

SPECIFICATIONS AND CONTRACT DOCUMENTS

FOR

CO-OP FARM IRRIGATION COMPANY

CO-OP/HSBCC CANAL PRESSURIZATION PROJECT

PROJECT SPONSORS:

CO-OP FARM IRRIGATION COMPANY

HUNTSVILLE SOUTH BENCH CANAL COMPANY

JULY 2025

Project No. 55-22-047 & 55-22-052



J-U-B ENGINEERS, INC.

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**CO-OP FARM IRRIGATION COMPANY
CO-OP/HSBCC CANAL PRESSURIZATION PROJECT**

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ADVERTISEMENT FOR BIDS
CO-OP FARM IRRIGATION COMPANY
HUNTSVILLE, UTAH
CO-OP/HSBCC CANAL PRESSURIZATION PROJECT

CO-OP Farm Irrigation Company (Owner) is requesting Bids for the construction of the **CO-OP/HSBCC Canal Pressurization Project**.

Bids for the construction of the Project will be received at the **Ogden Valley Branch – Weber County Library System located at 131 S 7400 E, Huntsville, UT 84317** until **August 14, 2025** at **2:00 pm** local time. At that time the Bids received will be publicly opened and read.

The Project includes the following Work:

- Approximately 14,900 feet of 24" to 20" fused HDPE pipe installed by open trench
- 73 metered turnout connections
- Precast concrete screening inlet structure
- Air valve and drain assemblies
- Demolition of 38 existing structures and replacing with HDPE pipe
- Grading and reseeding

Owner anticipates that the Project's total bid price will be approximately **\$3,000,000**. The Project is expected to be substantially complete by **April 30, 2026**.

Information and Bidding Documents for the Project will be made available on **Wednesday, July 23, 2025** and can be found at the following designated website:

www.questcdn.com eBidDoc #9797758

Bidding Documents may be downloaded from the designated website. Prospective Bidders are urged to register with the designated website as a plan holder, even if Bidding Documents are obtained from a plan room or source other than the designated website in either electronic or paper format. The designated website will be updated periodically with addenda, lists of registered plan holders, reports, and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only through the designated website. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the designated website.

A pre-bid conference for the Project will be held on **July 31, 2025 at 10:00 am** local time at the **Ogden Valley Branch – Weber County Library System located at 131 S 7400 E, Huntsville, UT 84317**.

Attendance at the pre-bid conference is encouraged but not required.

The Owner reserves the right to waive any informality or to reject any or all Bids. Each Bidder must deposit with his Bid, a bid security subject to the conditions provided in the Instructions to Bidders. No Bidder may withdraw his Bid within thirty-five (35) days after the date of the opening thereof. For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents. The Peoa South Bench Ditch Company is an Equal Opportunity Employer.

This Advertisement is issued by:

Owner: **CO-OP Farm Irrigation Company**

By: **William White**

Title: **President**

Date: **July 22, 2025**

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INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACT

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ARTICLE 1—DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.
- 2.03 Owner has established a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner recommends that Bidder register as a plan holder with the Issuing Office at such website, and obtain a complete set of the Bidding Documents from such website. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.
- 2.04 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents, or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as plan holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms, or for a Bidder's failure to obtain Addenda from a plan room.
- 2.05 *Electronic Documents*
- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.
1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader Version 6 or later. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot

and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.

- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.05.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within **5 days** of Owner's request, Bidder must submit the following information:
 - A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
 - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.
 - C. Bidder's state or other contractor license number, if applicable.
 - D. Subcontractor and Supplier qualification information.
 - E. Other required information regarding qualifications.
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4—PRE-BID CONFERENCE

- 4.01 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.
- 4.02 Information presented at the pre-Bid conference does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions

at the pre-Bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *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.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:
 - a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.
 - b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.
 - c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-related Documents*

- A. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.
- B. A Site visit is scheduled following the pre-bid conference. Maps to the Site will be available at the pre-Bid conference.
- C. Bidders visiting the Site are required to arrange their own transportation to the Site.
- D. All access to the Site other than during a regularly scheduled Site visit must be coordinated through the following Owner or Engineer contact for visiting the Site: **Co-op: Bill White, (801) 518-7422; HSBCC: Greg Graves, (801) 648-6822**. Bidder must conduct the required Site visit during normal working hours.
- E. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- F. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general 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. Bidder is responsible for establishing access needed to reach specific selected test sites.
- G. Bidder must 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.
- H. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

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

5.06 *Other Work at the Site*

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

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

- A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder’s examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
- B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

- 7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:
 - A. **Jonathan Frazier, (801) 547-0393, jfrazier@jub.com**
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than seven days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8—BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of **five percent (5%)** of Bidder’s maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents.
- 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, 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 and furnish the required Contract security within 30 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, in whole in the case of a penal sum bid bond, and to the extent of Owner’s damages in the case of a damages-form bond. Such forfeiture will 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 7 days after the Effective Date of the

Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 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 (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.
- 9.02 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 10—SUBSTITUTE AND “OR EQUAL” ITEMS

- 10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those “or-equal” or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an “or-equal” or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer within 10 days of the issuance of the Advertisement for Bids or invitation to Bidders. Each such request must comply with the requirements of Paragraphs 7.05 and 7.06 of the General Conditions, and the review of the request will be governed by the principles in those paragraphs. 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 registered Bidders. Bidders cannot rely upon approvals made in any other manner.
- 10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required.
- 11.02 If requested by the 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, individual, or entity.
- 11.03 If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given,

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

- 11.04 Contractor shall not be required to employ any subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 12—PREPARATION OF BID

- 12.01 The Bid Form is included with the Bidding Documents.

- A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must 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."

- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.

- 12.03 A Bid by a corporation must 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 seal must be affixed and attested by the corporate secretary or an assistant corporate secretary. The corporate address and state of incorporation must be shown.

- 12.04 A Bid by a partnership must 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 official address of the partnership must be shown.

- 12.05 A Bid by a limited liability company must 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 official address of the firm must be shown.

- 12.06 A Bid by an individual must show the Bidder's name and official address.

- 12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.

