	D696	1.1 x 10 <sup>-4</sup>
Volume resistivity	ohm-cm	D991	2.6 x 10 <sup>16</sup>
HDB @ 73.4 °F	psi	D2837	1600
@140 °F	psi	D2837	800
<i>Pipe shall also be:</i> Molecular weight category			Extra high
Molecular weight		GPC	330,000 <sup>(2)</sup>

- B. Samples of pipe, physical and chemical data sheets, shall be submitted to the ENGINEER for approval and his approval shall be obtained before pipe is purchased.
- C. HDPE pipe with DR ratings of 9 are to be used as indicated on the bidding schedule, and shall conform to the latest revision of ASTM Specification D3350.
- D. HDPE pipe shall bear permanent identification markings that will remain legible during normal handling, storage, installation, and service life and that have been applied in a manner that will not reduce the strength nor otherwise damage the product. Pipe markings shall include, as a minimum, standard color designation (blue for potable water line), nominal size; standard PE code designation; dimension ratio and diameter base; AWWA pressure class; AWWA designation number; manufacturers name or trademark and production record code; and the seal, or mark of the testing agency that certified the suitability of the pipe or tubing material for potable water products.

## **51.07. WATER MAIN FITTING**

All ductile iron fittings shall conform to AWWA C 153, AWWA C 110, and AWWA C 111, 2 inch to 48 inch, for 250 psi water pressure plus water hammer. All fittings except plugs and sleeves shall be cement lined to conform to AWWA C 104 with a bituminous seal coat. Sleeves and plugs shall be bituminous seal coated. Application gaskets, standard transition gasket (SMJ gasket) for IPS PVC, mechanical joint restraining glands, and bolts shall be furnished. All bolts shall be Cor Blue or an equivalent ASTM A 242 material. Sleeves and plugs shall be bituminous seal coated.

- A. Fittings include hydrants, gate valves, tees, elbows, crosses, reducers, caps, plugs, and wyes.
- B. **All fittings associated with PVC or DI water main installation shall be ductile iron. All ductile iron fittings shall be mechanical-joint and utilize mechanical-joint restraining glands where anchor couplings are not required.**
- C. Pressure rating of fittings shall be equal to or greater than the specified pipe.
- D. Backfill operations at fittings, gate valves, and hydrant locations shall not occur until all materials and work have been viewed by the OWNER or RPR.
- E. PVC Expansion Couplings shall be allowed when transitioning from PVC to RJ PVC Pipe. The expansion couplings shall be provided by the manufacturer and be RJ on one end and slip joint on the other. The fitting shall be of the same material as the pipe, and in no case shall have thinner walls than that of the pipe furnished. The fitting for gasketed joint, RJ PVC pipe shall be molded in one (1) piece.

Ductile Iron Expansion Couplings shall be a ductile iron sleeve with a restrained-joint fitting on one side and slip-joint fitting on the other side.

### **F. Fittings for use with HDPE**

All fittings associated with HDPE shall be either Ductile Iron or of HDPE material with the equal or greater pressure rating as the pipe. Where HDPE is to be joined to PVC or Ductile Iron pipe, the appropriate transition fitting shall be used. The transition fittings shall be as specified and as manufactured by the HDPE pipe manufacturer or an approved DI equal. As the HDPE pipe will contract upon pressurization, it may be necessary to restrain several joints on either side of the HDPE-to-Ductile Iron/PVC connection points. It shall be the CONTRACTOR'S responsibility to coordinate with the HDPE pipe manufacturer, the number of joint restraints needed for any given installation.

**Butt Fusion Fittings:** Butt fusion fittings shall have a manufacturing standard of ASTM D3261. Fabricated fittings are to be manufactured using Data Loggers. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the quality control record, copies of which shall be submitted to the OWNER'S Resident Project Representative. All fittings shall have nominal burst values of three and one-half times the Working Pressure Rating of the fitting.

**Electrofusion Fittings:** Electrofusion shall have a manufacturing standard of ASTM F1055. All fittings shall have nominal burst values of three and one-half times the Working Pressure Rating of the fitting.

**Flanged and Mechanical Joint Adapters:** Flanged and Mechanical Joint Adapters shall have a manufacturing standard of ASTM D3261.

#### **51.08. WATER MAIN PIPE LAYING**

- A. **General:** Only competent persons at laying water main pipe shall be employed on this phase of the work, and complete suitable equipment necessary for the execution of same is required. Any incompetency observed by the OWNER must be removed at his request, and where improper equipment or lack of same appears to be impairing the quality or speed of the work, such adjustments in same shall be made to the OWNER's satisfaction.

The pipe, fittings, and valves shall be placed in the trench with care. Under no circumstances shall pipe or other materials be dropped or dumped into the trench. The pipe shall not be dragged in a manner which would cause scratching on the surface of the pipe and will be considered cause for rejection. Pipe shall be installed in accordance with the manufacturer's recommendations, and with the Standard Specifications for Water and Sewer Main Construction in Illinois.

**A full length of pipe shall be used where slip-joint pipe connects to a fitting or appurtenance. Where a full length of pipe cannot be utilized for any reason, a UFR Series 1350 joint restraint, for PVC or equal for DI, manufactured by The Ford Meter Box Company, Inc, shall be used at the first joint from the fitting such that the length of restrained pipe is greater than or equal to 20 feet.**

All joints that result in a change of direction shall be restrained with a solid concrete thrust block in such a fashion so that the weight and thrust is transferred to the undisturbed soils of the trench. These solid thrust blocks shall be made of concrete and placed so that adequate bearing against undisturbed soil is provided.

- B. **Pipe Cleaning During Laying Operation:** If dirt or dust has been introduced into the length of pipe, a thorough cleaning of the pipe shall be done just before the joint of pipe is installed. At this time a visual check shall be made by placing the pipe in an inclined position to assure that all foreign matter and dirt is removed from the inside of the pipe. The pipe shall be kept clean during and after laying. At the termination of pipe laying, the open end of the pipeline shall be closed off by a suitable cover until laying operations are resumed.
- C. **Inspection of Material During Construction:** Any materials not meeting the specifications, or obviously faulty material, shall be rejected by the ENGINEER and removed from the job site by the CONTRACTOR. When ordered by the ENGINEER, joints may be cut from the pipeline for inspection. All ductile iron installation, whether pipe or fittings, shall be reviewed by the Resident Project Representative before the trench is backfilled. Failure to allow for this observation shall result in the exposing of the pipe for review, and shall be incidental to the contract price.
- D. **Fluid Tight Joints:** All dirt, debris, and moisture shall be removed from the surfaces to be jointed. Make sure the gasket is not twisted or turned to prevent proper sealing in the groove. Apply the lubricant to the gasket surface and to the spigot end of the pipe. The joint is made by one quick easy motion making sure the guide mark has reached the end of the fitting. For restrained-joint pipe, the contractor should then inserting the nylon spline through the spline hole in the assembled joint which engages with the spline groove in the pipe end.
- E. **Breaks in Pipe or Joints:** All breaks in pipe and/or joints shall be repaired to the satisfaction of the ENGINEER and at the expense of the CONTRACTOR. The defective pipe or fittings shall be removed and replaced. Repair clamps will not be permitted.

F. Cutting Pipe: Cutting of RJ pipe shall not be allowed; only the installation of full length pipe shall be allowed. The only exception to this is when restrained-joint pipe is connecting to a fitting. In this case the restrained-joint pipe may be cut to the necessary length and appropriate UFR used on the restrained-joint at the fitting.

G. Bed and Cover: Each section of pipe in the trench shall rest upon the pipe bed for the full length of its barrel. The bottom of the trench shall be free from rocks, clods, or other sharp-edged objects. The subgrade upon which the pipe is placed shall consist of material suitable for supporting the pipe without excessive settlement or stress development.

If the pipe is to be laid in a trench having a rock bottom, bedding shall be as specified in Section 31.10.

Initial and final backfill shall be as specified in Section 41.04.

Service lines and laterals must be assembled so that no strain is placed on the pipe during or after backfill operation. After laying of the pipe is completed, it shall be center loaded with backfill to prevent arching and whipping under pressure. Center loading should be done carefully so that joints will be completely exposed for examination during testing, unless conditions warrant complete backfill before testing.

H. Preliminary Pressure Testing: At the ENGINEER's option during the general construction period the following pressure testing procedure shall be followed:

After the PVC pipe is assembled trench side or in the trench, a test of not less than 50% above the system's anticipated working pressure shall be applied with either air or water. After two consecutive tests have been performed without any failure, the CONTRACTOR at his option and with the ENGINEER's approval may discontinue testing until the system is completed. A hydrostatic test shall then be run as outlined in paragraph I, this section.

If there is a change of laying conditions, technique or personnel after the testing has been discontinued the CONTRACTOR should, and at the ENGINEER's request will, test additional sections to provide assurance that this change is satisfactory.

I. Pressure Testing: Hydrostatic and pressure testing shall conform with Section 41, "Pressure Testing of Water Main and Equipment".

J. Measurement and Payment: Payment for all work described in this section shall be included in the CONTRACTOR's bid price for the respective sizes of lines, pressure class, and material type, as shown in the Bid Schedule. Measurement in lineal feet shall be made along the centerline of the trench through all valves and fittings.

K. Service Connections: All service connections shall be made by means of tees, tapped couplings, service clamps and other fittings approved by the ENGINEER. The water main shall not be tapped for the installation of service connections until flushing and "pigging" of the main has been completed as specified in Section 41.08. The use of solvent weld plastic saddles will not be permitted. Whenever corporation stops are placed in plastic lines after conducting hydrostatic tests, a visual inspection of the saddle and corporation stop shall be made to ensure the system is free of leaks.

L. Polyethylene encasement shall be used to wrap the ductile iron pipe prior to installation. See section 51.03 for specifications on the polyethylene encasement.

- M. The CONTRACTOR'S attention is brought to the fact that HDPE pipe has a high coefficient for thermal expansion and contraction. Care shall be taken when connecting pipe at all bores and all fittings.

## **51.09. WATER MAIN APPURTENANCES**

### **51.09.01 SERVICE LINE**

Polyethylene service pipe and tubing shall be rated for use with water at 73.4°F at a maximum working pressure of 200 psi. The Standard Dimension Ratio (SDR) shall be 9 for CTS tubing sizes. The average outside diameter, minimum wall thickness and respective tolerances for any cross-section shall be as specified in ASTM D 2737. Pipe and fittings shall be rated at the same pressure class, or greater, as the water main at the connection point. All compression fittings must use a stainless steel insert.

### **51.09.02 HYDRANT**

The hydrant shall have male connections with National Standard hose coupling threads. The opening of all hydrants shall be counterclockwise. An arrow shall be cast or stamped on the top indicating the direction to open. The operating nut shall be National Standard pentagon. The main valve opening shall be designed so that removal of all working parts can be accomplished without excavating. Furthermore, the main valve assembly, drain ring, and drain ring housing shall be connected to the shoe by drain ring housing bolts, allowing easy maintenance, repair, or replacement of the entire barrel assembly without water shut-off. CONTRACTOR shall provide all necessary reducers and/or enlargers for complete connection, and shall be included in the bid price for flushing/fire hydrants.

Hydrants shall be set at such elevations that the connecting pipe will not have less cover than the main water main. Blocking shall be as described on the drawings. Not less than 7 cubic feet of clean gravel shall be placed around the base of the hydrant to insure drainage. A woven, nylon, polypropylene fabric shall be placed over the gravel to prevent infiltration of soil into the drainage field. The backfill around the hydrant shall be thoroughly compacted to the grade line. Hydrants shall have the interior cleaned of all foreign matter before installation. Stuffing boxes shall be tightened and the hydrant shall be inspected in working condition. The CONTRACTOR shall remove all of the internals of the hydrant during initial flushing of the water main, in order to prevent rocks, dirt, etc., from damaging the working parts of the hydrants.[ All hydrants shall be set plumb and one hose connection shall face the road, or to the satisfaction of the OWNER or ENGINEER. Hydrants shall be painted with 1 primer coat of red paint and 2 red finish coats.]

The hydrant must employ a compression type main valve which closes with pressure. The operating nut is to be made of bronze or cast iron. The operating threads and thrust collar shall be sealed from the waterway by one or more "O" rings and shall be lubricated from a sealed, self-contained lubricant reservoir. Upper and lower stems shall be jointed with a cast iron coupling with stainless steel pins.

There shall be a minimum of 2 drain ports. These drains shall be of bronze. The drain valves shall be rubber or leather faced and shall work automatically with the main valve and permit draining of the barrel with the main valve closed. Springs must be bronze or stainless steel if springs are utilized in drain valve assembly.

The hydrant seat must be bronze with a machined seating surface. The main valve assembly shall be seated in a subseat of all bronze material so as to provide bronze to bronze engagement of the valve seat ring and to provide a drainage channel of non-ferrous material. This bushing must be locked in place mechanically to prevent rotation or accidental removal.

Where a hydrant is installed adjacent to a road bore or ditch crossing the depth of bury required may be greater than that listed below. In these instances, the CONTRACTOR shall provide the appropriate depth of bury at no additional cost to the OWNER.

1. 2-1/4 inch Flushing Hydrants

The hydrant shall be designed for 150 lbs. working pressure and 300 lbs. hydrostatic test pressure. The hydrant must employ a compression type main valve which closes with pressure. The operating nut is to be made of bronze or cast iron. The hydrant shall have a 2-1/4 inch barrel, a single, 2-1/2 inch hose nozzle with National Standard thread and a 3 inch ring/fluid tight inlet connection, to adapt to any size PVC water main. The hydrant shall be joined to the water main by a mechanical joint shoe sized to match the water main and a Large End Mechanical Joint Reducer when necessary.

2. 4-1/2 inch Flushing Hydrants

4-1/2 inch flushing hydrants shall have a base connection as required for the type and size of pipe used in the water main construction. The hydrant shall be designed for 200 lbs. working pressure and 400 lbs. hydrostatic test pressure. Hydrants shall be of the dry barrel type, with breakable body traffic model, conforming to AWWA C502, and shall have a valve opening at least 4-1/2 inches in diameter. The flush hydrant shall be designed for a minimum of 42 inch bury. The hydrant shall have two 2-1/2 inch hose connections. The main valve opening shall not be less than 4-1/2 inches.

The safety flange shall be set approximately 4 inches above ground level.

3. Fire Hydrants

Fire hydrants shall have a base connection as required for the type and size of pipe used in the water main construction. The hydrant shall be designed for 200 lbs. working pressure and 400 lbs. hydrostatic test pressure. Hydrants shall be of the dry barrel type, with breakable body traffic model, conforming to AWWA C502, and shall have a valve opening at least 5-1/4 inches in diameter. The fire hydrant shall be designed for a minimum of 48 inch bury. The hydrant shall have two 2-1/2 inch hose connections, and one 5-1/4 inch pumper connection.

The main valve opening shall not be less than 5-1/4 inches.

The safety flange shall be set approximately 4 inches above ground level.

**51.09.03 BUTTERFLY VALVES**

Butterfly valves 3 inch-20 inch shall and conform to AWWA specification C504 except as modified or supplemented herein.

“Bolt-through” style valves will not be allowed. Valves must be flanged, for bolting from both sides, to allow the valve to remain in place when removing piping either upstream or downstream of the valve for maintenance. One piece bodies shall be composed of materials meeting the requirements of ASTM A 126, Class B, with added nickel and chromium (“semisteel”). Valves shall be rated at 200 psi and provide bubbletight shutoff at differentials up

to 200 psi. The rubber seal shall be integral to the valve body, not located on the disk itself. The disk shall have a stainless steel edge.

#### **51.09.04 GATE VALVES**

Gate valves shall be designed for a minimum water working pressure of 250 psi. Valves shall be resilient wedge, non-rising stem type, and shall be used with the type of pipe and joint to be installed. Gate valves shall have a clear waterway equal to the full nominal diameter of the valve and shall be opened by turning counterclockwise. The operating nut shall have an arrow, cast in the metal, indicating the direction of opening. Each valve shall have the maker's initials, and pressure ratings cast on the body. Prior to shipment from the factory, each valve shall be tested by hydraulic pressure equal to twice the water working pressure.

2 inch-12 inch gate valves shall conform to AWWA Standards C509 & C550 with 'O' ring seals. 14 inch-36 inch gate valves shall conform to AWWA Standards C550, & C515 with 'O' ring seals and a 90° bevel gear actuator.

Gate valves shall have mechanical joints. No "push-on" joints will be allowed. All bolts for the bonnet shall be stainless steel. All bolts for the retainer glands shall be Cor Blue or an equivalent ASTM A 242 material. The valve, below the operating nut, shall be wrapped in 4 mil plastic. The plastic wrap shall cover the bonnet, the mechanical joint glands, bolts, and valve body.