- 12.08 All names must be printed in ink below the signatures.

- 12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.

- 12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.
- 12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.
- 12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Unit Price*

- A. Bidders must 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.

13.02 *Allowances*

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

ARTICLE 14—SUBMITTAL OF BID

- 14.01 The Bidding Documents include 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 2 of the Bid Form.
- 14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must 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 must 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 must be enclosed in a separate package plainly marked on the outside with the

notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement.

- 14.03 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 15—MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened 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.
- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03 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, the Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

ARTICLE 16—OPENING OF BIDS

- 16.01 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 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 17.01 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 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 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, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.

18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.

18.05 *Evaluation of Bids*

A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

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

18.06 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.

18.07 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 19—BONDS AND INSURANCE

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

19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 30 days thereafter, Successful Bidder must 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 10 days thereafter, Owner will 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 21—SALES AND USE TAXES

- 21.01 **Owner is not exempt from sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes must be included in the Bid.**

ARTICLE 22—CONTRACTS TO BE ASSIGNED

Not Used

ARTICLE 23—RETAINAGE

- 23.01 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Agreement.

CONTRACT PROVISIONS

Contractor shall adhere to the following federal contract provisions:

- A. Buy America Domestic Procurement Preference
- B. Inspection
- C. Debarment and Suspension
- D. Drug-Free Workplace
- E. Trafficking Victims Protection Act of 2000
- F. New Restrictions on Lobbying

A. BUY AMERICA DOMESTIC PROCUREMENT PREFERENCE

As required by Section 70914 of the Bipartisan Infrastructure Law (also known as the Infrastructure Investment and Jobs Act), P.L. 117-58, on or after May 14, 2022, none of the funds under a federal award that are part of Federal financial assistance program for infrastructure may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States, unless subject to an approved waiver. The requirements of this section must be included in all subawards, including all contracts and purchase orders for work or products under this program.

Recipients of an award of Federal financial assistance are hereby notified that none of the funds provided under this award may be used for a project for infrastructure unless:

1. All iron and steel used in the project are produced in the United States-this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;
2. All manufactured products used in the project are produced in the United States-this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and
3. All construction materials are manufactured in the United States-this means that all manufacturing processes for the construction material occurred in the United States.

The buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project, but are not an integral part of the structure or permanently affixed to the infrastructure project.

For further information on the Buy America preference, please visit www.doi.gov/grants/BuyAmerica. Additional information can also be found at the White House Made in America Office website: www.whitehouse.gov/omb/management/made-in-america/.

Waivers

When necessary, recipients may apply for, and the Department of the Interior (DI) may grant, a waiver from these requirements, subject to review by the Made in America Office. The DOI may waive the application of the domestic content procurement preference in any case in which it is determined that one of the below circumstances applies:

1. Non-availability Waiver: the types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality;

2. Unreasonable Cost Waiver: the inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent; or
3. Public Interest Waiver: applying the domestic content procurement preference would be inconsistent with the public interest.

There may be instances where an award qualifies, in whole or in part, for an existing DOI general applicability waiver as described at:

www.doi.gov/grants/BuyAmerica/GeneralApplicabilityWaivers. If the specific financial assistance agreement, infrastructure project, or non-domestic materials meets the criteria of an existing general applicability waiver within the limitations defined within the waiver, the recipient is not required to request a separate waiver for non-domestic materials.

If a general applicability waiver does not already apply, and a recipient believes that one of the above circumstances applies to an award, a request to waive the application of the domestic content procurement preference may be submitted to the financial assistance awarding officer in writing. Waiver requests shall include the below information. The waiver shall not include any Privacy Act information, sensitive data, or proprietary information within their waiver request. Waiver requests will be posted to www.doi.gov/grants/buyamerica and are subject to public comment periods of no less than 15 days.

Waiver requests will also be reviewed by the Made in America Office.

1. Type of waiver requested (non-availability, unreasonable cost, or public interest).
2. Requesting entity and Unique Entity Identifier (UEI) submitting the request.
3. Department of Interior Bureau or Office who issued the award.
4. Federal financial assistance listing name and number (reference block 2 on DOI Notice of Award)
5. Financial assistance title of project (reference block 8 on DOI Notice of Award).
6. Federal Award Identification Number (FAIN).
7. Federal funding amount (reference block 11.m. on DOI Notice of Award).
8. Total cost of Infrastructure expenditures (includes federal and non-federal funds to the extent known).
9. Infrastructure project description(s) and location(s) (to the extent known).
10. List of iron or steel item(s), manufactured goods, and construction material(s) the recipient seeks to waive from Buy America requirements. Include the name, cost, countries of origin (if known), and relevant PSC or NAICS code for each.
11. A certification that the recipient made a good faith effort to solicit bids for domestic products supported by terms included in requests for proposals, contracts, and nonproprietary communications with the prime contractor.
12. A statement of waiver justification, including a description of efforts made (e.g., market research, industry outreach) by the recipient, in an attempt to avoid the need for a waiver. Such a justification may cite, if applicable, the absence of any Buy America-compliant bids received in response to a solicitation.
13. Anticipated impact if no waiver is issued.

Approved waivers will be posted at www.doi.gov/grants/BuyAmerica/ApprovedWaivers; recipients requesting a waiver will be notified of their waiver request determination by an awarding officer.

Questions pertaining to waiver should be directed to the financial assistance awarding officer.

Definitions

"Construction materials" includes an article, material, or supply that is or consists primarily of:

- Non-ferrous metals;
- Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- Glass (including optic glass);
- Lumber; or
- Drywall.

"Construction Materials" does **not** include cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

"Domestic content procurement preference" means all iron and steel used in the project are produced in the United States; the manufactured products used in the project are produced in the United States; or the construction materials used in the project are produced in the United States.

"Infrastructure" includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and building and real property. Infrastructure includes facilities that generate, transport, and distribute energy.

"Project" means the construction, alteration, maintenance, or repair of infrastructure in the United States.