#### **51.09.05 VALVE BOXES**

Valve boxes shall be ductile iron. Boxes shall be of the extension type with screw adjustment and flared base. The minimum thickness of metal shall be 3/16 inch. The word "WATER" shall be cast in the cover. Boxes shall be installed over each gate valve. The boxes shall be of such a length that will permit adjustment in length, without full extension, to the depth of cover required over the pipe at the valve location. The CONTRACTOR shall supply extension stems, as necessary, where the water main is installed deeper than normal due to utilities, convenience, etc. This work shall be incidental to the Contract.

Valves and valve boxes shall be installed at locations determined by the OWNER or his representative. Valves not set at that location shall be relocated by the CONTRACTOR at no cost to the OWNER. Valves shall be set plumb. Valve boxes shall be centered on the valve. Earth fill shall be carefully tamped around each valve box to a distance of 4 feet on all sides of the box or to the undisturbed trench face if less than 4 feet. [ Valves shall not be located in tillable fields or areas where agricultural practices pose the possibility of damaging the valves and/or valve boxes. Gate valve boxes shall be per Section 10.03.01.16. ]

Approval of location must be given by Township Supervisors when valve boxes are located on public R.O.W.

All valve boxes for valves 4 inch to 12 inch shall be installed upon the valve with the use of a Gate Valve Adaptor as manufactured by Adaptor Inc., or equal, to stabilize the valve box, and shall be incidental to the contract price. All valve boxes for valves 14 inch to 24 inch shall be centered over the operating nut and installed upon a level surface of rock, compacted around the bevel gear and operating nut, to stabilize the valve box. The compacted rock shall be incidental to the Contract. Substantial completion will not be issued to the CONTRACTOR until it has been verified by the OWNER that all gate valves can be accessed and operated with a standard valve wrench.



#### **51.09.06 VALVE BOX MARKERS**

The station shall be two sided with identification stickers located on both sides containing OWNER's official name and telephone number. Color to be selected by OWNER.

#### **51.09.07 COMBINATION AIR RELEASE VALVE**

Combination air release valves shall be installed at high points in the supply main when directed by the ENGINEER. Valves for water mains 8 inch diameter or less shall have 1 inch inlet and outlet. Valves for water mains larger than 8 inch diameter shall have 2 inch inlet and outlet. All combination valves shall be so designed as to permit the release of a large quantity of air during the filling of the pipeline and also permit a large quantity of air to reenter the pipeline to break the vacuum and eliminate any danger of collapse should the liquid suddenly leave the pipeline. The combination pressure unit operates independently and releases small accumulations of air which may collect while the line is in operation and working under pressure. Valves shall have cast iron bodies and be furnished with national pipe threads. Floats and trim shall be of a non-corrosive metal, standard with the manufacturer. Seats shall be of a material which will provide cushion for the float sufficient to receive float shock upon closing.

Connections shall be made to the pipeline by the use of a 1 inch corporation stop. Fittings shall be used for the 1 inch copper vent line piping, bending will not be allowed. A #22 mesh stainless steel screen shall be secured over the open end of the 1 inch copper vent line piping.

All 2 inch valves shall be per Section 10.03.01.4.b. Connections shall be made to the pipeline by the use of a 2 inch corporation stop. Combination air valves shall be installed in a standard 30 inch meter well with lid. Fittings shall be used for the 2 inch copper vent line piping, bending will not be allowed. A #22 mesh stainless steel screen shall be secured over the open end of the 2 inch copper vent line piping.

Combination air release valves shall be paid for at the contract unit price for each installed as specified. This price shall include all excavation, materials, dewatering, meter well, backfill, 4 inch x 4 inch treated post (for protection of copper vent line) with the top cut at a 45° angle, installation of a Valve Marker next to wood post, a meter skin insulator over the top of the air release valve, painting vent pipe if requested by OWNER, and other miscellaneous work as necessary.

#### **51.09.08 PLUGS AND CAPS**

Standard plugs shall be inserted into the bells of all dead end pipes, tees, or crosses. Spigot ends shall be capped.

#### **51.09.09 SAMPLE STATIONS**

Sampling stations shall be 3-1/2 foot bury, with a 3/4 inch FIP inlet, and a 3/4 inch unthreaded nozzle. All stations shall be enclosed in a lockable, nonremovable, aluminum-cast housing. When opened, the station shall require no key for operation; the water will flow in an all brass waterway. All working parts will also be of brass and be removable from above ground with no digging. Exterior piping shall be galvanized steel. A copper vent tube will enable each station to be pumped free of standing water to prevent freezing and to minimize bacteria growth. A ball valve/curb stop and valve box shall be included for isolation of the sampling station, as detailed on the Drawings, and shall be incidental to the bid price for the sampling station.

#### **51.09.10 COPPER TRACER WIRE**

Copper tracer wire shall be installed with all PVC raw and finished water main, and service lines (up to the service meter). The wire shall be copper-clad steel wire coated with HDPE and shall be connected to all valves and brought up into each valve box (on the exterior of the box, and doubled-over under the cover on the interior), and shall be connected to all hydrants and service meter pits, creating a continuous wire throughout all water main and appurtenances. All splices of tracer wire shall utilize direct bury splice kits. During installation of the connector, the CONTRACTOR shall tie the tracer wire into a knot and leave approximately 4 inches to be inserted into the connector per manufacture's specifications. The CONTRACTOR shall install tracer wire for water main installed by trenching. The Contractor shall include in his bid price for water main installation all costs associated with tracer wire installation.

Substantial completion will not be issued to the CONTRACTOR until it has been verified by the OWNER that all tracer wire is continuous and can be field located with the OWNER's locating equipment.

#### **51.09.11 TRACER WIRE ACCESS POINTS**

Tracer wire access points shall be installed at select gate valves and at locations between gate valves as shown on the Plan Sheets. Access points will consist of a test station which shall be a durable and flexible by design. The station shall be two sided with decals located on both sides with the complete name of the OWNER and their phone number. Each station shall have internal terminals. The signs shall be blue in color and the decal shall be white background with blue lettering. The costs associated with this work shall be paid for at the contract unit bid price for Tracer Wire Access Points.

#### **51.09.12 TAPPING SLEEVE**

Tapping sleeves shall be all stainless steel per ASTM A-240, type 304 with the exception of the flange, which may be epoxy-coated ductile iron per ASTM 536. The sleeves shall be corrosion resistant, lightweight, and provide a full circumferential seal. A stainless steel test plug shall also be provided as part of the sleeve for pressure testing prior to tapping the pipe. Bolts shall be 18-8 stainless fusion bonded bolts, and nuts shall be 304 stainless fluoropolymer coated to prevent galling. The CONTRACTOR's bid price for installing a tapping sleeve and gate valve shall include the sleeve and the valve of the size specified, as well as all necessary tasks for a complete connection.

#### **51.09.13 LMI SERVICE LINE**

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#### **51.09.14 DUCTILE IRON RESTRAINT GLANDS**

Restraint for PVC and ductile iron pipe joined with standardized mechanical joint fittings shall be incorporated in the design of the follower gland and the PVC pipe restraining glands shall provide full circle contact and support of the pipe wall. Restraint shall be accomplished by a series of ring segments mechanically retained inside the gland housing and designed to grip the pipe wall in an even and uniform manner. Restraining ring segments shall be actuated by bolts featuring twist off heads. All components of the restrainer, including the gland bolts, and restraint segments shall be of high strength ductile iron, ASTM A536, Grade 65-45-12. Restraining devices shall be UL Listed/FM Approved on AWWA C-900 PVC pipe and shall be certified by an independent testing facility as meeting or exceeding ASTM F1674-96 Standard Test Method for Joint Restraint Devices for PVC Pipe. Joint restraints shall be used at all fittings,

gate valves, and hydrants, not requiring an anchor coupling, and shall be incidental to the contract price. Restraints shall be rated at a minimum of 200 psi.

#### **51.09.15 ANCHOR COUPLING**

Restraint of ductile iron pipe between gate valves and hydrants and between tees or other fittings and gate valves shall be accomplished utilizing anchor couplings. Anchor couplings shall be designed to conform to the following provisions;

DI Pipe Barrel:	ANSI/AWWA C151/A21.51 Class 53
Groove Depth:	AWWA C606 Table 1
DI Retaining Ring:	ANSI/AWWA C151/A21.51
DI Swivel Follower:	ANSI/AWWA C110/A21.10 Compatible.

Wall thickness beneath the groove shall exceed the minimum referenced in ANSI/AWWA C150/A21.50 Table 50.13 "Thickness for Internal Pressure", for 350 psi rating plus a surge allowance of 100 psi. The pipe shall be furnished with a bituminous exterior coating per ANSI/AWWA C151/A21.51 and cement mortar lined and seal coated per ANSI/AWWA C104/A21.4.

#### **51.09.16 SEPTIC ENCASEMENT MATERIAL**

Where called for on the Drawings, the water main shall be installed in PVC casing [(see Section 51.03 or 51.04 for material requirements) ]of the size shown on the Construction Drawings. The length of septic encasement of a said size shall be determined using the Standard Specifications for Water & Sewer Main Construction in Illinois for the different arrangements of the sewer line being crossed. As there are currently no known structures or other limiting factors in these areas, the septic encasement may be installed in an open trench. Backfill for septic encasement shall be specified in Section 41.04 and will be incidental to the unit price of the septic encasement installation and no additional compensation will be allowed. Measurement in lineal feet shall be made along with centerline of the septic encasement as installed. The PVC shall be RJ pipe when the length is greater than 40 feet. Casing spacers shall be used inside casing pipe. The ends of the casing shall be sealed with either end seals or a method approved by the OWNER. Payment for septic encasement shall include the PVC septic encasement, casing spacers, and end seals and will be paid per the bid schedule item for septic encasement of said size. Payment for the RJ PVC carrier pipe shall be paid based on the unit price on the bid schedule for restrained-joint PVC within casing of said size. The payment length of the restrained joint PVC pipe shall be the next length greater than the length of the casing pipe that will allow for the use of full 20 feet sections of restrained-joint PVC pipe. The cost of expansion coupling, casing spacers, and end seals shall be incidental. Payment for the PVC carrier pipe shall be paid based on the unit price on the bid schedule for PVC of said size and pressure classification.

#### **51.09.17 CASING SPACERS**

Casing spacers for water main 6 inch and smaller shall be a polyethylene casing spacer which is injection molded from high density polyethylene. The compressive strength shall be greater than 3,100 psi and tensile strength shall be greater than 3,100 psi. During installation, either lock washers or lock nuts shall be used when bolting the spacers together.

The casing spacers for water main larger than 6 inch shall be bolt on style with a shell made of two sections of T-304 stainless steel or some other non-corrosive metal. All nuts and bolts are to be 18-8 stainless steel or equivalent non-corrosive material. The runners shall be made of ultra

high molecular weight polymer with high abrasion resistance and a low coefficient of friction. During installation, either lock washers or lock nuts shall be used when bolting the spacers together.

#### **51.09.18 WATER SERVICE CONNECTION**

Service connections shall be placed where indicated on the drawings. In general, the meter shall be placed on private property with the exact lateral location on each individual property to be directed by the OWNER. The vertical placement of the meter (height of lid above-ground) shall flush with final surface. Each connection shall consist of the following: corporation stop, service clamp, meter, pressure regulator (if required), meter yoke assembly with stop valve, meter box and meter box cover. The meter pit and corporation stop excavations shall not be backfilled until all materials, fittings, and work have been viewed by the OWNER or the RPR.

The CONTRACTOR shall bid a lump sum for all of the above named items, complete in place, except for the service pipe. The installation shall be the specified size throughout as indicated on the bidding proposal. The service pipe shall be paid for separately on the basis of the material, size, and number of feet installed. No payment will be allowed for the bid item "service connection" until the OWNER has approved the horizontal and vertical placement of the meter box, as installed.

#### **51.09.19 CORPORATION STOPS**

For pressure regulating and non-pressure regulating service connections measuring 5/8" x 3/4" and 1", a corporation stop size of 1 inch shall be used. The ball valve shall be brass, taper thread by Conductive Compression Connection for CTS tubing, and shall be of ball valve design for use with a compression fitting and stainless steel insert. No flaring of polyethylene pipe will be allowed.

For pressure regulating and non-pressure regulating service connections measuring 1-1/2" and 2" a corporation stop size of 2 inch shall be used. The ball valve shall be brass, taper thread by Packed Joint outlet for PVC pipe, and shall be of ball valve design. A 2 inch gate valve with a valve box shall be installed near the corporation stop.

#### **51.09.20 SERVICE CLAMP/SADDLE**

Service clamps shall be bronze, strap-type as required for the size of corporation stop as specified, and shall be per Section 10.03.01.12 and as approved by the ENGINEER. The use of solvent weld plastic saddles will not be permitted. The service clamps shall be located on the pipe such that the tap location is between 8 and 10 o'clock or between 2 and 4 o'clock as seen on the cross section of the pipe unless physical elements of the trench warrant otherwise and the deviation is approved by the ENGINEER. Whenever possible, corporation stops shall be placed in plastic lines before conducting hydrostatic tests.

#### **51.09.21 METER**

The meter shall conform to the latest revision of AWWA C700 Standard for Cold Water Meters - Displacement Type. They shall be provided with straight reading registers, Touch-Read capabilities, or dual Touch-Read and Radio-Read capabilities, as specified in the bid schedule, indicating gallons. The Touch-Read and Radio-Read Meter Reading Systems shall comply with all design, performance, and material requirements of the appropriate AWWA Standard, as most

recently revised. Flanged connections will be made with stainless steel, zinc-coated bolts only. Refer to Table 10.03.01.21.a-h. for meter specifications.

The meters with dual read capabilities (Radio-Read and Touch-Read) shall consist of a meter onto which a dual port touchcoupler Meter Transceiver Unit (MXU) is attached. Single port meters require a single port touchcoupler MXU, per Section 10.03.01.21.i.

The MXU shall be closed and installed in the retainer of the plastic meter lid and the TouchPad installed in a 1 7/8" hole drilled (by the CONTRACTOR) in the edge of the plastic meter lid. All costs associated with providing fully functioning dual-read meters shall be included in the appropriate bid item. See also the detail provided on the Contract Drawings.

#### **51.09.22 REGULATOR**

The pressure regulator shall be a 3/4 inch outlet pressure regulator factory set at 50 psi. A field adjustment range of 25 to 75 psi, shall be provided. Inlet pressure shall be rated at a minimum of 250 psi. The regulator shall be complete with an integral strainer and constructed of stainless steel and bronze only. The regulators shall be constructed of stainless steel, zinc-coated bolts and/or screws only. The unit shall be per Section 10.03.01.21.h.

#### **51.09.23 METER YOKE ASSEMBLY**

The meter yoke assembly shall be of all copper and bronze/brass construction and be equipped with all necessary spacer tubes and spuds. The assembly shall incorporate a dual check valve and shall be such that a compression fitting is used. The meter yoke shall have a copper riser which elevates the meter above the service line per meter and coppersetter as specified below. A ball angle meter valve shall be installed which has a lock wing that can be padlocked in the closed position. A double check backflow preventer shall be located on top.

The meter swivel nut for both the angle stop valve and the discharge elbow shall be equipped with a saddle and saddle nuts to assist in meter and gasket installation. Meter settings will be similar to the typical detail drawing for a 5/8" x 3/4" service connection. Only compression fittings with stainless steel inserts shall be used. No flaring of polyethylene pipe will be allowed.

The CONTRACTOR shall install a No. 4 re-bar and tie wire, or equal, with each yoke and meter, or other approved means for providing lateral support to the assembly. After the installation of the rebar, a piece of one inch polyethylene service line shall cover the rebar remaining above grade to prevent contact of two unlike metals. This shall be included in the bid price for each service connection.

The CONTRACTOR shall install a 5 feet HDPE extension piece beyond the meter box to which the customer can connect his/her service line without digging into the meter box, as shown on the drawings. The extension shall be plugged to keep out debris. This shall be included in the bid price for each service connection.

#### **51.09.24 METER BOX**

The CONTRACTOR shall furnish and install a meter box as shown on the drawings and as approved by the ENGINEER. The meter box shall be PVC profiled-wall, as per Specification 10.03.01.23. The meter box shall be supported on a minimum of 4 bricks.

#### **51.09.25 METER COVER**

The meter box cover shall be as per Section 10.03.01.24. Lids shall overlap the frame and be lockable. The lids shall have a recess suitable for an electronic meter reading antenna. The lid shall be cast iron with hole cut to fit electronic reading antenna. Refer to Section 10.03.01.24 for specific requirements pertaining to services of different sizes.



# **Welded Steel Ground Storage Tank**

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## **Welded Steel Ground Storage Tank**

### **Section 71**

#### **71.01. SCOPE OF WORK**

The CONTRACTOR shall furnish all materials, tools, equipment, labor, and incidentals necessary for the design, manufacture, delivery, and erection of one steel, all-welded construction (including seal-welding of the inside of the tank above the high water level), ground water storage tank. The tank is to be complete with all accessories specified herein, and shall be erected on a foundation to be designed and constructed by the tank contractor. Except where otherwise noted, the latest revision of AWWA Standard D100 and AWS DS.2-84 shall be followed for the tank design, construction, and inspection. Design of the tanks in accordance with Appendix C of AWWA Standard D100 will NOT be permitted.

#### **71.02. EXPERIENCE**

The CONTRACTOR shall be a specialist in the design and construction of welded steel tanks, and shall have built in its own name not less than five (5) comparable tanks within the last five years now giving satisfactory service. Each bidder shall provide a letter with his bid, listing such examples giving the OWNER, tank size, date constructed, consulting engineer, and engineer's address and telephone number. Such company shall have on its staff a full time professional engineer who will be in responsible engineering charge of the work to be done. The CONTRACTOR shall own their own fabrication facilities. Divided responsibilities between erection and fabrication will NOT be allowed.

The CONTRACTOR shall submit certification of welder qualification. All welders shall be qualified by ASME in all positions.

#### **71.03. SHOP DRAWINGS**

The successful bidder shall furnish six (6) detailed sets of drawings, calculations and/or specifications showing the type and pertinent information of the proposed tanks, appurtenances, foundation design and details, foundation design calculations, and the method of construction, to the ENGINEER for approval before beginning fabrication and/or construction. All such submissions shall be signed and stamped by a Registered Structural Engineer employed by the tank manufacturer and licensed in the State of Illinois.

When approved, two sets of such prints and submittal information will be returned to the bidder, marked "APPROVED FOR CONSTRUCTION" and these drawings will then govern the work detailed thereon. The approval of the ENGINEER of the tank supplier's drawings shall be an approval relation only to their general conformity with the bidding drawings and specifications and shall not guarantee details dimensions and quantities, which remains the bidder's responsibility.

#### **71.04. FOUNDATIONS**

The CONTRACTOR shall design and construct foundations for the tanks in accordance with AWWA D100, and the recommendations of the attached soils investigation reports. Footings as indicated on the drawings are for conceptual information only. The CONTRACTOR shall provide the ENGINEER

with foundation design calculations and drawings for the soils engineer's review and approval prior to initiating construction.

A copy of the concrete design mix, approved by the CONTRACTOR's structural engineer, shall be provided to the ENGINEER. Refer to Section 21 of the specifications regarding concrete test requirements.

The Contractor shall have an independent soils consultant verify that the foundations subgrade meets or exceeds the recommendation of the geotechnical report, and shall be incidental to the contract price. Additionally, any construction observation required for a deep foundation alternative (drilled piers, driven piles, GEOPIER foundations, etc.) shall be provided by a geotechnical consultant, and shall be incidental to the contract price.

Earth excavation is considered incidental to concrete for foundations. Should the footings be adjusted in accordance with the soil bearing pressure, any increase or decrease in the concrete and reinforcement quantities will be allowed for at the applicable unit price listed in the Bid Proposal.

#### **71.05. GROUND TANK DESIGN**

- A. Size — The welded steel tank shall have a nominal diameter of 27.69 feet with a nominal sidewall height of 17.33 feet. The tank capacity shall be 72,000 gallons, minimum, at the high water level of 16.00 feet.

B. Governing Specifications

Material, design, welding, shop fabrication, erection testing, and inspection of the proposed ground water storage tank shall conform to the latest edition of American Water Works Association (AWWA) Standard D-100, and the latest edition of American Welding Society, except as hereinafter stipulated.

The following design parameters shall apply, and the structures shall safely withstand the following loads acting separately or in combination:

1. Weight of the structure.
2. Weight of the water in the tank.
3. Wind stresses incurred by blowing at a minimum rate of 100 MPH from any direction
4. Earthquake design of the structure for Seismic Zone 2 per AWWA D-100, latest revision.
5. Snowload minimum of 25 psf as specified in AWWA D-100, latest revision.
6. Minimum plate thickness shall be ¼ inch

C. Material

The tank shall have a total capacity of not less than 72,000 gallons, when measured from the floor of the tank to the point of overflow. The height of the tank from the top of the foundation to the high water level shall be as shown on the drawings. The tank shall be of all welded-steel construction, with a steel roof and bottom.

D. Accessories

1. Ladder - A fixed ladder shall be provided on the outside of the tank, and shall extend from a point eight feet (8') above the foundation and provide access to the roof hatches and vent. A step-off

platform shall be located near the roof hatch. The ladder shall be equipped such that it meets the latest requirements of the Occupational Safety and Health Act.

As a minimum, the ladder shall be equipped with a Saf-T-Climb fall prevention safety device as manufactured by Air Space Devices, Inc., P.O. Box 138, Paramount, CA. 90733, or equal. Shop drawings shall include complete details and specifications of the fall prevention device.

2. Ladder Gate - A protective ladder gate shall be furnished and installed by the CONTRACTOR to the ladder assembly. The gate shall be at least eight feet (8') high, constructed of aluminum, and prevent unauthorized access to the ladder. It shall be hinged on one side, capable of being opened easily by one person on the ladder beneath it, and be provided with a mechanism for locking the gate in both open and closed positions. The gate shall be as manufactured by R.B. Industries, P.O. Box 9712, Greensboro, NC 27408, or Leary Construction Company, Greenfield, IN 46140, or equal. The gate shall not conflict with the proposed safety climb device.

### 3. Openings

- a. Roof Hatch - An opening shall be provided above the high water level and shall have a clear minimum dimension of twenty-four inches (24") square. The opening shall have a suitable hinged cover and a hasp to permit locking. The hatch shall have a curb at least four inches (4") high, and the cover shall have a downward overlap of at least two inches (2").

The roof hatch shall meet all current EPA, OSHA, and AWWA requirements.

- b. Vent/Second Roof Hatch - A vent shall be provided at the apex of the roof and shall be of adequate size to safely vent the tank such that excessive pressures will not build up under its maximum fill rate of 1,500 GPM and such that an excessive vacuum will not be produced at its maximum withdrawal rate of 2,500 GPM.

The openings in the roof vent shall be covered with a stainless steel, #24 mesh screen, conforming to the latest EPA and AWWA requirements. The roof vent shall be designed to function properly if iced or frosted over, per Section 5.7.2 of AWWA D100-84.

The vent may be removable to serve as a roof manhole, but must be capable of being securely bolted in place to prevent rain, birds, or insects from entering the tank.

- c. Second Roof Hatch - In the event that the vent is not removable to serve as a roof manhole, a second roof hatch must be installed that meets the latest EPA, OSHA, and AWWA requirements
- d. Manhole - A twenty-four inch (24") diameter (minimum) manhole shall be located approximately three feet (3') above the base of the foundation. The manhole cover shall be equipped with a hinged support. All bolts and nuts used with the manhole must be stainless steel.

### 4. Overflow Pipe

The tank shall be equipped with an overflow pipe of steel pipe construction with welded joints. The steel pipe shall conform to ASTM A53, Grade B Seamless, Schedule 40, with ASTM A234 butt welded L.R. elbows, caps, and reducers, Grade WPB and ASTM A181 forged, carbon steel, 150# ANSI welding neck flanges, Grade 1, complete with ASTM A307, Grade B heavy hex head bolts with heavy hex nuts. The pipe shall extend to within twelve inches (12") of ground level and have a discharge capacity of at least 1,500 GPM. The overflow shall not be included in the design of the roof vent. The overflow pipe shall be covered with a stainless steel #24 mesh screen conforming to the latest EPA and AWWA requirements. The overflow pipe shall include a

Tideflex rubber check sleeve as manufactured by Red Valve Company, Inc., or equal. The sleeve shall be flanged, and connected to the bottom of the overflow pipe for safety/security purposes.

5. Fill Line

The Contractor shall fabricate a fill line as shown on the drawings to eliminate zones of stratification inside the tank and prevent stagnation and insure thorough mixing of the water throughout the tank.

6. Fill Pipe

The fill pipe shall be sized consistently with the influent pipe and shall extend to a height approximately 35 feet above the tank floor. The fill pipe shall be supported inside the tank as required. A Structural Engineer's approval of the submitted shop drawings for the support is required. There shall be two (2) duckbill style check valves at the top of the fill pipe pointing in opposite directions to allow flow to enter tank during filling cycles and prevent water from leaving the tank during draw cycles. These valves shall be Tideflex "TMS System" by Red Valve Company or equal.

**71.06. INSPECTION**

The CONTRACTOR shall provide a qualified quality control team other than the erection foreman and crew, and shall conduct radiographic examination of the welding in conformance with AWWA Standard D-100, Section 11. The CONTRACTOR'S quality control team shall analyze the radiographs and submit a written report of its findings and the radiographs to the ENGINEER. The quality control report and the radiographs shall be the property of the OWNER.

During field erection of the tank, all welds shall be ground to a smooth radius, leaving no sharp edges along the seams.

Upon completion of the walkway installation the CONTRACTOR shall supply and install adequate safety equipment for accessing the tank for construction observation purposes. If the CONTRACTOR fails to provide adequate safety equipment for construction observation purposes during the tank construction or painting, the project will be stopped at no additional cost until such equipment is provided.

**71.07. GUARANTEE**

The CONTRACTOR shall guarantee the structures against any defective material or workmanship for a period of one (1) year from the date of acceptance. If any materials or workmanship prove to be defective within one (1) year, they shall be replaced or repaired by the CONTRACTOR at his own expense.

**71.08. DISINFECTION**

After all cleaning and painting work is accomplished (a minimum of seven (7) days following application of the final coat on the interior tank surfaces), the CONTRACTOR shall fill with water and disinfect the tank in accordance with the AWWA Standard C652 (Disinfection of Water Storage Facilities). After disinfection, the CONTRACTOR shall obtain bacteriologic clearance, from an Illinois Environmental Protection Agency (IEPA) approved lab, from the IEPA. A minimum of two (2)

consecutive samples collected at a minimum of 48 hours apart shall be analyzed and approved by IEPA before placing the tank into service.

If results of tests indicate inadequate disinfection, then the tank shall be drained and disinfected again, until IEPA approval is obtained.

Bio-Penetrant Application - Concurrent with filling and chlorinating the new tank, the CONTRACTOR shall add the bio-penetrant WD-3100 manufactured by Stiles-Kem Division, Waukegan, Illinois, 60085, (847) 689-1100. The bio-penetrant shall be added once the water has partially filled the bottom of the tank at a rate of 5 gallons per 100,000 gallons tank capacity. After filling, the tank shall set full of water for at least 48 hours, then emptied and refilled with clean water.

All bio-penetrant application work shall be performed in the presence of the Resident Project Representative. All bio-penetrant application work shall be incidental to the Contract price.

Any wasted water shall be treated to neutralize the chlorine residual and the water shall be discharged in such manner that no damage to downstream points occur.

Filling operations shall be coordinated with the OWNER. The OWNER shall provide the permissible filling rates and times.

#### **71.09. WATER USED BY CONTRACTORS**

Water used by the CONTRACTOR to test, chlorinate, and place the tank in service shall not be billed to the CONTRACTOR. This includes the water initially used to fill the tank, regardless of whether the water is wasted or utilized in the distribution system. See Section 12.13 for additional requirements.



## **PROTECTIVE COATINGS – STEEL TANKS**

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## **PROTECTIVE COATINGS – STEEL TANKS**

### **Section 101**

#### **101.01. SCOPE OF WORK**

The CONTRACTOR shall furnish all materials, tools, equipment, labor, and incidentals necessary for the painting of a steel, all-welded construction, water storage tank. The latest revision of AWWA Standard D102 shall be followed for the tank painting. As a minimum the painting system must meet NSF Standard 61 in accordance with the Recommended Standards for Water Works, current edition, Section 7.0.17. All painting shall be done strictly in accordance with the manufacturer's recommendations and shall be performed in a manner satisfactory to the ENGINEER and/or the Resident Project Representative.

#### **101.02. QUALITY ASSURANCE**

- A. The CONTRACTOR shall hold a valid State Contractor's license, if required, for performing surface preparation and coating work and shall have three years practical experience and successful history in the application of specified products to surfaces of steel water tanks. Upon request, he shall substantiate this requirement by furnishing a list of reference job completions.
- B. General: Quality assurance procedures and practices shall be utilized to monitor all phases of surface preparation, application and inspection throughout the duration of the project. Procedures or practices not specifically defined herein may be utilized provided they meet recognized and accepted professional standards and are approved by the ENGINEER.
- C. Surface Preparation: Surface Preparation will be based upon comparison with: "Pictorial Surface Preparation Standards for Painting Steel Surfaces" B SSPC-Vis-1-89 Visual Standard for Abrasive Blast Cleaned Steel.
- D. Application: No coating shall be applied: When the surrounding air temperature or the temperature of the surface to be coated is below manufacturers printed instructions; to wet or damp surfaces or in rain, snow, fog or mist; when the temperature is less than 5°F above the dew point; when it is expected the air temperature will drop below recommended temperatures six hours after application of coating. Dew point shall be measured by use of an instrument such as a Sling Psychrometer in conjunction with US Department of Commerce Weather Bureau Psychometric Tables.

If above conditions are prevalent, coating shall be delayed or postponed until conditions are favorable. The days coating shall be completed in time to permit the film sufficient drying time prior to damage by atmospheric conditions.

- E. Inspection Devices: The Contractor shall furnish, until final acceptance of coating, inspection devices in good working condition for detection of holidays and measurement of dry-film thickness and certified instrumentation to test accuracy of holiday detectors.

Dry-film thickness gauges and holiday detectors shall be made available for the ENGINEER's use at all times until final acceptance of application. Holiday detection devices shall be operated in the presence of the ENGINEER.

F. Include on label of container:

1. Manufacturer's name, product name, and number.
2. Type of paint and generic name.
3. Color name and number.
4. Storage and temperature limits.
5. Mixing and application instructions, including requirements for precautions which must be taken.
6. Drying or curing time.

**101.03. SAFETY**

- A. In accordance with the requirements of the OSHA Regulations for Construction, the Contractor shall provide and require the use of personal protective and lifesaving equipment for all persons working in or about the project.
- B. All pertinent local, state and federal safety regulations shall be adhered to rigidly. All safety precautions noted on the manufacturers Product Data Sheet and Material Safety Data Sheet shall be observed.
- C. Material Safety Data Sheets (MSDS) and Product Data Sheets for all paint, solvents and chemicals used, shall be available on the job site at all times.
- D. All necessary precautions shall be taken when acid (WD-3100) and chlorine are used in the same environment such as during the disinfection process.
- E. No smoking will be permitted in water tanks.
- F. Spray equipment must be grounded at all times during sandblasting and painting. Ground to scaffolding is not sufficient.
- G. Head and face protection and respiratory devices: Applicable health and safety precautions required by appropriate regulatory agencies such as OSHA, ANSI, etc. shall be followed.
- H. Ventilation shall be adequate to reduce the concentration of air contaminant to the degree that a hazard to the worker does not exist.
- I. Whenever the occupational noise exposure exceeds the maximum allowable sound levels, the Contractor shall provide and require the use of approved ear protective devices. Noise levels cannot exceed OSHA or local regulations for other workers or residents.
- J. All temporary ladders and scaffolding shall conform to the applicable requirements of the OSHA Regulations for Construction. They shall be erected where requested by the Resident Project Representative to facilitate proper inspection and be moved by the CONTRACTOR to locations requested by the Resident Project Representative.
- K. The CONTRACTOR shall follow and strictly adhere to all applicable health and safety regulations and precautions as required by local, state, and federal regulatory agencies such for the surface preparation, removal, and waste disposal of all lead-based paint systems.

#### **101.04.        PREPARTION OF SURFACES**

All Surface Preparation will be based upon comparison with: "Pictorial Surface Preparation Standards for Painting Steel Surfaces" - SSPC-Vis-1-89 Visual Standard for Abrasive Blast Cleaned Steel.

All surface preparation shall be done in the field.

Remove all oil, grease and foreign matter from all metal surfaces prior to cleaning. All surfaces are to be clean, dry, and free of contaminants. All rough edges, weld seams and sharp corners occurring during fabrication and field erection are to be ground to a curve.

All tanks shall have an inflatable plug placed where the water main enters the bottom of the riser pipe or the bottom of the bowl to prevent any blast material from entering the water main.