B. INSPECTION

Reclamation has the right to inspect and evaluate the work performed or being performed under this Agreement, and the premises where the work is being performed, at all reasonable times and in a manner that will not unduly delay the work. If Reclamation performs inspection or evaluation on the premises of the Recipient or a sub-Recipient, the Recipient shall furnish and shall require sub-recipients to furnish all reasonable facilities and assistance for the safe and convenient performance of these duties.

C. DEBARMENT AND SUSPENSION (2 CFR 1400)

A contract award must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the Department of the Interior regulations at 2 CFR 1400-Governmentwide Debarment and Suspension (Nonprocurement). SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

D. DRUG-FREE WORKPLACE (2 CFR 182 and 1401)

The Department of the Interior regulations at 2 CFR 1401-Governmentwide Requirements for Drug-Free Workplace (Financial Assistance), which adopt the portion of the Drug-Free Workplace Act of 1988 (41 U.S.C. 701 et seq, as amended) applicable to grants and cooperative agreements, are hereby incorporated by reference and made a part of this agreement. By entering into this grant or cooperative agreement with the Bureau of Reclamation, the Recipient agrees to comply with 2 CFR 182.

E. TRAFFICKING VICTIMS PROTECTION ACT OF 2000 (2 CFR 175.15)

Trafficking in persons.

- 1) *Provisions applicable to a recipient that is a private entity.*
 - a) You as the recipient, your employees, subrecipients under this award, and subrecipients' employees may not
 - i) Engage in severe forms of trafficking in persons during the period of time that the award is in effect;
 - ii) Procure a commercial sex act during the period of time that the award is in effect; or
 - iii) Use forced labor in the performance of the award or subawards under the award.
 - b) We as the Federal awarding agency may unilaterally terminate this award, without penalty, if you or a subrecipient that is a private entity-
 - i) Is determined to have violated a prohibition in paragraph 1.a. of this award term; or
 - ii) Has an employee who is determined by the agency official authorized to terminate the award to have violated a prohibition in paragraph 1.a. of this award term through conduct that is either:
 - (1) Associated with performance under this award; or
 - (2) Imputed to you or the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our agency at 2 CFR part 1400.
- 2) *Provisions applicable to any recipient.*
 - a) You must inform us immediately of any information you receive from any source alleging a violation of a prohibition in paragraph 1.a. of this award term.
 - b) Our right to terminate unilaterally that is described in paragraph 1.b. of this section:
 - i) Implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. 7104(g)), and
 - ii) Is in addition to all other remedies for noncompliance that are available to us under this award.
 - c) You must include the requirements of paragraph 1.a. of this award term in any subaward you make to a private entity.
- 3) *Definitions.* For purposes of this award term:
 - a) "Employee" means either:
 - i) An individual employed by you or a subrecipient who is engaged in the performance of the project or program under this award; or
 - ii) Another person engaged in the performance of the project or program under this award and not compensated by you including, but not limited to, a volunteer or individual whose services are contributed by a third party as an in-kind contribution toward cost sharing or matching requirements.
 - b) "Forced labor" means labor obtained by any of the following methods: the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.
 - c) "Private entity":

- i) Means any entity other than a state, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 CFR 175.25.
- ii) Includes:
 - (1) A nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 CFR 175.25(b).
 - (2) A for-profit organization.
- d) "Severe forms of trafficking in persons," "commercial sex act," and "coercion have the meanings given at section 103 of the TVPA, as amended (22 U.S.C. 7102).

F. NEW RESTRICTIONS ON LOBBYING (43 CFR 18)

The Recipient agrees to comply with 43 CFR 18, New Restrictions on Lobbying, including the following certification:

- 1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Recipient, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- 2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying" in accordance with its instructions.
- 3) The Recipient shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31 U.S.C. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

BID FORM FOR CONSTRUCTION CONTRACT

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 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

**CO-OP Farm Irrigation Company
255 S 7200 E
Huntsville, UT 84317**

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—ATTACHMENTS TO THIS BID

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

- A. Required Bid security;
- B. List of Proposed Subcontractors;
- C. List of Proposed Suppliers;
- D. Required Bidder Qualification Statement with supporting data; and

ARTICLE 3—BASIS OF BID—UNIT PRICE BID

3.01 *Unit Price Bids*

A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
BASE BID					
GENERAL					
1	Mobilization	LS	1		\$
2	General Stormwater Permit	LS	1		\$
3	Connect to Existing Structure	LS	1		\$

4	Furnish and Install Screened Inlet Structure	LS	1		\$
5	Furnish and Install 24" Main Line Meter	LS	1		\$
CO-OP FARM IRRIGATION COMPANY					
6	Furnish and Install 24" HDPE DR41 Pipe	LF	6,300		\$
7	Furnish and Install 20" HDPE DR32.5 Pipe	LF	7,860		\$
8	Furnish and Install 24" 45-degree HDPE Bend	EA	2		\$
9	Furnish and Install 24"x20" HDPE Eccentric Reducer	EA	1		\$
10	Furnish and Install 20" 90-degree HDPE Bend	EA	1		\$
11	Furnish and Install 20" 45-degree HDPE Bend	EA	4		\$
12	Furnish and Install CO-OP Air Valve-01	LS	1		\$
13	Furnish and Install CO-OP Air Valve-02	LS	1		\$
14	Furnish and Install CO-OP Air Valve-03	LS	1		\$
15	Furnish and Install CO-OP Air Valve-04	LS	1		\$
16	Furnish and Install CO-OP Air Valve-05	LS	1		\$
17	Furnish and Install CO-OP Air Valve-06	LS	1		\$
18	Furnish and Install CO-OP Air Valve-07	LS	1		\$
19	Furnish and Install CO-OP Air Valve-08	LS	1		\$