- A. Interior immersion or wet surfaces shall be blast cleaned to a near white metal finish by any of the recommended methods outlined in the Steel Structures Painting Council Specifications SP10.
- B. Exterior or dry surfaces shall be blast cleaned to a commercial finish by any of the recommended methods outlined in the Steel Structures Painting Council SP6.

No painting shall occur before the prepared surfaces are approved by the Resident Project Representative.

#### **101.05.        CONTAINMENT**

It is at the Contractors discretion whether to contain or wet abrasive blast in conjunction with the removal of all existing coatings. It is solely the Contractor's responsibility to comply with all local, state and federal regulations for the removal of coatings. All debris and wastes shall be contained within the tank site. Upon completion the project site must be returned to its original condition.

##### **A. Containment**

The Contractor shall ensure that no release of blasting debris escapes the property limits. The ground surrounding the site shall be protected from all debris and other materials generated in the cleaning operations. All exterior blasting (except vacuum blasting) shall be enclosed. The Contractor shall be responsible for all materials that are used and for the apparatus or enclosure used to contain debris. The enclosure shall be designed not to impose excessive loading on the structures and appurtenances and if damage would occur it is the responsibility of the Contractor to return owner's property to its original condition.

The OWNER reserves the right to stop work or to require additional or different enclosure methods, if the CONTRACTOR's operations create a nuisance beyond the containment in the sole opinion of the OWNER or any regulatory agency. It is the CONTRACTOR's responsibility to maintain all federal, state and local guidelines for the containment of all coating removal, including the protection necessary to have no emissions of residual dust leaving the project site. If any residual leaves the work site it is solely the CONTRACTOR's responsibility to address clean-up on all affected areas.

##### **B. Wet Abrasive Blasting**

The exterior of the tank can be wet abrasive blasted utilizing Holdtight 102 as recommended per data sheet for flash rust resistance. The Contractor is to comply with the federal Clean Air Act, not

allowing nuisance dust to leave the project site. If any residual leaves the project site it is solely the Contractors responsibility to address clean-up of all affected areas.

If the CONTRACTOR chooses to utilize the wet abrasive blasting method, the paint manufacturer's representative shall visit the site during at the start of the blasting process. This site visit shall be coordinated by the CONTRACTOR and shall be in addition to the site visits required in Section 101.09 of these specifications.

#### **101.06. PAINT**

- A. A single paint manufacturer shall be selected and that manufacturer's paints shall be the only paints allowed under the entire contract.

The painting for all Base Bids shall conform to the Tnemec Co., Inc's Interior Steel Paint System - Zinc -Epoxy-Polyamide and Exterior Steel Paint System B Zinc – Polyurethane – Fluoropolymer Polyurethane or equal, and the latest revision of AWWA Specification D102.

The paints and paint products of the Tnemec Co., Inc., North Kansas City, Mo. mentioned above and in the following specifications are set up as a standard of quality. The usual "or equal" clause shall apply. The products of equivalent quality of other manufacturers may be substituted on approval of the ENGINEER. No request or substitution will be considered which decreases the film thickness designated and/or the number of coats to be applied, or which offers a change from the generic type of coating specified. Requests for substitution shall include the manufacturer's literature for each product giving the name, product number, generic type, descriptive information, solids by volume, recommended dry film thickness, composition, directions for use and application, and satisfactory evidence of past performance on water tanks (which shall include submittal of a list of three projects in which the product has been used and rendered satisfactory service).

All materials delivered to the job site shall be in original sealed and labeled containers of the paint manufacturer. Each container shall provide labels with the following information: Name or title of material, manufacturer's name, manufacturer's stock number, color, thinning instructions, application instructions, and expiration date. All damaged containers and/or unacceptable materials shall be promptly removed from the job site.

All bulk materials shall be properly stored.

- B. Tnemec Series 91-H2O - An aromatic urethane, zinc-rich primer certified to ANSI/NSF 61 standards.
- C. Tnemec Series 20HS Pota-Pox - An epoxy-polyamide coating for potable water certified to ANSI/NSF 61 standards.
- D. Tnemec Series 73 Endura-Shield - A high-build aliphatic acrylic polyurethane enamel coating; shall meet or exceed the appropriate ASTM test requirements as related to abrasion, adhesion, exterior exposure, humidity, salt spray (FOG), QUV, and graffiti resistance.
- E. Tnemec Series V700 Low VOC HydroFlon- A high-build fluoropolymer polyurethane coating; shall meet or exceed the appropriate ASTM test requirements as related to abrasion, adhesion, exterior exposure, humidity, salt spray (FOG), QUV, graffiti resistance and must exceed the weathering requirements of AAMA 2604.

#### **101.07. APPLICATION OF PAINT**

All painting shall be done in the field.

Before any type of primer, paint, or coating is applied to the steel surfaces, steps shall be taken, either by circulation of air or by the application of heat, to dry the metal surfaces completely. Whatever metal is cleaned on any day shall be coated with primer on the same day. If rust forms on any blasted surface, the surface shall be recleaned, as necessary, before application of primer.

Coatings shall be applied in such a manner as to produce as uniform a thickness of coating and complete coverage as possible, free of lap marks, sags, runs, streaks, misses, and other imperfections. Each coat shall be allowed to dry thoroughly, before applying the next coat.

- A. Rate - The paint for each coat shall be applied at the rate and in the manner as specified by the manufacturer to achieve the minimum dry mil thickness required. **NOTE:** Runs, Drips, and sagging of material will not be accepted and shall be repaired per the ENGINEER's/OWNER's instruction.
- B. Thinners - If the material has thickened or must be diluted for application by spray gun the coating shall be built up to the same film thickness achieved with undiluted materials. Deficiencies in film thickness shall be corrected by the application of an additional coat of paint. Where thinning is necessary only the products of the manufacturer furnishing the paint shall be allowed. All thinning shall be done strictly in accordance with the manufacturer's recommendations and with the full knowledge and approval of the ENGINEER.
- C. Atmospheric Conditions - No paint shall be applied when the surrounding air temperature, measured in the shade, is below 40 degrees F and no paint shall be applied when the temperature of the surface to be painted is below 35 degrees F. Paint shall not be applied to wet or damp surfaces and shall not be applied in the rain, snow, fog, or mist, or when the relative humidity exceeds 85% (percent), when the temperature is less than 5 degrees above the dew point, or when it is expected the air temperature will drop below the recommended temperatures six hours after application of coating. Dew point shall be measured by use of an instrument such as a Sling Psychrometer in conjunction with US Department of Commerce Weather Bureau Psychrometric Tables. Dew or moisture condensations should be anticipated and if such conditions prevail painting shall be delayed until midmorning to be certain that the surfaces are dry. The day's painting shall be completed well in advance of the probable time of day when condensation will occur in order to permit the film a reasonable drying time prior to the formation of moisture. Additionally, the work area shall be reasonably free of air-born dust at the time of application and while the coating is drying.
- D. Mixing - Before use, all coatings and components shall be thoroughly stirred to re-incorporate any pigment which may have settled and to eliminate any stratification of the vehicle. In the event that a primer is used that contains a high degree of solids, the paint pump, whether pot or airless, shall have the capacity for continuous agitation of the coating shall be engaged whenever the coating is being component as packaged by the paint manufacturer. No partial batches will be permitted. Multiple component coatings that have been mixed, shall not be used beyond their pot life. Only the components specified and furnished by the paint manufacturer shall be mixed.
- E. Interior Stripe Coat - Prior to the application of the intermediate coat to all interior bolt heads, lapped joints, nut threads, corners, welds, and other deviation from a smooth surface shall be given a brushed coat. The stripe coat shall be allowed to dry to a tacky condition before the full coat is applied. The areas where the ladder rungs join the ladder rails, all angle and steel support members, tops and backs of angles, and any areas that cannot be easily sprayed are to also receive this extra attention.

#### F. Interior Painting

All interior surfaces shall be cleaned per SSPC-SP10 (wet areas and fill line) or SSPC-SP6 (dry areas), in the field, and shall receive the following coatings:

1. Prime Coat: One full coat of Tnemec Series 91H2O Hydro-Zinc applied at 2.5 - 3.5 mils dry film thickness to the cleaned steel surface on the same working day before any rust bloom forms (within twelve (12) hours).
2. Stripe Coat: A Stripe Coat shall be applied to all bolt heads, lapped joints, nut threads, corners, welds, weld seams and other deviations from a smooth surface. The stripe coat shall be a brushed coat, Tnemec Series 20HS Pota-Pox (White), applied at 2.0 - 3.0 mils dry film thickness prior to the application of a full intermediate coat. The areas where the ladder rungs join the ladder rails, all angle and steel support members, tops and backs of angles, and any areas that cannot be easily sprayed are to also receive this extra attention.
3. Intermediate Coat: One full coat of Tnemec Series 20HS - 1255 Pota-Pox (Beige) at 4.0 - 6.0 mils dry film thickness.
4. Final Coat: One full coat of Tnemec Series 20HS -15BL Pota-Pox (Tank White) shall be applied at 4.0 -6.0 mils dry film thickness.
5. The total dry film thickness shall be a minimum of 10.5 mils.

#### G. Exterior Painting

All exterior surfaces shall be cleaned per SSPC-SP6, in the field and shall receive the following coatings:

1. Prime Coat: One full coat of Tnemec Series 91 H2O Hydro-Zinc applied at 2.5 - 3.5 mils dry film thickness to the cleaned steel surface on the same working day before any rust bloom forms (within twelve (12) hours).
2. Intermediate Coat: One full coat of Tnemec Series 73 (color as determined by Paint Manufacturer) Endura-Shield shall be applied at 2.5-3.5 mils dry film thickness.
3. Finish Coat: One coat of Tnemec Series V700 Low VOC HydroFlon (color to be determined by OWNER) shall be applied at 2.0 - 3.0 mils dry film thickness. Note, the tank logo shall be applied with this material and no clear coat shall be used.
4. The total dry film thickness shall be a minimum 7.0 mils.

#### H. Tank Logo – Base Bid A

After the final Fluoropolymer Polyurethane Color Coat has dried on the tank, the lettering “CCRWD” shall be painted on the tank in two (2) locations, using one (1) coat of Tnemec Series V700 Low VOC HydroFlon, (color to be determined by the OWNER) with a minimum resultant dry film thickness of 1.5 mils. Letter height shall be forty-eight (48") inches. The CONTRACTOR shall submit lettering alignment/layout/orientation for approval by the OWNER prior to painting.

### **101.08. CURING TIME**

Adequate ventilation which will effectively remove solvents shall be provided for proper drying of the paints on the interior of the tank surfaces. A minimum of seven (7) days following application of the

final coat on the interior and/or exterior surfaces shall be allowed before the tank is filled with water or disinfected.

#### **101.09.**      **INSPECTION/TESTING**

Each operation of the work sequence shall be monitored and accepted by the Resident Project Representative before performing the next operation. The CONTRACTOR shall notify the Resident Project Representative of the proposed schedule at the beginning of the job, and by phone during the job regarding what portions and phases of the work are ready for monitoring and will assist the Project Representative in monitoring all necessary tests and inspections. No painting will be done on weekends without prior approval of the Resident Project Representative.

The CONTRACTOR shall be responsible for coordinating with the paint manufacturer's representative to visit the job site(s) at least once during the blasting operation (if the wet blasting alternative is chosen (see Section 101.05.B of these Specifications), once during the painting operation and again upon completion of the project. The paint manufacturer's representative shall certify in writing that the required thickness of paint was applied, and that the CONTRACTOR was applying the paint according to instructions while he was at the site(s). Any costs associated with these site visits or reports shall be incidental to the contract price.

The CONTRACTOR shall supply and install safety equipment for climbing the tank during construction observation. It shall be the CONTRACTOR's responsibility to provide safety devices for climbing the tank during the painting stages of the project.

In addition to visual inspection, surfaces shall be routinely checked for dry film thickness in accordance with the thicknesses as stipulated in section 101.07 of these specifications using an approved magnetic gauge (to be provided by the CONTRACTOR). The Contractor shall assist the Resident Project Representative in the use and operation of all equipment for access to the surfaces to be monitored.

All interior surfaces and appendages inside this structure shall be tested for "holidays and pinholes" by the Contractor in the presence of the tank OWNER and/or Resident Project Representative. The CONTRACTOR shall call ahead to coordinate a time for this test. This also includes all coated areas above the high-water line. This work shall be done prior to the painting contractor removing scaffolding, as all welded seams, edges, etc., will be tested. A wet sponge low voltage holiday detector shall be used. Any areas which fail this test shall be repaired using the same finish coating applied by brush or roller only. After the proper drying time the CONTRACTOR shall retest the repaired areas in the presence of the OWNER and/or Resident Project Representative.

#### **101.10.**      **CLEAN-UP**

The CONTRACTOR shall keep the premises free from accumulation of waste materials, rubbish, and other debris resulting from the work and at the completion of the work, he will remove all waste materials, rubbish, and debris from about the premises as well as all tools, construction equipment and machinery, and surplus materials and shall leave the site clean and ready for use by the OWNER. The CONTRACTOR will restore to their original condition those portions of the site not designated for alteration by the Contract Documents. All dumpsters used for waste material storage shall be removed in a timely manner after completion of the project.

Substantial completion will not be issued to the CONTRACTOR until final cleanup is satisfactory to the OWNER.





**SUBSURFACE INVESTIGATION**  
**AND**  
**DESIGN-CONSTRUCTION RECOMMENDATIONS**

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**SUBSURFACE INVESTIGATION**  
**AND**  
**DESIGN-CONSTRUCTION RECOMMENDATIONS**

**Section 111**

**111.01.**      **NOTE**

The following Subsurface Investigation and Design-Construction Recommendations are for reference only. The OWNER and ENGINEER do not guarantee that the soil conditions represented in this report coincide with those actually existing at the proposed tank site. Please note; the soil boring *only* went to 20 feet deep and is based on the design parameters summarized in the report. The proposed tank shown in the drawings may vary from those parameters. According to Section 71, the CONTRACTOR is to provide a foundation design completed by a structural engineer to the ENGINEER for approval. The CONTRACTOR/BIDDER is free to conduct any additional subsurface investigations, following the award of the contract, as deemed necessary in order to design and construct a safe, adequate foundation.

**111.02.**      **SOIL REPORT**

Following pages



## **Geotechnical Engineering Report**

**Proposed Clearwell  
Calhoun County Rural Water District  
Illinois River Road  
Hardin, Illinois 62006**

**PSI Report Number: 0026204-1  
February 20, 2018**





480 North Street  
Springfield, Illinois 62704  
phone: (217) 544-6663  
fax: (217) 544-6148  
intertek.com/building  
psiusa.com

February 20, 2018

Calhoun County Rural Water District  
RR#1 Box 25  
Hardin, IL 62047

Attn: Mr. Gary J. Rose

Re: Geotechnical Engineering Report  
Proposed Clearwell  
Calhoun County Rural Water District  
Illinois River Road  
Hardin, Illinois 62006  
**PSI Report No.: 0026204-1**

Dear Mr. Rose:

Per your request, Professional Service Industries, Inc. (PSI) is pleased to submit this Geotechnical Engineering Report for the proposed Clearwell to be constructed at the Calhoun County Rural Water District existing facility in Hardin, Illinois. Included in this report are the results of the subsurface exploration and recommendations concerning the design and construction of the proposed structure.

PSI appreciates the opportunity to have provided Calhoun County Rural Water District with PSI's geotechnical engineering services and look forward to participation in the construction phase of this project. If you have any questions concerning this report or if we may be of further service in any manner, please contact our office.

Respectfully submitted,

**Professional Service Industries, Inc.**

A handwritten signature in blue ink, appearing to read "Eram Iqbal", with a stylized flourish extending from the end.

Eram Iqbal  
Department Manager

**GEOTECHNICAL ENGINEERING REPORT**

For the

**PROPOSED CLEARWELL  
CALHOUN COUNTY RURAL WATER DISTRICT  
ILLINOIS RIVER ROAD  
HARDIN, ILLINOIS 62006**

Prepared for

**CALHOUN COUNTY RURAL WATER DISTRICT  
RR#1 BOX 25  
HARDIN, IL 62047**

Prepared by

**PROFESSIONAL SERVICE INDUSTRIES, INC.  
480 NORTH STREET  
SPRINGFIELD, ILLINOIS 62704  
TELEPHONE (217) 544-6663**

**PSI REPORT NO.: 0026204-1**

**February 20, 2018**



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Eram Iqbal  
Department Manager  
Geotechnical Services

---

William P. Pongracz, P.E.  
Director





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## 1 PROJECT INFORMATION

### 1.1 PROJECT AUTHORIZATION

This report presents the results of a geotechnical subsurface exploration and evaluation conducted for Calhoun County Rural Water District, in connection with the proposed Clearwell to be constructed at the Calhoun County Rural Water District existing facility in Hardin, Illinois. The following table summarizes, in chronological order, the project authorization history for the services performed and represented in this report by Professional Service Industries, Inc. (PSI).