20	Furnish and Install CO-OP Air Valve-09	LS	1		\$
21	Furnish and Install CO-OP Air Valve-10	LS	1		\$
22	Furnish and Install CO-OP Air Valve-11	LS	1		\$
23	Furnish and Install CO-OP Turnout-01	LS	1		\$
24	Furnish and Install CO-OP Turnout-02	LS	1		\$
25	Furnish and Install CO-OP Turnout-03	LS	1		\$
26	Furnish and Install CO-OP Turnout-04A	LS	1		\$
27	Furnish and Install CO-OP Turnout-04B	LS	1		\$
28	Furnish and Install CO-OP Turnout-05	LS	1		\$
29	Furnish and Install 4" Blind Flange Turnout	LS	1		\$
30	Furnish and Install CO-OP Turnout-06	LS	1		\$
31	Furnish and Install CO-OP Turnout-07	LS	1		\$
32	Furnish and Install CO-OP Turnout-08	LS	1		\$
33	Furnish and Install CO-OP Turnout-09	LS	1		\$
34	Furnish and Install CO-OP Turnout-10	LS	1		\$
35	Furnish and Install CO-OP Turnout-11	LS	1		\$
36	Furnish and Install CO-OP Turnout-12	LS	1		\$

37	Furnish and Install CO-OP Turnout-13	LS	1		\$
38	Furnish and Install CO-OP Turnout-14	LS	1		\$
39	Furnish and Install CO-OP Turnout-15	LS	1		\$
40	Furnish and Install CO-OP Turnout-16	LS	1		\$
41	Furnish and Install CO-OP Turnout-17A	LS	1		\$
42	Furnish and Install CO-OP Turnout-17B	LS	1		\$
43	Furnish and Install CO-OP Turnout-18	LS	1		\$
44	Furnish and Install CO-OP Drain	LS	1		\$
45	9500 E Road Crossing	LS	1		\$
46	1200 S Road Crossing	LS	1		\$
47	Remove and Dispose of Existing Structures	LS	1		\$
48	Remove and Dispose of Existing Culverts	EA	5		\$
49	Remove and Dispose of Existing Concrete Liner	LF	6,761		\$
50	Fill Existing Ditch	LF	91		\$
51	Fence Crossing	EA	17		\$
52	Furnish and Install 4ft Rail Gate	EA	1		\$
53	Asbestos Concrete Pipe Crossing	EA	2		\$

54	Dirt Drive Crossing	EA	4		\$
55	Asphalt Drive Crossing	EA	2		\$
56	Gravel Drive Restoration	LF	171		\$
57	Furnish Imported Trench Backfill Type A1	TON	740		\$
58	Furnish Imported Bedding Material Type A3	TON	6,940		\$
59	Furnish Imported Foundation Material Type A5	TON	70		\$
60	Furnish and Install Above Ground Pipe Markers	EA	28		\$
61	Reseeding	ACRE	10		\$
HUNTSVILLE SOUTH BENCH CANAL COMPANY					
62	Furnish and Install 20" HDPE DR32.5 Pipe	LF	755		\$
63	Furnish and Install 10" HDPE DR21 Pipe	LF	1,785		\$
64	Furnish and Install 20" 45-degree HDPE Bend	EA	3		\$
65	Furnish and Install 20"x10" HDPE Eccentric Reducer	EA	1		\$
66	Furnish and Install 10" HDPE Bend (Various Angles)	EA	4		\$
67	Furnish and Install 10"x6" HDPE Eccentric Reducer	EA	1		\$
68	Furnish and Install HSBCC Meter	LS	1		\$
69	Furnish and Install 20" Isolation Valve	EA	4		\$

70	Furnish and Install 10" Isolation Valve	EA	1		\$
71	Furnish and Install 2" Air Valve Assembly	EA	13		\$
72	Furnish and Install 2" Main Line Service	EA	25		\$
73	Furnish and Install 2" Main Line Stub Service	EA	2		\$
74	Furnish and Install 4" Main Line Service	EA	9		\$
75	Furnish and Install 4" Blind Flange Turnout	EA	2		\$
76	Furnish and Install HSBCC Turnout-17	LS	1		\$
77	Furnish and Install HSBCC Turnout-50	LS	1		\$
78	Furnish and Install HSBCC Lateral-01	LS	1		\$
79	Furnish and Install HSBCC Lateral-02	LS	1		\$
80	Furnish and Install HSBCC Lateral-03	LS	1		\$
81	Furnish and Install Drain	EA	2		\$
82	Connect to Existing HSBCC Pipe	LS	1		\$
83	20" HDPE Splice at 4'x4' Cleanout Box	EA	6		\$
84	20" HDPE Splice at 4'x8' Cleanout Box	EA	17		\$
85	20" HDPE Splice at 48" Manhole	EA	8		\$
86	Trappers Loop Siphon Entrance	LS	1		\$

87	Trappers Loop Siphon Exit	LS	1		\$
88	Existing Pipe Transition to New Pipe	LS	1		\$
89	10" HDPE Splice at Edgewater Resort Manhole	EA	3		\$
90	8900 E Road Crossing	LS	1		\$
91	Slipline Existing 18" RCP at 6525 East	LS	1		\$
92	Slipline Existing 21" RCP at St Florence Catholic Community	LS	1		\$
93	Slipline Existing 24" Corrugated Plastic Pipe	LS	1		\$
94	Slipline Existing 24" CMP at SR-39	LS	1		\$
95	Slipline Existing 15" Corrugate Plastic Pipe at Edgewater Resort	LS	1		\$
96	Slipline Existing 24" RCP at Edgewater Resort	LS	1		\$
97	Remove and Dispose of Existing Concrete Liner	LF	403		\$
98	Fence Crossing	EA	5		\$
99	Bennett Creek Improvements	LS	1		\$
100	Furnish Imported Trench Backfill Type A1	TON	90		\$
101	Furnish Imported Bedding Material Type A3	TON	360		\$
102	Furnish Imported Foundation Material Type A5	TON	4		\$
103	Furnish and Install Above Ground Pipe Markers	EA	45		\$

104	Reseeding	ACRE	3		\$
Total of all Base Bid Unit Price Bid Items					\$
ALTERNATE BID ITEMS					
SILVER SUMMIT ESTATES					
105	Furnish and Install 6" HPDE DR17 Pipe	LF	4,266		\$
106	Furnish and Install 6" 90-degree HDPE Bend	EA	5		\$
107	Furnish and Install 6"x2" HDPE Eccentric Reducer	EA	2		\$
108	Furnish and Install 2" Air Valve Assembly	EA	2		\$
109	Furnish and Install 2" Service	EA	12		\$
110	Fence Crossing	EA	6		\$
111	Dirt Drive Restoration	TON	63		\$
112	Asphalt Road Crossing	EA	1		\$
113	Furnish Imported Bedding Material Type A3	TON	654		\$
114	Furnish Imported Foundation Material Type A5	TON	10		\$
115	Furnish and Install Above Ground Pipe Markers	EA	9		\$
116	Reseeding	ACRE	2		\$
Total of all Alternate Bid Unit Price Bid Items					\$
Total of All Unit Price Bid Items					\$