PROJECT TITLE: PROPOSED CLEARWELL - HARDIN, ILLINOIS		
Document/Reference No.	Date	Requested/Provided By
Request for Proposal	11/7/17	Mr. Kenny Woelfel of Heneghan & Associates, P.C.
PSI Proposal (0026227711)	11/9/17	Professional Service Industries, Inc.
Signed Proposal	12/19/17	Mr. Gary J. Rose of Calhoun County Rural Water District

### 1.2 PROJECT DESCRIPTION

Mr. Kenny Woelfel of Heneghan & Associates, P.C. provided the preliminary project information through an email dated November 7, 2017. PSI received the following documents attached to the email:

- Request for Proposal; and
- An Aerial map and Topographical Map with proposed soil boring location.

Based on the provided information, PSI understands that the proposed project will include construction of a Clearwell and utilities north of the existing Clearwell, at the existing treatment plant facility. Mr. Ronnie Paul of Heneghan & Associates, P.C. provided preliminary structure details during a telephone conversation with Mr. Eram Iqbal of PSI on January 1, 2018. The following table lists the structural loads and site features that are required for, or are the design basis, for the conclusions contained in this report:

STRUCTURAL LOAD/PROPERTY	REQUIREMENT/DESIGN BASIS	
Clearwell (Tank)	Steel Tank with 60,000 gallon capacity (water)	R
Diameter of Tank	18 feet	R
Height of Tank	32 feet	R
Base Pressure	2,000 psf	R
Proposed Footings	Base Steel Plate with Ringwall footings	R
Finished Grades	Within 2 feet of existing grades	B

R = Reported to PSI by Dollar General or PSI's client.

B = Recommendations have been prepared based on these parameters/loading in lieu of the project specific information



The geotechnical recommendations presented in this report are based on the available project information, the proposed location and orientation of the structure on the site and the subsurface materials described in this report. If any of the information we have been given or assumed is incorrect, please contact us so that we may amend the recommendations presented accordingly. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

### **1.3 PURPOSE/SCOPE OF SERVICES**

The purpose of this exploration was to explore the subsurface conditions at the site for an evaluation of an acceptable foundation system for the proposed Clearwell structure. PSI's proposed scope of services included drilling a single SPT soil boring within the proposed structure footprint (identified and located by Heneghan & Associates, P.C.) to a depth of approximately 20 feet below the existing surface grades in general accordance with ASTM standards, select laboratory testing and preparation of this report. This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions, and presents recommendations regarding the following:

- Description of the site including surface conditions, topography and adjacent structures;
- A discussion of subsurface conditions and groundwater as observed in soil boring;
- An evaluation of the data as it relates to the proposed development;
- Recommendations for structure foundations, bearing capacities, and fill/backfill requirements;
- Recommendations for bedding and backfill criteria for utility installation, and discussion on trench bracing and shoring; and
- Discussions of the factors impacting construction and performance of the proposed construction.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater or air, on, or below or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. Furthermore, PSI was not requested to provide any service to investigate or detect the presence of moisture, mold or other biological contaminants in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence of the amplification of the same. Mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. As such, PSI cannot be held responsible for the occurrence or recurrence of mold amplification.



## **2 DRILLING, FIELD AND LAB TESTING PROCEDURES**

### **2.1 DRILLING AND SAMPLING PROCEDURES**

The soil boring was performed with a drill rig equipped with a rotary head. Conventional 3¼" hollow-stem augers were used to advance the holes. Representative samples were obtained employing split-spoon and thin-wall sampling procedures in accordance with ASTM procedures.

### **2.2 FIELD TESTS AND MEASUREMENTS**

**PENETRATION TESTS** - During the sampling procedure, standard penetration tests were performed at regular intervals to obtain the standard penetration value of the soil. The standard penetration value (N) is defined as the number of blows of a 140-pound hammer falling thirty (30) inches, required to advance the split-spoon sampler one (1) foot into the soil. The sampler is lowered to the bottom of the drill hole and the number of blows recorded for each of three (3) successive increments of six (6) inches penetration. The "N" value is obtained by adding the second and third incremental numbers. The results of the standard penetration test indicate the relative density and comparative consistency of the soils, and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components.

**THIN-WALLED TUBE SAMPLING** - This practice is utilized as to obtain a relatively undisturbed specimen suitable for laboratory tests of structural properties or other tests that might be influenced by soil properties. A relatively undisturbed sample is obtained by pressing a thin-walled metal tube (typically 3 inches in diameter) into the in-situ soil, removing the soil-filled tube, and sealing the ends to prevent the soil disturbance or moisture loss. These samples may be utilized in the laboratory to obtain the following information or perform the following tests: Unconfined Compressive Strength ( $q_u$ ), Laboratory Determination of Water Content, Wet and Dry Density, Void Ratio, Porosity, Percent Saturation, and Atterberg Limits.

**WATER LEVEL MEASUREMENTS** - Water level observations were made during drilling and upon completion of the boring operations, and are noted on the boring log presented herewith. In relatively impervious soils, the accurate determination of the groundwater elevation may not be possible even after several days of observation. Seasonal variations, temperature and recent rainfall conditions may influence the levels of the groundwater table and volumes of water will depend on the permeability of the soils.

**GROUND SURFACE ELEVATIONS** - Heneghan and Associates, P.C. provided site specific topographical plan to PSI during the proposal phase of this project. Based on the existing Topographical Map, the site exhibits an elevation difference of less than approximately 2 feet within the proposed development area. However, if required by others, the exact test boring elevation and location should be determined in the field by a professional surveyor.

### **2.3 LABORATORY TESTING PROGRAM**

In addition to the field investigation, a supplemental laboratory-testing program was conducted to determine additional pertinent engineering characteristics of the foundation materials necessary in analyzing the behavior of the proposed structure.

**LABORATORY DETERMINATION OF WATER (MOISTURE) CONTENT OF SOIL BY MASS** - For many materials, the water content is one of the most significant index properties used in establishing a correlation between soil behavior and its index properties. The water content is used in expressing



the phase relationship of air, water, and solids in a given volume of material. In fine grained cohesive soils, the consistency of a given soil type depends on its water content. The water content of a soil, along with its liquid and plastic limits as determined by Atterberg Limit testing, is used to express its relative consistency or liquid index.

**UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS ( $Q_u/Q_r$ )** - The primary purpose of the unconfined compressive strength test is to obtain the compressive strength of soils and rock that possess significant cohesion to permit testing in the unconfined state. Unconfined compressive strength ( $Q_u$ ) is the compressive stress at which an unconfined cylindrical specimen of soil will fail in a simple compression test. In this test method, unconfined compressive strength is taken as the maximum load obtained per unit area or the load per unit area at 15% axial strain, whichever is secured first during a performance of a test. For the unconfined compressive strength test, the shear strength ( $S_u$ ) is calculated to be half of the compressive stress at failure.

The values of the unconfined compressive strength, as determined on samples of soil from the split-spoon sample (IDOT approved Rimac  $Q_r$ ), must be considered recognizing the manner in which they were obtained because the split-spoon sampling techniques provide a representative, but somewhat disturbed, soil sample. Because thin-walled tube samples are relatively undisturbed and are larger in size, these samples produce more accurate unconfined compressive strength results.

**ATTERBERG LIMITS** - The Atterberg Limits are defined by the liquid limit (LL) and plastic limit (PL) states of a given soil. These limits are used to determine the moisture content limits where the soil characteristics changes from behaving more like a fluid on the liquid limit end to where the soil behaves more like individual soil particles on the plastic limit end. The liquid limit is often used to indicate if a soil is a low or high plasticity soil. The plasticity index (PI) is the difference between the liquid limit and the plastic limit. The plasticity index is used in conjunction with the liquid limit to assess if the material will behave like a silt or clay. The material can also be classified as an organic material by comparing the liquid limit of the natural material to the liquid limit of the sample after being oven-dried.

The phases of the laboratory testing program were conducted in general accordance with applicable ASTM specifications. The results of these tests are to be found on the accompanying boring logs located in the Appendix.

### 3 SITE AND SUBSURFACE CONDITIONS

#### 3.1 SITE LOCATION AND DESCRIPTION

The project site for the proposed Clearwell is located at the Calhoun County Rural Water District existing facility along Illinois River Road in Hardin, Illinois. Specially, the proposed Clearwell will be located immediately north of the existing Clearwell and west of the existing Sand Filters. The proposed site has approximate latitude and longitude of 39.0697°N and 90.6101°W, respectively.

At the time of the drilling operations, the site was currently an open grass-covered lot with very moist, soft surficial soils. Based on the existing topographical map, the site exhibits an elevation difference of less than approximately 2 feet within the proposed development area. Surface drainage appeared fair based on visual site observations.



### 3.2 GENERAL AREA GEOLOGY

The geology of this region has been greatly influenced by several major land-forming factors including bedrock formation and tectonic movements prior to the Pleistocene Period on the geological time scale, and the action of water and wind. A mantle of wind-deposited and water-worked loessial material overlies a deposit of Illinoisan glacial drift on much of the region in which the site is located.

In this region the glacial drift has been deposited in terminal glacial moraines or intermediate ground moraines composed of compact glacial till, which is often times overlain by glacio-fluvial outwash deposits of variable texture, but consist predominately of coarser grained soils such as silts, sands and gravel. The underlying glacial till may also be variable textured, but is primarily a heterogeneous mixture of sands, gravels, and pebbles bound in a compact clay to silty matrix. Boulders may exist within the glacial till.

The Illinoisan glacial drift and underlying older drift extend to bedrock, which generally consists of interbedded limestone, sandstone, coal and shale.

Coal Mining - A cursory review of the Directory of Coal Mine Maps in Illinois issued by the Illinois Geological Survey (ISGS) for Calhoun County August 2017, indicates that mining operations are not reported at this site.





### 3.3 SUBSURFACE CONDITIONS

Per client's instructions, PSI completed a single soil boring within the proposed Clearwell structure to a depth of approximately 20 feet below the existing grades. The approximate boring location is shown on the Boring Location Plan presented in the Figures of this report. The location of the proposed soil boring was selected and located in the field by representatives of Heneghan and Associates, P.C. prior to the field drilling operations.

The soil borings were advanced utilizing 3¼ inch inside diameter, hollow-stem auger drilling methods. Soil samples were routinely obtained during the drilling process. Select soil samples were later tested in the laboratory to obtain soil material properties for the foundation section recommendations. Drilling, sampling, and laboratory testing was accomplished in general accordance with ASTM procedures.

The types of subsurface materials encountered in the soil borings have been visually classified in general accordance with ASTM D2487 and ASTM D2488. The results of the visual classifications, Standard Penetration tests, moisture contents and water level observations are presented on the boring logs in the *Appendix* of this report. Representative samples of the soils were placed in sample jars, and are now stored in the laboratory for further analysis, if requested. Unless notified to the contrary, all samples will be disposed of after 60 days following the date of this report.

The surface of the site at test boring location consisted of highly organic soil measuring approximately 3½ inches in thickness. Thickness and type of the surface materials should be expected to be variable within the proposed development area. Below the surficial materials, undisturbed firm to stiff cohesive soils consisted of lean clays and fat clays were noted and extended to termination depths of approximately 20 feet below the existing grades. A generalized soil profile and soil properties was identified and is summarized in Table 3.1.

**TABLE 3.1: GENERALIZED SOIL PROFILE AND PROPERTIES**

PROPERTY DESCRIPTION  SOIL STRATA TYPE	Approximate Depth (ft.)	RANGE OF PROPERTY VALUES				
		Standard Penetration, N	Moisture Content, %	Dry Unit Weight, pcf	Unconfined Compressive Strength, Qr (tsf)	Liquid Limit/Plastic Limit, %
Organic Soil	3½"	-	-	-	-	-
Firm to Stiff, Lean Clay (CL)	0.3 to 11	6 to 9	19 to 30	93	0.5 to 1.0	LL=30 PL=21
Stiff, Fat Clay (CH)	11 to 20	7 to 10	42 to 51	-	1.4 to 1.6	LL=87 PL=26

The subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the appendix should be reviewed for specific information at boring location. These records include soil descriptions, stratifications, penetration resistances, locations of the samples and laboratory test



data. The stratifications shown on the boring log represent the conditions only at the actual boring location. Variations may occur and should be expected within the development area. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. Water level information obtained during field operations is also shown on these boring logs.

### **3.4 GROUNDWATER CONDITIONS**

Groundwater was observed at a depth of approximately 18 feet during the drilling operations. However, based on natural moisture contents of the soil samples, saturated soils were observed as shallow as 8 to 10 feet below the existing grades. The water level observations provide an approximate indication of the groundwater conditions at the time the borings were drilled. However, long term observations in cased holes or piezometers would be necessary for a more accurate evaluation of the groundwater conditions at the site.

Fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. Additionally, discontinuous zones of perched water may exist within the soils. The possibility of groundwater level fluctuation should be considered when developing the design and construction plans for the project. PSI recommends that the contractor determine the actual groundwater levels at the site at the time of the construction activities.

## **4 EVALUATION AND RECOMMENDATIONS**

### **4.1 GEOTECHNICAL DISCUSSION**

The following geotechnical related recommendations have been developed on the basis of the subsurface conditions encountered and PSI's understanding of the proposed developments. Should changes in the project criteria occur, a review must be made by PSI to determine if modifications to our recommendations will be required. There are three (3) primary geotechnical related concerns or discussion topics related to these sites, which will affect the performance of the proposed structure. The following summarizes those concerns:

1. Settlement of Tank
2. Site Compaction
3. Shear Strength of Soil

#### **1. SETTLEMENT OF TANK**

Consolidation testing and detailed settlement analysis was not part of this scope. However, PSI has performed a preliminary settlement analysis of the proposed tank using empirical correlations, to estimate the consolidations parameters. Based on the data collected and considering an operational/service load of 2,000 psf over the entire tank area, PSI estimated a total settlement of approximately 4 to 6 inches with an additional settlement of approximately ½ to 1 inch in a 50 year period. The differential settlement (center to edge) is estimated to be 2½ to 3½ inches. However, please note that PSI did not account for loading pressures on the new footings from the existing structures. Also, the existing structures will likely encounter some additional settlement due to the proposed Clearwell depending upon the distances between the existing structures and proposed Clearwell.





Based on PSI's experience, the actual field settlements are often less than the calculated values. PSI anticipates that a properly designed and constructed ring wall foundation will settle approximately 70% to 80% of the calculated values. If a reduction in overall settlement is desired, the applied stress can be reduced by either widening the foundation elements or to a lesser degree by extending the foundation embedment deeper, or by partial removal and replacement of the firm soils with compacted crushed aggregate.

## **2. SITE COMPACTION**

Since the site soils predominantly consist of silts and clays, it may become difficult to properly compact the soils because of high moisture contents. The soils may need to be scarified and dried to a moisture content that will facilitate compaction in accordance with the structural fill requirements of this report. Moisture contents indicated the natural moisture content of the upper several feet generally were in the range of approximately 19% to 30%. PSI estimated the optimum moisture content of these soils be approximately 16 to 17 percent as determined by ASTM D698 (Standard Proctor Test). Thus, some drying of these soils would be required to achieve proper compaction or may need stabilization using crushed aggregate after removal and replacement of the soft in-situ soils.

Depending on weather and soil conditions at the time of construction, methods for accomplishing grading may include the use of wide-track, low-contact-pressure type equipment to perform the recommended site grading. The determination of the proper equipment for use in excavation would be dependent on the condition of the soils at the time of construction and the prevailing weather conditions. Narrow track equipment and rubber tired vehicles may experience difficulty moving about the site and may deteriorate otherwise suitable soils.

## **3. SHEAR STRENGTH OF SOIL**

The primary geotechnical property controlling the bearing capacity and compressibility of the soils bearing the applied loads is the shear strength of the soil. PSI believes the shear strength of the soils within the explored depths ranges from 500 to 1,600 psf. This shear strength is considered "undrained" or a "total stress" parameter and will be used in conjunction with other physical and geometric parameters to calculate an allowable bearing capacity.

## **4.2 SITE PREPARATION**

PSI recommends that highly organic soils, loose and soft soils present in the construction areas be stripped from the site and either wasted or stockpiled for later use. Stripping operations should extend a minimum of 10 feet beyond the proposed tank perimeter limits. Based on the boring, an average stripping depth of approximately 4 inches is anticipated. PSI recommends that stripping operations be monitored and documented by a representative of the geotechnical engineer at the time of construction.