B. Bidder acknowledges that:

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

ARTICLE 4—TIME OF COMPLETION

4.01 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.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

- A. In submitting this Bid, Bidder represents the following:
1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. 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 the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder 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.
8. 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.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. 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.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 6.02.A.4:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. 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.
 - c. 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.
 - d. 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.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

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

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Address for giving notices:

Bidder's Contact:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

Bidder's Contractor License No.: (if applicable)

BID BOND (PENAL SUM FORM)

Bidder Name: Address <i>(principal place of business)</i> :	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: CO-OP Farm Irrigation Co. Inc. Address <i>(principal place of business)</i> : 255 S 7200 E Huntsville, UT, 84317	Bid Project <i>(name and location)</i> : CO-OP/HSBCC Canal Pressurization Project, Huntsville, Utah Bid Due Date:
Bond Penal Sum: Date of Bond:	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder	Surety
<i>(Full formal name of Bidder)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature) (Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
<i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i>	

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 will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs 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 will 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 does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action will 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 will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must 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 Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will 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 will 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 governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

NOTICE OF AWARD

Date of Issuance: _____
Owner: CO-OP Farm Irrigation Co. Inc. Owner's Project No.: R23AP00531
Engineer: J-U-B Engineers, Inc. Engineer's Project No.: 55-22-047
Project: CO-OP/HSBCC Canal Pressurization Project
Contract Name: CO-OP/HSBCC Canal Pressurization Project
Bidder: _____
Bidder's Address: _____

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:

CO-OP/HSBCC Canal Pressurization Project

The Contract Price of the awarded Contract is \$_____. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

Three (3) 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.

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

You must comply with the following conditions precedent within 30 days of the date of receipt of this Notice of Award:

1. Deliver to Owner **three (3)** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the 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 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: CO-OP Farm Irrigation Co. Inc.
By (signature): _____
Name (printed): _____
Title: _____
Copy: Engineer

Page intentionally left blank

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

This Agreement is by and between **CO-OP Farm Irrigation Co. Inc.** ("Owner") and
_____ ("Contractor").

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

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:

- Approximately 14,900 feet of 24" to 20" fused HDPE pipe installed by open trench
- 73 metered turnout connections
- Precast concrete screening inlet structure
- Air valve and drain assemblies
- Demolition of 38 existing structures and replacing with HDPE pipe
- Grading and reseeding

ARTICLE 2—THE PROJECT

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

CO-OP/HSBCC Canal Pressurization Project

ARTICLE 3—ENGINEER

3.01 The Owner has retained **J-U-B Engineers, Inc.** ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is 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 complete on or before **April 30, 2026**, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **July 1, 2026**.

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 Contract Times, as duly modified. 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 **\$2,000** for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
 2. *Completion of Remaining Work*: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner **\$500** 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 Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

4.04 *Site Limitations That Affect Work*

- A. **The typical irrigation season is from May 1 to November 15. During this time the canal system must remain in operation to deliver water to the users for irrigation. It is anticipated that the majority of the work will need to be performed outside of the irrigation season. Any work performed during the irrigation season must be performed with consideration given to the operation of the canal system.**
- B. **Access to the project from STA 1+00 to STA 73+63 is along the pipeline corridor from 9500 East. All bridges crossing the South Fork of the Ogden River east of 9500 East are private bridges and cannot be crossed with construction equipment.**
- C. **The permanent easement from STA 1+00 to STA 73+63 is 15 feet wide, centered on the existing pipeline. There is also a 40 foot wide temporary construction easement, centered on the existing pipeline.**
- D. **Access to the project from STA 143+50 to STA 339+10 is along the pipeline corridor from public roads.**
- E. **Work on the Bureau of Reclamation property, approximately STA 1+00 to STA 2+30, must be coordinated with Weber Basin Water Conservancy District.**

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. The bid amount is _____ (\$ _____).

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

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

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the **25th** day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

- a. **95 percent** of the value of the Work completed (with the balance being retainage).

- 1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

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

- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to **100 percent** of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less **200 percent** of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

- A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

- A. All amounts not paid when due will bear interest at the rate of **5 percent** per annum.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of all of the following:
 - 1. This Agreement.
 - 2. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 - 3. General Conditions.
 - 4. Supplementary Conditions.
 - 5. Specifications as listed in the table of contents of the project manual.
 - 6. Drawings (not attached but incorporated by reference) consisting of _____ sheets with each sheet bearing the following general title: **CO-OP & HSBCC – CO-OP/HSBCC CANAL PRESSURIZATION PROJECT**
 - 8. Addenda (numbers _____ to _____, inclusive).
 - 9. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages ____ to __, inclusive).
 - b. Documentation submitted by Contractor prior to Notice of Award (pages ____ to __, inclusive).
 - 10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
- B. The Contract Documents listed in Paragraph 7.01.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 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

- A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:
1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
 2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
 7. 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.
 8. 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.
 9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
 10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. 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.

8.02 *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 8.02:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything 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.

8.03 *Standard General Conditions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

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

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

Owner:

(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Phone: _____

Email: _____

(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.)

Contractor:

(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

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

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Phone: _____

Email: _____

License No.: _____
(where applicable)

State: _____

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NOTICE TO PROCEED

Owner: CO-OP Farm Irrigation Co. Inc. Owner's Project No.: R23AP00531
Engineer: J-U-B Engineers, Inc. Engineer's Project No.: 55-22-047
Contractor: _____ Contractor's Project No.: _____
Project: CO-OP/HSBCC Canal Pressurization Project
Contract Name: CO-OP/HSBCC Canal Pressurization Project
Effective Date of Contract: _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____ pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

The date by which Substantial Completion must be achieved is **April 30, 2026**, and the date by which readiness for final payment must be achieved is **July 1, 2026**.