After stripping and removing highly vegetated soil layer and excavating to the proposed subgrade level, as required, the subgrade should be thoroughly proof-rolled. Proof-rolling should be performed with a fully loaded tandem axle dump truck or similar rubber tired vehicle, with a minimum gross weight of 9 tons per single axle. Soils that are observed to rut or deflect excessively under the moving load should be undercut and replaced with properly compacted structural fill. The proof-rolling and undercutting activities should be witnessed by a representative of the geotechnical engineer and should be accomplished during a period of dry weather. Soft, loose or unstable areas revealed by the proof-rolling should be stabilized by additional compaction or undercut and replaced with structural fill or crushed aggregate.



Since the near-surface soils consist primarily of fine-grained soils (silts and clays), it may become difficult to achieve the required soil compaction and subgrade stability due to high soil moisture contents and relatively shallow groundwater. A stable base for compaction of structural fill is extremely important. Where soft subgrade soils are encountered, it is recommended that these materials be removed to underlying higher strength soils. If instability extends for significant depths, for example greater than 1 to 2 feet, incorporating larger-graded aggregate "bridging" materials, geotextiles and/or geogrids may be considered. Lime or lime by-product (locally available 'Code-L') treatment of the subgrade soils could be used to provide a stable subgrade, or the upper 12-inches could be replaced with the compacted crushed aggregate such as IDOT item CA-6. Typically, the most appropriate means of stabilizing unstable subgrades are addressed at the time these conditions are encountered. Other factors that may affect the most appropriate and/or cost-effective methods of stabilization include construction schedule, weather conditions, and material availability.

Please note that the degree of soil drying or chemical modification required will depend to a large extent on the weather conditions, seasonal precipitation, construction schedule, and also the methods and techniques employed by the contractor. The most appropriate soil stabilization methodologies should be determined at the time of construction. During site preparation, burn pits, trash pits or other isolated disposal areas may be encountered. Such materials encountered during site work or construction should be completely excavated and removed from the site.

#### **4.3 FILL/BACKFILL REQUIREMENTS**

Fill and/or backfill material for the project should be a well-graded granular or non-expansive {Liquid Limit (LL)<50 and Plasticity Index (PI)<25} cohesive material free of organic matter, waste construction debris, shale fragments, mine tailings, and other deleterious materials. The first layer of fill material should be placed in a relatively uniform horizontal lift and adequately keyed into the subgrade soils. The new fill materials should have a Proctor maximum dry density greater than 100 pcf and have a maximum particle size of 2 inches. Soils classified as CL, CL-ML, SM, SC-SM, SW, GW, GP and SP will generally be suitable for use as structural fill. Soils classified as OL, OH, MH, CH and PT should be considered unsuitable. Silt (ML) soils with  $PI \leq 4$ , are considered very unstable at or above saturation limits, therefore extra attention should be paid during site grading operations of these silt (ML) soils.

Fills and backfills should be placed in maximum lifts of 8 inches of loose material. Suitable cohesive fills should be compacted to a minimum dry density of 97% of the maximum, as determined by ASTM D698 (Standard Proctor test). The material should be compacted within the range of -2 to +3 percentage points of the optimum moisture content value as determined by the standard Proctor test. If a fine-grained silt or clay (cohesive) soil is used for fill, close moisture content control will be essential to achieve the recommended degree of compaction. If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. Each lift of compacted-structural fill should be tested by a representative of PSI prior to placement of subsequent lifts. The following Table 4.1 summarizes the recommended compactive effort for various types of structural fills.



TABLE 4.1: FILL/BACKFILL REQUIREMENTS

RECOMMENDED COMPACTIVE EFFORT				
(FOR VARIOUS TYPES OF STRUCTURAL FILL/BACKFILL)				
MATERIAL TESTED	PROCTOR TYPE	MIN % DRY DENSITY	MOISTURE CONTENT RANGE	RECOMMENDED FREQUENCY OF TESTING
Structural Fill	Standard	97%	-2 to +3%	1 per 1,000 sf of fill placed
Utility Trench	Standard	97%	-2 to +3%	1 per 100 lf of backfill placed

\*Minimum of 3 tests per lift

The top of compacted structural fill, if higher than the existing grades outside the structure, should extend horizontally at least 8 feet beyond the outside edge of the structural foundations before sloping. PSI recommends that permanent fill slopes be constructed at 3(H) on 1(V) or flatter and be properly compacted. The surfaces of the slopes should be protected from erosion by seeding, sodding, or other acceptable means.

If over-excavation of the foundations is required to remove soft or unsuitable soils, the excavation should extend outward horizontally from the edge of the footing for a distance twice to the depth of soil removed below the footing. A representative of PSI should be present on site to verify proper excavation depths. Backfilling and compaction procedures, as described above, could then be implemented to the bottom of footing elevation. In lieu of soil backfill, a controlled low strength flowable fill material with a minimum 28-day specified compressive strength of 100 psi could also be used as backfill.

Based on the boring information and laboratory tests, the underlying low-plasticity natural cohesive soils (lean clays) appear suitable for use as structural fill. However, based on the in-situ moisture contents of these materials, significant drying of the cohesive on-site soils should be anticipated to facilitate compaction. Off-site soils used as fill should be evaluated by adequate laboratory testing prior to their use as fill.

#### 4.4 FOUNDATION RECOMMENDATIONS

Based on the subsurface soil formation, anticipated structural loading and tank dimension, PSI recommends that the tank could be founded on ringwall foundation bearing within the undisturbed firm to stiff soils. However, if settlement is a concern, the proposed tank can be supported either one of the options such as surcharge loading, partial removal and replacement of firm soils by crushed aggregate or ground improvement (stone columns). ***Please note PSI's scope of work included drilling a single soil boring to a depth of 20 feet below the existing grades (suggested by client) with limited soil index properties. The other foundation options to minimize the settlement of tank will likely require a more detailed settlement analysis with additional/deeper soil boring with laboratory consolidation tests.***

##### 4.4.1 FOUNDATION CONSTRUCTION - GENERAL COMMENTS

The proposed Clearwell could be supported at grade on a ringwall foundation using an ultimate soil bearing pressure of 5,200 psf. It is anticipated that approximately 30 to 40 percent of the total settlement would likely occur during the staged hydro-load testing of the tank or within a few months after commissioning. It is anticipated that the remaining settlement will occur in the long-term (several years), after the tank is in service.



The bearing capacity of the underlying soils will dominate the behavior of the structure. PSI recommends a minimum dimension of 12-inches for the ring footing to reduce the possibility of a local bearing capacity failure due to punching shear. For design of the lateral resistance of the footings, PSI has provided the following design values:

Recommended Parameters for Lateral Resistance		
Parameters specific to soil type	In-Situ Cohesive Soils	Crushed L.S.
Friction Factor for Base	0.32	0.47 *
Coefficient of Active Pressure (Ka) **	0.39	0.27 *
Coefficient of Passive Pressure (Kp) **	2.56	3.70 *
Coefficient of At-Rest Pressure (Ko) **	0.56	0.43 *

\* These values may be used for design only if the crushed limestone backfill extends back from the wall certain distances. These are a horizontal distance approximately equal to or greater than the total height of the wall at the surface, and at least one-foot beyond the heel of the wall footing.

\*\* Earth pressure coefficients valid for level backfill conditions with no surcharge

\*\*\* Passive earth pressure can be determined utilizing factor of safety of 2.0; Kp shouldn't be used for soil above the frost depth because of the difficulty in assuring its reliability

Ringwall footings should be located at a depth of approximately 36 inches or deeper below the final exterior grade to provide adequate frost protection per local codes. Also, a modulus of subgrade reaction of 3 to 5 pci can be used for the tank bottom design. Axial tension is generated in the ringwall foundation by lateral earth pressure. The lateral pressure is the result of product surcharge and the backfill within the ring wall foundation. The counterbalancing effect of the passive pressure on the outside of the ring wall foundation should be ignored because of the difficulty in assuring its reliability (frost impact).

The foundation excavations should be observed prior to steel reinforcement or concrete placement to assess that the foundation materials are consistent with the materials discussed in this report. Soft or loose soil zones encountered at the bottom of the footing excavations should be removed to the level of competent naturally deposited soils or properly compacted structural fill as directed by the geotechnical engineer. Cavities formed as a result of excavation of soft or loose soil zones should be backfilled with lean concrete or dense graded compacted crushed stone.

After opening, footing excavations should be observed and concrete placed as quickly as possible to avoid exposure of the footing bottoms to wetting and drying. Surface runoff water should be drained away from the excavations and not be allowed to pond. If possible, the foundation concrete should be placed during the same day the excavation is made. If it is required that footing excavations be left open for more than one day, the soils in the excavation should be protected to reduce evaporation or entry of moisture. In this case, PSI recommends the placement of a 1 to 2 inch thick mud mat to protect the underlying soils from disturbance or changes in moisture content.

#### 4.4.2 HYDRO-LOAD TESTING

PSI recommends that the tank be hydro-load tested to reduce long-term settlement. PSI understands that the pipe connections will be made after the hydro-load tests. The hydro-load tests can be performed as described herein.

The tank should be filled with water in four equal increments such that the pressure at the base would be one-fourth the desired maximum pressure (service load). Settlement of the tank must



be monitored at least every six hours under a given incremental load at 4 to 8 equally spaced locations around the perimeter of the tank using a survey level. Every increment of load must be held until settlement between two consecutive six hourly readings is less than 1/4-inch or a maximum of two days. The final or the maximum load should be held for a minimum period of five days. After loading is complete, the unloading procedure can begin and should be done in similar decrements. The unloading can continue once the stable readings are reached for every decrement. Specifications and guidelines for the instrumentation are provided in American Petroleum Institute's (API) document API-653. It is recommended that PSI geotechnical engineer should analyze the settlement data at the completion of the load test.

#### 4.5 EARTHQUAKE AND SEISMIC DESIGN CONSIDERATIONS

The project site is located within a municipality that employs the International Building Code, 2012 edition. The 2012 International Building Code requires a Site Class for the calculation of the earthquake design forces in general accordance with ASCE-7. The effect of soil amplification on earthquake ground motions is taken into account by adjusting the earthquake spectral response accelerations for the soil and rock conditions at the site. The code group's soil or rock conditions into six sites as defined in Table 20.3-1 (ASCE-7), with site coefficients of  $F_a$  and  $F_v$  increasing from Site Class A through F. The site class is based on a weighted average of known or estimated soil properties for the uppermost 100 feet of subsurface profile.

The soil boring at the project site extended to depths of approximately 20 feet below the existing ground surface. Based on regional geological mapping and PSI experience with the area, PSI anticipates that the subsurface conditions below the explored depth may generally consist of stiffer soils than those encountered during drilling operations. Based on our review of the available data, and knowledge of regional geology, PSI evaluated the Site Class using the weighted average of known and estimated Standard Penetration Test (SPT) N-values and soil shear strengths estimated from the field and laboratory tests and regional geological information. Based on the estimated shear strength of the soil at the boring locations, **Site Class "D"** is recommended. The USGS-NEHRP probabilistic ground motion values for latitude 39.0697° N and longitude 90.6101° W obtained from the USGS geohazards web page are detailed in the table 4.2 below:

TABLE 4.2: PROBABILISTIC GROUND MOTION VALUES

Period (seconds)	2% Probability of Event in 50 years (%g)	Site Coefficients	Max. Spectral Acceleration parameters	Design Spectral Acceleration parameters	
PGA	13.4	---	---	---	
0.2 ( $S_s$ )	27.4	$F_a = 1.580$	$S_{ms} = 0.434$	$S_{Ds} = 0.289$	$T_0 = 0.134$
1.0 ( $S_1$ )	12.6	$F_v = 2.296$	$S_{m1} = 0.289$	$S_{D1} = 0.193$	$T_s = 0.668$

The Site Coefficients,  $F_a$  and  $F_v$  were interpolated for IBC 2012 Tables 1613.3.3(1) and 1613.3.3(2) as a function of the site classifications and the mapped spectral response acceleration at the short ( $S_s$ ) and 1 second ( $S_1$ ) periods.

A detailed study of slope instabilities, liquefaction and surface rupture due to faulting or lateral spreading was beyond PSI's contracted scope of services. However, the Table 4.3 below presents a qualitative assessment of these issues considering the site class, the subsurface soil properties, the groundwater elevation, and probabilistic ground motions:



**TABLE 4.3: QUALITATIVE ASSESSMENT ISSUES**

Hazard	Relative Risk	Comments
Liquefaction	Low	The soil within the upper 20 feet of the subsurface profile consists primarily of firm to stiff cohesive soils
Slope Stability	Low	The site is relatively flat and does not/will not incorporate significant cut or fill slopes.
Surface Rupture	Low	The site is not underlain by a mapped Holocene-aged fault.

#### **4.6 EXCAVATION SUPPORT**

Based on the preliminary information provided, PSI anticipates that the underground utility pipes will be bearing within the area's undisturbed firm to stiff soil formation. In view of the results of the test boring operations, laboratory test studies, analysis and provided information, consideration should be given to the following factors in the design and installation.

Trench box or temporary shoring and bracing to prevent sloughing and caving of the soil into the excavation should be provided for excavations with vertical faces deeper than five (5) feet in accordance with OSHA requirements. Shoring and bracing requirements for excavations deeper than five (5) feet should conform to the applicable federal, state and local regulations. According to the subsoil exploration, the soils found at this project are mostly cohesive with undrained shear strength ranging from 500 psf and 1,000 psf and can be classified as "Type C" according to the United States Department of Labor, Occupational Safety and Health Administration (OSHA) due to shallow groundwater and frequent sand seams.

Excavations must be performed and evaluated under the supervision of the contractor's designated Competent Person (as defined by the OSHA Standard, 29 CFR Part 1926.650 to .652, Subpart P - Excavations), who must evaluate the excavations at the time of construction activity to safeguard workers.

PSI recommends that construction equipment should not be operated within at least 5 feet of the edge of the excavation and that stockpiled materials should be kept away from the excavation at a minimum distance equal to the excavation depth to avoid surcharging of the excavation walls.

When applicable, excavations should not approach closer than a horizontal distance equal to the excavation depth from existing structures or buried utilities without some form of protection for the existing facilities. Also, excavations should be provided with a relatively clean bearing area provided by suitable equipment which should not disturb the soil beneath the design excavation bottom or leave large amounts of weakened soil in the excavation.

Proper sloping should be provided to the excavation bottom to facilitate the collection of any infiltration water at a convenient location along an excavation edge. Water standing or ponding within the bearing surface should not be allowed and this surface should be disturbance and deterioration protected by completing installation and backfilling operations as quickly as possible.

For the various subsurface formations encountered, the following Table 4.4 with soil parameters may be adopted to estimate the lateral earth pressures:



**TABLE 4.4: SOIL DESIGN PARAMETERS**

Type of Soil	Depth (ft.)	Unit Weight (pcf)	Undrained Shear Strength		Effective Shear Strength	
			c (psf)	$\phi$	c' (psf)	$\phi'$
CL	0 to 11	115	700	0	70	27
CH	11 to 20	120	1,200	0	120	19

*\*water table is estimated at a depth of approximately 8 to 10 feet below the existing grades at the time of the drilling operations, and could likely be higher due to capillary action.*

#### **4.7 PIPE SUPPORT**

For the structural and functional integrity of the utilities, it is imperative that the pipes have adequate foundation, i.e., the subsurface materials should have adequate support capabilities and also be able to provide uniform bedding to the pipe. The bedding may be provided either with a shaped bottom and tamped backfill, or by compacted granular bedding with tamped backfill. Up to four (4) inches of bedding material (per Illinois DOT) placed directly under the pipes or conduits placed in the utility trench should be compacted to the 90% compaction criteria with respect to the standard Proctor. As soon as the condition of the pipe permits, the entire width of the trench shall be backfilled with aggregate to a height of at least to the center of the pipe. However, when using flexible pipe, the aggregate backfill shall be continued to a minimum height of 1 foot above the top of the pipe in general accordance with Illinois DOT specifications.

#### **4.8 BACKFILL OPERATIONS**

Any backfill required against the utilities and underground structures should consist of freely draining granular materials. The backfill is to be placed on a controlled lift-by-lift basis. Individual fill lifts are to be of maximum 8-inch loose measure thickness (preferably 4 to 6 inches), and each individual lift is to be adjusted in moisture content to within plus or minus 2 percent of the optimum moisture content as determined by ASTM D-698. The fill materials are to be systematically compacted, such that an in-place density of at least 97% of the maximum dry density achieved by the standard Proctor test.

It must be recognized that over a period of time, the backfill against the below grade structures will become saturated. Under this circumstance, it is possible that the bottom slab/footings may be subjected to hydrostatic uplift that should be considered in the design. Uplift may be resisted either by assuring that the dead loads of the proposed structure counter balance the buoyancy forces or by providing a system of pressure relief valves. Lateral pressures acting on the below grade walls can be defined based on the effective strength parameters recommended in a previous section plus hydrostatic pressure. Specifications should require that the resulting fill materials densities be verified by test measurements conducted by the geotechnical engineer.

Prior to any filling operations, samples of the proposed borrow materials should be obtained for laboratory moisture-density testing. The tests will provide a basis for evaluation of fill compaction by in-place density testing. A qualified soil technician should perform sufficient in-place density tests during the filling operations to verify that proper levels of compaction are being attained.

#### **4.9 SILTATION CONTROL**

The upper soils at the site are generally silty in nature and are susceptible to erosion. Appropriate erosion control measures such as proper site contouring during general grading and siltation fences should be used during construction so that eroded materials remain onsite. Depending on the length



of time the subgrade is exposed and the amount of the siltation which occurs, it may be necessary to periodically remove materials collected by the silt fences.

## **5 CONSTRUCTION CONSIDERATIONS**

### **5.1 WEATHER RELATED CONCERNS**

The upper fine-grained soils encountered at this site may be sensitive to disturbances caused by construction traffic and to changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

### **5.2 DRAINAGE AND GROUNDWATER CONSIDERATIONS**

Based on the natural moisture contents, saturated soils were noted as shallow as 8 to 10 feet below the existing grades. Also, please note, due to capillary action in these silty soils, the soils are likely saturated at depths several feet above the observed groundwater levels. Therefore, groundwater seepage may be observed during utility excavations and foundations. Thus, a temporary dewatering system may be required during construction for foundations and utilities. The temporary dewatering system should be designed and installed by a contractor experienced in the project area. Typically, these consist of sump pit and/or trenches and pumps. Monitoring wells should be installed within the excavation so that the water levels can be monitored, the effectiveness of the dewatering system evaluated and appropriate adjustments to the system made, if necessary.

Fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. Additionally, discontinuous zones of perched water may exist within the soils. The possibility of groundwater level fluctuation should be considered when developing the design and construction plans for the project.

Furthermore, water should not be allowed to collect in the foundation excavations or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater or surface runoff.

### **5.3 FEDERAL EXCAVATION REGULATIONS**

In Federal Register, Volume 54, No. 209 (October, 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P." This document was issued to better insure the safety of workers entering trenches or excavations. It is mandated by this federal regulation that all excavations, whether they be utility trenches, basement excavations or foundation excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced. If they are not followed closely, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person" as defined in "CFR





Part 1926," should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. Materials removed from the excavation should not be stockpiled immediately adjacent to the excavations, inasmuch as this load may cause a sudden collapse of the embankment.

PSI is providing this information solely as a service to our client. PSI is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred. A trench safety plan was beyond the scope of PSI's services for this project. If the excavations are left open and exposed to the elements for a significant length of time, desiccation of the clays may create minute shrinkage cracks which could allow large pieces of clay to collapse or slide into the excavation.

## **6 GEOTECHNICAL RISK & REPORT LIMITATIONS**

### **6.1 GEOTECHNICAL RISK**

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools which geotechnical engineers use are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soils and the proposed structure will perform as planned. The engineering recommendations presented in the preceding section constitutes PSI's professional estimate of those measures that are necessary for the proposed structure to perform according to the proposed design based on the information generated and reference during this evaluation, and PSI's experience in working with these conditions.

### **6.2 REPORT LIMITATIONS**

The recommendations submitted in this report are based on the available subsurface information obtained by PSI and design details furnished by Heneghan and Associates, P.C., for the proposed Clearwell structure. If there are any revisions to the plans for the proposed structure, or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be retained to determine if changes in the recommendations are required. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of those conditions on the geotechnical recommendations for the project.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein, have been presented after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.

After the plans and specifications are complete, it is recommended that PSI be provided the opportunity to review the final design and specifications, in order to verify that the earthwork and recommendations are properly interpreted and implemented. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of the Calhoun County Rural Water District, for the specific application to the proposed Clearwell structure to be constructed at the Calhoun County Rural Water District existing facility on Illinois River Road in Hardin, Illinois.

# **FIGURES**

Aerial Plan

Topographical Map

ISGS Coal Mine Map

Boring Location Plan

## AERIAL PLAN

SOURCE:

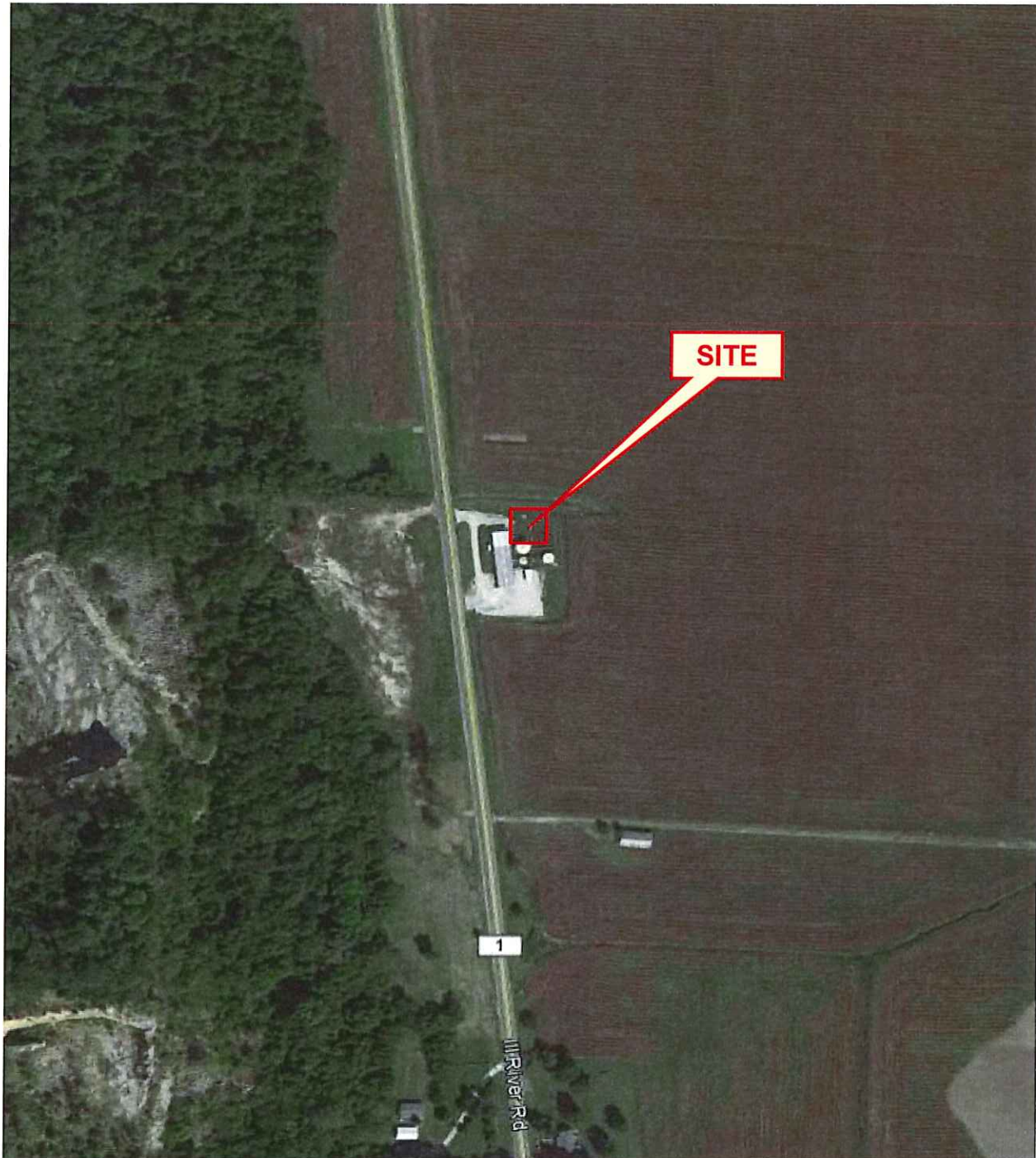
Google Earth

YEAR:

NA

SCALE:

No Scale



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## AERIAL PLAN

PSI PROJECT No.: 0026204-1  
Project: Proposed Clearwell  
Location: Illinois River Road  
Hardin, Illinois

# TOPOGRAPHICAL MAP

**SOURCE:**

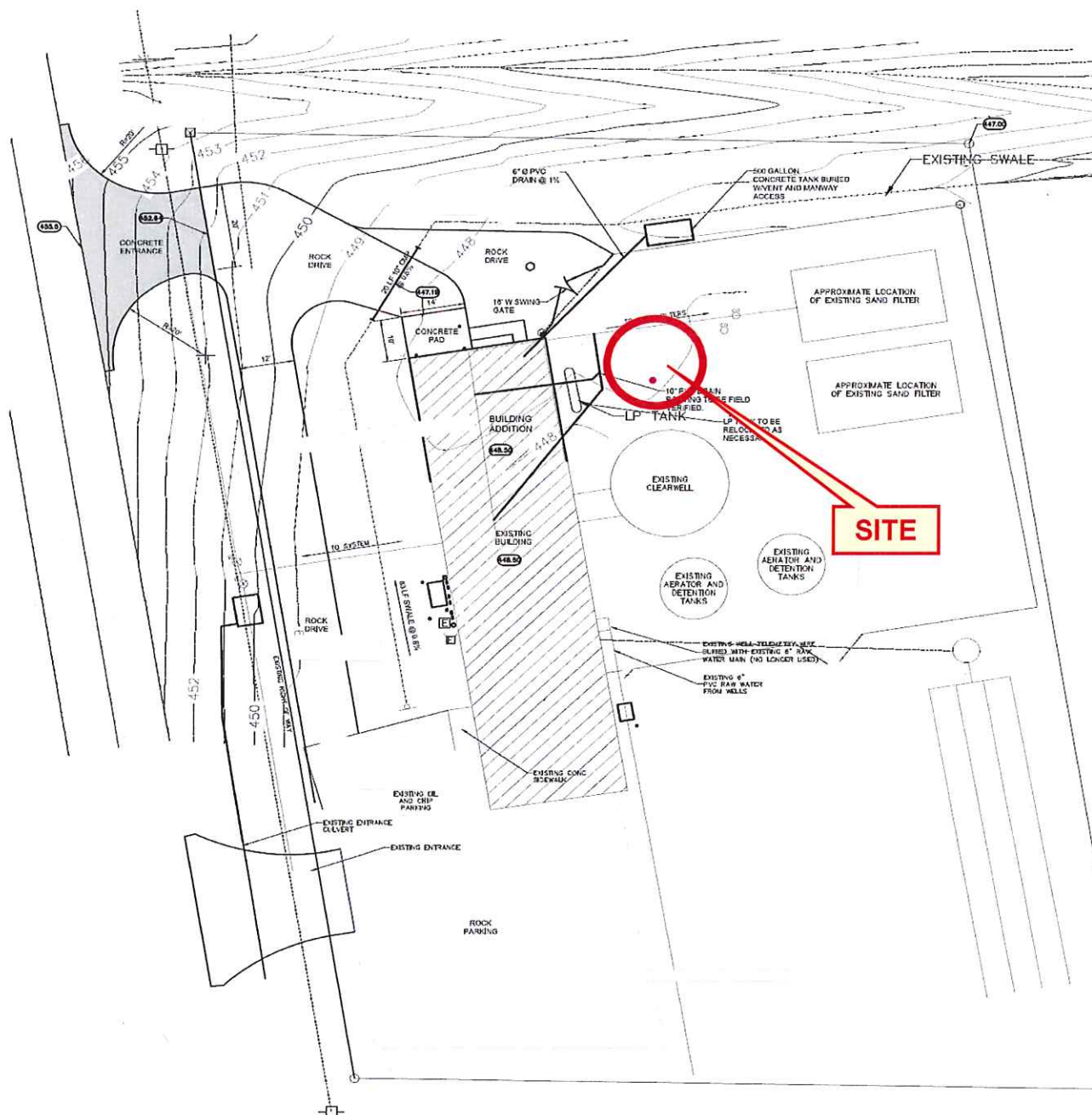
Heneghan & Associates, P.C.

YEAR:

Nov-17

SCALE:

No Scale



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# TOPOGRAPHICAL MAP

PSI PROJECT No.: 0026204-1

Project: Proposed Clearwell

Location: Illinois River Road  
Hardin, Illinois



# ISGS COAL MINE MAP

SOURCE:

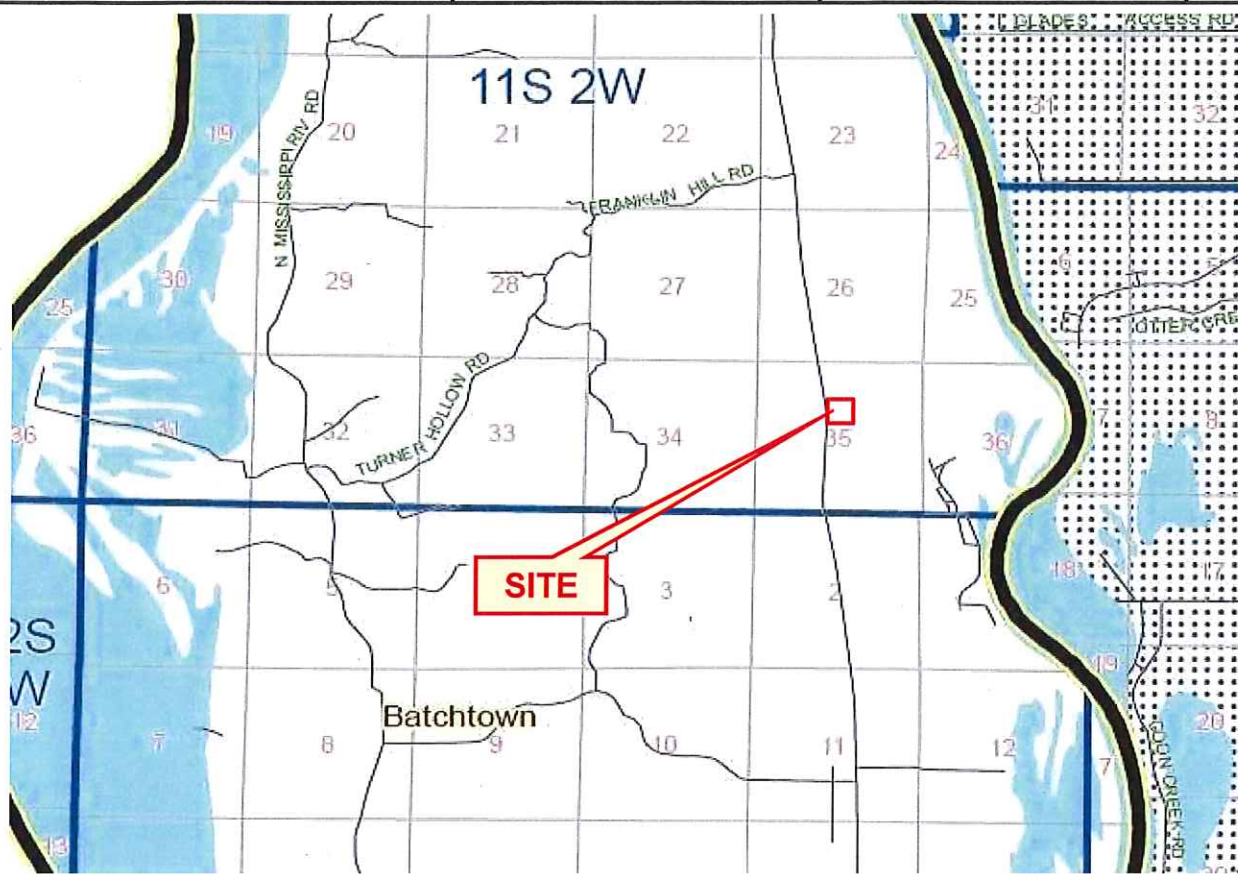
Illinois States Geological Survey (ISGS)

YEAR:

Aug-17

SCALE:

No Scale



## LEGEND:

### Mining Method

- Room & Pillar (RP)
- Room & Pillar Basic (RPB)
- Modified Room & Pillar (MRP)
- Room & Pillar Panel (RPP)
- Blind Room & Pillar (BRP)
- Checkerboard Room & Pillar (CRP)
- High Extraction Retreat (HER)
- Longwall (LW)
- Underground, Method Unknown
- Strip Mine
- Auger Mine
- General Area of Mining