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

NA

Owner: CO-OP Farm Irrigation Co. Inc.
By *(signature)*: _____
Name *(printed)*: _____
Title: _____
Date Issued: _____
Copy: Engineer

Page intentionally left blank

PERFORMANCE BOND

Contractor Name: Address <i>(principal place of business)</i> :	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: CO-OP Farm Irrigation Co. Inc. Mailing address <i>(principal place of business)</i> : 255 S 7200 E Huntsville, UT, 84317	Contract Description <i>(name and location)</i> : CO-OP/HSBCC Canal Pressurization Project, Huntsville, Utah Contract Price: Effective Date of Contract:
Bond Bond Amount: Date of Bond: <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <div style="text-align: center;"><i>(Signature)</i></div>	By: _____ <div style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>	Attest: _____ <div style="text-align: center;"><i>(Signature)</i></div>
Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>	Name: _____ <div style="text-align: center;"><i>(Printed or typed)</i></div>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

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 will 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 may 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 will 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 does 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 does 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 will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will 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 will not be reduced or set off on account of any such unrelated obligations. No right of action will 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 must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must 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 will be applicable.
- 12. Notice to the Surety, the Owner, or the Contractor must 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 will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will 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 will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows:

PAYMENT BOND

Contractor Name: Address <i>(principal place of business)</i> :	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: CO-OP Farm Irrigation Co. Inc. Mailing address <i>(principal place of business)</i> : 255 S 7200 E Huntsville, UT, 84317	Contract Description <i>(name and location)</i> : CO-OP/HSBCC Canal Pressurization Project, Huntsville, Utah Contract Price: Effective Date of Contract:
Bond Bond Amount: Date of Bond: <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____	By: _____
<i>(Signature)</i>	<i>(Signature)(Attach Power of Attorney)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____	Attest: _____
<i>(Signature)</i>	<i>(Signature)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

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 will 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 will 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 will 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 will 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 will 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 will 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 satisfying 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 will 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 will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will 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 will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will 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:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. 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;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is 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 will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows:

Contractor's Application for Payment

Owner: CO-OP Farm Irrigation Co. Inc. Engineer: J-U-B Engineers, Inc. Contractor: _____ Project: CO-OP/HSBCC Canal Pressurization Project Contract: CO-OP/HSBCC Canal Pressurization Project	Owner's Project No.: R23AP00531 Engineer's Project No.: 55-22-047 Contractor's Project No.: _____																								
Application No.: _____ Application Date: _____																									
Application Period: From _____ to _____																									
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 70%;">1. Original Contract Price</td><td style="width: 30%; text-align: right;">\$ -</td></tr><tr><td>2. Net change by Change Orders</td><td style="text-align: right;">\$ -</td></tr><tr><td>3. Current Contract Price (Line 1 + Line 2)</td><td style="text-align: right;">\$ -</td></tr><tr><td>4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)</td><td style="text-align: right;">\$ -</td></tr><tr><td>5. Retainage</td><td></td></tr><tr><td> a. _____ X \$ - Work Completed</td><td style="text-align: right;">\$ -</td></tr><tr><td> b. _____ X \$ - Stored Materials</td><td style="text-align: right;">\$ -</td></tr><tr><td> c. Total Retainage (Line 5.a + Line 5.b)</td><td style="text-align: right;">\$ -</td></tr><tr><td>6. Amount eligible to date (Line 4 - Line 5.c)</td><td style="text-align: right;">\$ -</td></tr><tr><td>7. Less previous payments (Line 6 from prior application)</td><td></td></tr><tr><td>8. Amount due this application</td><td style="text-align: right;">\$ -</td></tr><tr><td>9. Balance to finish, including retainage (Line 3 - Line 4)</td><td style="text-align: right;">\$ -</td></tr></table>		1. Original Contract Price	\$ -	2. Net change by Change Orders	\$ -	3. Current Contract Price (Line 1 + Line 2)	\$ -	4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)	\$ -	5. Retainage		a. _____ X \$ - Work Completed	\$ -	b. _____ X \$ - Stored Materials	\$ -	c. Total Retainage (Line 5.a + Line 5.b)	\$ -	6. Amount eligible to date (Line 4 - Line 5.c)	\$ -	7. Less previous payments (Line 6 from prior application)		8. Amount due this application	\$ -	9. Balance to finish, including retainage (Line 3 - Line 4)	\$ -
1. Original Contract Price	\$ -																								
2. Net change by Change Orders	\$ -																								
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a. _____ X \$ - Work Completed	\$ -																								
b. _____ X \$ - Stored Materials	\$ -																								
c. Total Retainage (Line 5.a + Line 5.b)	\$ -																								
6. Amount eligible to date (Line 4 - Line 5.c)	\$ -																								
7. Less previous payments (Line 6 from prior application)																									
8. Amount due this application	\$ -																								
9. Balance to finish, including retainage (Line 3 - Line 4)	\$ -																								
Contractor's Certification The undersigned Contractor certifies, to the best of its knowledge, the following: (1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment; (2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and (3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.																									
Contractor: _____																									
Signature: _____ Date: _____																									
Recommended by Engineer By: _____ Title: _____ Date: _____	Approved by Owner By: _____ Title: _____ Date: _____																								
Approved by Funding Agency By: _____ Title: _____ Date: _____	By: _____ Title: _____ Date: _____																								

Contractor's Application for Payment

Unit Price

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: CO-OP Farm Irrigation Co. Inc. Engineer: J-U-B Engineers, Inc. Contractor: _____ Project: CO-OP/HSBCC Canal Pressurization Project Contract: CO-OP/HSBCC Canal Pressurization Project						Owner's Project No.: R23AP00531 Engineer's Project No.: 55-22-047 Contractor's Project No.: _____							
Application No.:		Application Period:		From	to	Application Date:							
A	B	C	D	E	F	G	H	I	J	K	L		
Bid Item No.	Description	Contract Information				Work Completed			Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)	
		Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E) (\$)	Estimated Quantity Incorporated in the Work This Period	Estimated Quantity Incorporated in the Work to Date	Value of Work Completed to Date (E X G) (\$)					
Change Orders													
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Change Order Totals					\$	-		\$	-	\$	-	\$	-
Original Contract and Change Orders													
Project Totals					\$	-		\$	-	\$	-	\$	-

Stored Materials Summary
Contractor's Application for Payment

Owner: CO-OP Farm Irrigation Co. Inc.						Owner's Project No.: R23AP00531					
Engineer: J-U-B Engineers, Inc.						Engineer's Project No.: 55-22-047					
Contractor:						Contractor's Project No.:					
Project: CO-OP/HSBCC Canal Pressurization Project											
Contract: CO-OP/HSBCC Canal Pressurization Project											

Application No.:		Application Period: From		to		Application Date:							
A	B	C	D	E	F	G	H	I	J	K	L	M	
Item No. (Lump Sum Tab) or Bid Item No. (Unit Price Tab)	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Description of Materials or Equipment Stored	Storage Location	Application No. When Materials Placed in Storage	Materials Stored			Incorporated in Work			Materials Remaining in Storage (I-L) (\$)	
						Previous Amount Stored (\$)	Amount Stored this Period (\$)	Amount Stored to Date (G+H) (\$)	Amount Previously Incorporated in the Work (\$)	Amount Incorporated in the Work this Period (\$)	Total Amount Incorporated in the Work (J+K) (\$)		
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Totals						\$	-	\$	-	\$	-	\$	-

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	<u>CO-OP Farm Irrigation Co. Inc.</u>	Owner's Project No.:	<u>R23AP00531</u>
Engineer:	<u>J-U-B Engineers, Inc.</u>	Engineer's Project No.:	<u>55-22-047</u>
Contractor:	<u></u>	Contractor's Project No.:	<u></u>
Project:	<u>CO-OP/HSBCC Canal Pressurization Project</u>		
Contract Name:	<u>CO-OP/HSBCC Canal Pressurization Project</u>		

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 Documents.

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.

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 must be as provided in the Contract, except as amended as follows:

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:

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 Documents.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

Page intentionally left blank

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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 document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; 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; 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.

- 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.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. 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), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations 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 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. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 - 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *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.
24. *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.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *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.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *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.
30. *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.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *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.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *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.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *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.
37. *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.
38. *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 or areas furnished by Owner which are designated for the use of Contractor.
39. *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.
40. *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.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *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 of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, 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.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *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.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* 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:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. 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 Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means 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, means 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, means 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. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. 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 Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed 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 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 *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 the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will 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.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents 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 Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document 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 versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will 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.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will 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.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. 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.

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, means 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, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer 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 or Engineer 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 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 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 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 in writing 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.

- 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 notify Owner and Contractor in writing 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 versions, 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 precludes 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 30th 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 60th day after the day of Bid opening or the 30th 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 may 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 must 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 will 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 Contract Price or 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. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price 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. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. 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, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses 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.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing 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, or to improvements, structures, utilities, or similar facilities located at such adjacent lands 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 7.13, 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 in a court of competent jurisdiction; 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 will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

5.03 *Subsurface and Physical Conditions*

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

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* 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 Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* 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;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
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;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 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 whether it is necessary for Owner to obtain 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; 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. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, 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 subject to the provisions of Paragraphs 4.05.D and 4.05.E.
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;
 - 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 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, then any such adjustment will 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, 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.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. 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 on the Drawings, or was not shown or indicated on the Drawings 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), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; 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
 4. 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. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, 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. 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;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. 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, then any such adjustment will 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, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. 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;
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, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, 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. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- 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, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates 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 obligates 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 Contractor's obligations under the Contract. These bonds must 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 terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, 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 must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. 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.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages 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, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

- Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.
- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages 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, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
 - F. 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, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
 - G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. 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.
 - H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
 - I. If either party does not purchase or maintain 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.
 - J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
 - K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) 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 will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, 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 and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, 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;
 - 4. apply with respect to the performance of the Work, whether such performance is 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; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other 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 Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- 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 advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. 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 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer 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.

1. 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, risks, 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 individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater 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.
 2. None of the above waivers extends 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. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, 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, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. 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 all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights 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 insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract 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 fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 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 6.04 shall maintain such proceeds in a segregated account, and 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, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *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.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *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 maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. 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 will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *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 must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will 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 must 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.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, 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 equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) 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) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item 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 will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material 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 equipment or material under the circumstances described below. To the extent possible such requests must 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 equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.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 equipment or material that Contractor seeks to furnish or use. The application:
 - a. will 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 the item specified; and
 - 3) be suited to the same use as the item 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 the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will 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 will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- 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's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers 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 or Supplier 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 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. 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 or Suppliers 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 or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, 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 or Supplier, whether initially or as a replacement, will 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 solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *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 an 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 will be disclosed 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.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. 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.

7.10 *Taxes*

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

7.11 *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. 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 is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written 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 written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *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.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. 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.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. 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.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.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).
- E. 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.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that 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.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. 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.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will 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.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as 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 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 by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) 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
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must 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 Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must 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.C.
 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.C.
 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. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. 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, comply with the requirements of 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 will 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 or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 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, will 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 or Sample will 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.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

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 Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
- 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

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 is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 - 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 - 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, or improper modification, 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.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 - 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. The end of the correction period established in Paragraph 15.08;
 - 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. 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 will 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 losses, damages, costs, and judgments (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 from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage 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 will 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.

7.19 Delegation of Professional Design Services

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

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 third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. 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.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, 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.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

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 for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, 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. 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 will 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, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will 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 or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- 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.
 - 1. 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 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 8.03.B.
 - 2. 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 Contractor.
- C. 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 will 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 (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 10.07. 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 *Resident 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 the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

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

10.05 *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.

10.06 *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.

10.07 *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, will 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 Contractor under 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 10.07 also apply to the Resident Project Representative, if any.

10.08 *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 of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that 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, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in 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 11.05, (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 that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. 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 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. 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.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *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. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work 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 must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates 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.

11.06 *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.C.2.

11.07 *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 must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must 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);
 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 11.07.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 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will 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 will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 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 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.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 5 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 will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will 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 of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *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 must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

- B. *Change Proposal Procedures*

- 1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
- 2. *Supporting Data:* 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.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must 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.

- 3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
- 4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must 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.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *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 in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *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 are subject 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;
 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; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- 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 rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, 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 will 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 will 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 will 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 will 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 will 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 will 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 will be incorporated in a Change Order or other written document 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. When needed 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 will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will 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 in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, 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, will 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 accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will 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, which 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 will 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 or retained for services specifically related to the Work.
 5. Other costs consisting of 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, 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.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed 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 builder's risk or other property insurance established in accordance with Paragraph 6.04), 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 include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will 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 does not include any of the following items:
 - 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general 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. The cost of purchasing, renting, or furnishing small tools and hand tools.
 - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 5. 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.
 - 6. Expenses incurred in preparing and advancing Claims.
 - 7. 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*
 - 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
 - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

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 for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's 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 for Work covered by allowances, and the Contract Price will 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, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

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 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 with such procedures and programs 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 will 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 will 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 will 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 written 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 will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, 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 will 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 defective Work as required by Engineer, then Owner may, after 7 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 for 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.
 - 2. 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 must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) 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.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

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

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from 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 has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other 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; or
 - l. Other items entitle 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 will 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 will be treated as an amount due as determined by Paragraph 15.01.D.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 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will 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 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

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

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.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 6.04 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 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must 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 duly pending Change Proposals and Claims; 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 Final Application and Recommendation of Payment:* 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 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will 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. 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. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *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 and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- 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 as a Claim, 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 Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect 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 adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, 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 from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, 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 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). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. 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.
- E. 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.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to 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 directly attributable to any such suspension. Any Change Proposal seeking such adjustments must 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) 10 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) written 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 7 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 will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 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 for any loss of anticipated profits or revenue, post-termination overhead costs, 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 7 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, 7 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, pursuant to Article 12; and
 - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

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 will not constitute a waiver of that provision, nor will 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 of the Contract or 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 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party 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.

18.09 *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.

18.10 *Headings*

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

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

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

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

No suggested Supplementary Conditions in this Article.

ARTICLE 2—PRELIMINARY MATTERS

2.02 *Copies of Documents*

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:

- A. Owner shall furnish to Contractor **4** printed copies of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

2.06 *Electronic Transmittals*

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

- B. *Electronic Documents Protocol*: The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.

1. *Basic Requirements*

- a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.
- b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
- c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.

- d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.
- e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
- f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. *System Infrastructure for Electronic Document Exchange*

- a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.
 - 1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is **10 MB**. Attachments larger than that may be exchanged using large file transfer functions or physical media.
 - 2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.
- b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.
- c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash

drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.

- d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.
- e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.
- f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.
- g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.
- h. The Owner will operate a Project information management system (also referred to in this EDP as "Project Website") for use of Owner, Engineer and Contractor during the Project for exchange and storage of Project-related communications and information. Except as otherwise provided in this EDP or the General Conditions, use of the Project Website by the parties as described in this Paragraph will be mandatory for exchange of Project documents, communications, submittals, and other Project-related information. The following conditions and standards will govern use of the Project Website:
 - 1) Describe the period of time during which the Project Website will be operated and be available for reliance by the parties;
 - 2) Provide any minimum system infrastructure, software licensing and security standards for access to and use of the Project Website;
 - 3) Describe the types and extent of services to be provided at the Project Website (such as large file transfer, email, communication and document archives, etc.); and
 - 4) Include any other Project Website attributes that may be pertinent to Contractor's use of the facility and pricing of such use.

C. *Software Requirements for Electronic Document Exchange; Limitations*

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.
 - a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.
2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.
3. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth in Exhibit A to this EDP, including software versions, if listed.

SC-2.06 Supplement Paragraph 2.06 of the General Conditions by adding the following paragraph:

D. *Requests by Contractor for Electronic Documents in Other Formats*

1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.
2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor ("Request") in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be subject to the provisions of the Owner's response to the Request, and to the following conditions to which Contractor agrees:
 - a. The content included in the Electronic Documents created by Engineer and covered by the Request was prepared by Engineer as an internal working document for Engineer's purposes solely, and is being provided to Contractor on an "AS IS" basis without any warranties of any kind, including, but not limited to any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor's application, or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.
 - b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor's sole risk and the Contractor waives any

claims against Engineer or Owner arising from use of data in Electronic Documents covered by the Request.

- c. Contractor shall indemnify and hold harmless Owner and Engineer and their subconsultants from all claims, damages, losses, and expenses, including attorneys' fees and defense costs arising out of or resulting from Contractor's use, adaptation, or distribution of any Electronic Documents provided under the Request.
 - d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless such distribution is specifically identified in the Request and is limited to Contractor's subcontractors. Contractor warrants that subsequent use by Contractor's subcontractors complies with all terms of the Contract Documents and Owner's response to Request.
3. In the event that Owner elects to provide or directs the Engineer to provide to Contractor any Contractor-requested Electronic Document versions of Project information that is not explicitly identified in the Contract Documents as being available to Contractor, the Owner shall be reimbursed by Contractor on an hourly basis (at **\$115** per hour) for any engineering costs necessary to create or otherwise prepare the data in a manner deemed appropriate by Engineer.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

No suggested Supplementary Conditions in this Article.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.05 *Delays in Contractor's Progress*

SC-4.05 Amend Paragraph 4.05.C.2 by adding the following subparagraphs:

- a. If "abnormal weather conditions" as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions had an adverse effect on the Work as scheduled.
- b. Site, Subsurface and Physical Conditions, Hazardous Environmental Conditions

5.03 *Subsurface and Physical Conditions*

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

- E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
None		

- F. The following table lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
Canal Piping Project – South Bench Canal Company	February 2007	Existing HSBCC pipeline construction drawings

5.06 Hazardous Environmental Conditions

SC-5.06 Add the following new paragraphs immediately after Paragraph 5.06.A.3:

4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

Report Title	Date of Report	Technical Data