### Source of Mine Outline

- Final Mine Map
- Not Final Mine Map
- Undated Mine Map
- Incomplete Mine Map
- Secondary Source Map

### Tipple, Shaft, Slope, Drift Locations

- Strip Mine Tipple - Active
- Strip Mine Tipple - Abandoned
- Mine Shaft - Active
- Mine Shaft - Abandoned
- Mine Slope - Active
- Mine Slope - Abandoned
- Mine Drift - Active
- Mine Drift - Abandoned
- Air Shaft
- Uncertain Location
- Uncertain Type of Opening

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## ISGS COAL MINE MAP

PSI PROJECT No.: 0026204-1  
Project: Proposed Clearwell  
Location: Illinois River Road  
Hardin, Illinois

# BORING LOCATION PLAN

**SOURCE:**

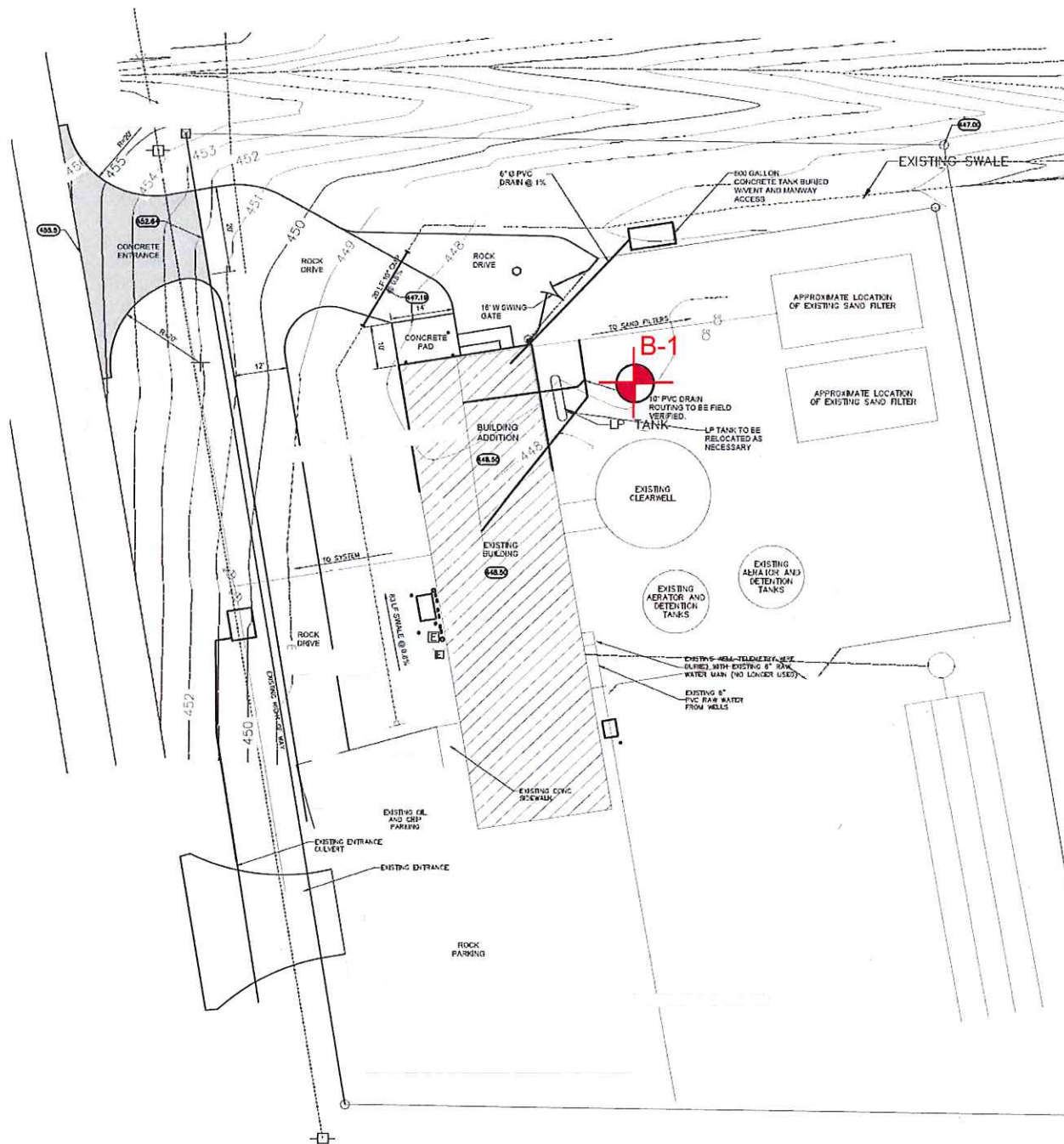
Heneghan & Associates, P.C.

DATE:

Nov-17

SCALE:

No Scale



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## BORING LOCATION PLAN

PSI PROJECT No.: 0026204-1

Project: Proposed Clearwell

Location: Illinois River Road

Hardin, Illinois



# **LIST OF APPENDICES**

Boring Log

Laboratory Test Results

Key to Terms and Symbols





Professional Service Industries, Inc.  
480 North Street, Springfield, Illinois 62704  
Telephone: (217) 544-6663  
Fax: (217) 544-6148

## LOG OF BORING B-1

Sheet 1 of 1

PSI Job No.: 0026204-1	Drilling Method: Hollow Stem Auger	<b>WATER LEVELS</b>
Project: Proposed Clearwell	Sampling Method: Shelby Tube/Split Spoon	▽ While Drilling 18 feet
Location: Illinois River Road	Hammer Type: Automatic Hammer	▽ Upon Completion None
Hardin, Illinois	Boring Location: See Attached Boring Location Plan	▽ Delay N/A

Elevation (feet)	Depth (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	Station: N/A Offset: N/A	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ⊙ X Moisture    PL LL ⊕	Additional Remarks
							Surface Elev.: 448 ft					
	0			1	18		3 1/2-inch Organic Soil		6-4-4 N=8	19	⊙ X	
445				2	18		- brown, rust brown	CL	5-4-5 N=9	24	⊙ * X	Q <sub>r</sub> = 0.8 tsf
5				3	24		- brown, rust brown, gray		600 psi	26	▲ ⊙ ⊕	DD = 93 pcf LL = 30 PL = 21 Q <sub>u</sub> = 0.5 tsf
440				4	18		- light brown, gray		2-3-3 N=6	30	⊙ * X	Q <sub>r</sub> = 0.8 tsf
10				5	18		FAT CLAY (CH), STIFF, GRAY, REDDISH BROWN, very moist		3-3-4 N=7	42	⊙ * X	Q <sub>r</sub> = 1.4 tsf
435				6	18		- gray, brown	CH	3-4-5 N=9	43	⊙ * X	Q <sub>r</sub> = 1.4 tsf
15				7	18				3-4-5 N=9	44	⊙ * ⊕	LL = 87 PL = 26 Q <sub>r</sub> = 1.6 tsf
430				8	18		- gray		3-5-5 N=10	51	⊙ * >> X	Q <sub>r</sub> = 1.6 tsf
20							Boring Terminated at -20 Feet					

Completion Depth: 20.0 ft	Sample Types:	Latitude: 39.0697
Date Boring Started: 1/23/18	Auger Cutting	Longitude: -90.6101
Date Boring Completed: 1/23/18	Split-Spoon	Drill Rig: CME-55
Logged By: R. Tomlin	Rock Core	Remarks: Boring elevation was interpolated from Topographical Map
Drilling Contractor: PSI, Inc.	Shelby Tube	
	Hand Auger	
	Texas Cone	

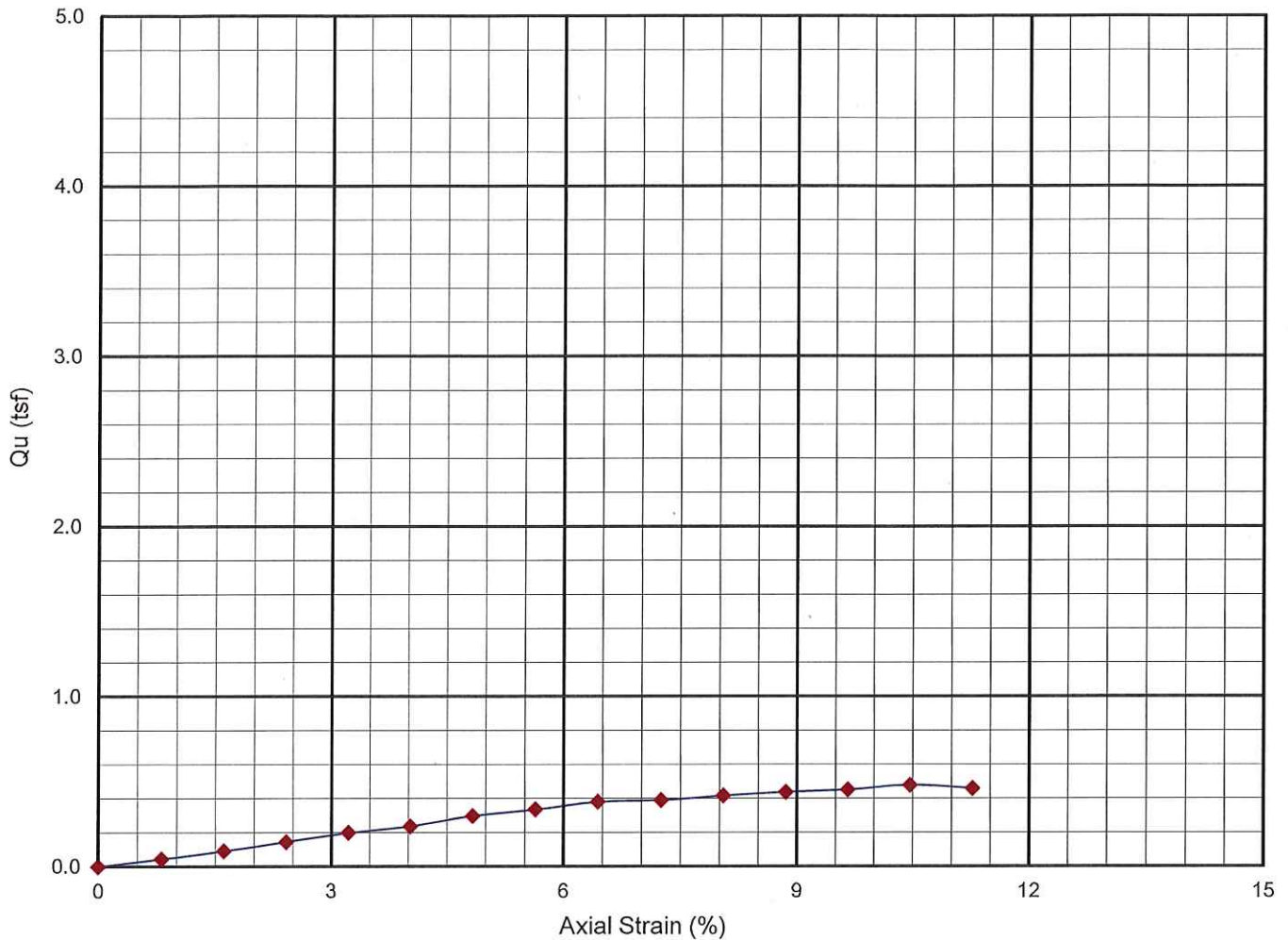
The stratification lines represent approximate boundaries. The transition may be gradual.

# SHELBY TUBE SAMPLE

(3-INCH UNDISTURBED SAMPLE)

BORING No. B-1  
SAMPLE No. ST-3 6' - 8'

Axial Strain, % vs. Unconfined Compressive Strength (Qu), tsf



## Physical Properties

Unconfined Comp. Strength (Qu) =	0.5	tons/ft <sup>2</sup>	Liquid Limit (LL) =	30
Water Content (% of dry wt) =	26	%	Plastic Limit (PL) =	21
Wet Density =	117	lb/ft <sup>3</sup>	Passing No. 200 Sieve =	NP %
Dry Density =	93	lb/ft <sup>3</sup>	Specific Gravity (Gs) =	NP Unitless
*Degree of Saturation (S%) =	89	%	<b>Notes:</b> NP = Test Not Performed *If Specific Gravity (Gs) not determined in laboratory then calculations are based on an estimated G <sub>s</sub> of 2.68 based on PSI experience with the soils in the area.	
*Void Ratio (e <sub>o</sub> ) =	0.78	unitless		
*Porosity (n) =	0.44	unitless		

Description: Lean Clay, brown

Test Method: ASTM D-2166

Remarks: 16" Recovery

Sample Method: Shelby Tube

Tested By: PSI - R. Dimayuga

Load Ring: SN 15225; Calibrated July 2017



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phone 217/544-6663 fax 217/544-6148

## SHELBY TUBE SAMPLE

PSI PROJECT No.: 0026204-1  
Project: Proposed Clearwell  
Location: Illinois River Road  
Hardin, Illinois



## GENERAL NOTES

### SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

### DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.	SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
HSA: Hollow Stem Auger - typically 3 1/4" or 4 1/4" I.D. openings, except where noted.	ST: Shelby Tube - 3" O.D., except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry	BS: Bulk Sample
R.C.: Diamond Bit Core Sampler	PM: Pressuremeter
H.A.: Hand Auger	CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings
P.A.: Power Auger - Handheld motorized auger	

### SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
N <sub>60</sub> : A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q <sub>u</sub> : Unconfined compressive strength, TSF
Q <sub>p</sub> : Pocket penetrometer value, unconfined compressive strength, TSF
w%: Moisture/water content, %
LL: Liquid Limit, %
PL: Plastic Limit, %
PI: Plasticity Index = (LL-PL), %
DD: Dry unit weight, pcf
▽, ▽, ▼ Apparent groundwater level at time noted

### RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	N - Blows/foot
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	50 - 80
Extremely Dense	80+

### ANGULARITY OF COARSE-GRAINED PARTICLES

Description	Criteria
Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular:	Particles are similar to angular description, but have rounded edges
Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Rounded:	Particles have smoothly curved sides and no edges

### GRAIN-SIZE TERMINOLOGY

Component	Size Range
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (3/4 in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to 3/8 in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

### PARTICLE SHAPE

Description	Criteria
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

### RELATIVE PROPORTIONS OF FINES

Descriptive Term	% Dry Weight
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%

## GENERAL NOTES

(Continued)

### CONSISTENCY OF FINE-GRAINED SOILS

<u>Q<sub>u</sub> - TSF</u>	<u>N - Blows/foot</u>	<u>Consistency</u>
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

### MOISTURE CONDITION DESCRIPTION

<u>Description</u>	<u>Criteria</u>
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

### RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term</u>	<u>% Dry Weight</u>
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

### STRUCTURE DESCRIPTION

<u>Description</u>	<u>Criteria</u>	<u>Description</u>	<u>Criteria</u>
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick	Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick	Lensed:	Inclusion of small pockets of different soils
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing	Layer:	Inclusion greater than 3 inches thick (75 mm)
Slickensided:	Fracture planes appear polished or glossy, sometimes striated	Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
		Parting:	Inclusion less than 1/8-inch (3 mm) thick

### SCALE OF RELATIVE ROCK HARDNESS

<u>Q<sub>u</sub> - TSF</u>	<u>Consistency</u>
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

### ROCK BEDDING THICKNESSES

<u>Description</u>	<u>Criteria</u>
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

### ROCK VOIDS

<u>Voids</u>	<u>Void Diameter</u>
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

### GRAIN-SIZED TERMINOLOGY

(Typically Sedimentary Rock)

<u>Component</u>	<u>Size Range</u>
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

### ROCK QUALITY DESCRIPTION

<u>Rock Mass Description</u>	<u>RQD Value</u>
Excellent	90 - 100
Good	75 - 90
Fair	50 - 75
Poor	25 - 50
Very Poor	Less than 25




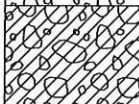

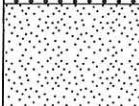
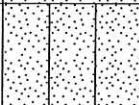
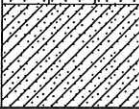

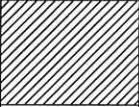

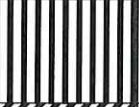
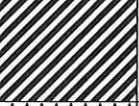
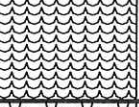

### DEGREE OF WEATHERING

Slightly Weathered:	Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.
Weathered:	Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.
Highly Weathered:	Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.



# SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS  MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS  MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS  (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		GRAVELS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS  MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS  (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		CLEAN SANDS  (LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
		SANDS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS  MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS  LIQUID LIMIT LESS THAN 50	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS  LIQUID LIMIT GREATER THAN 50	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS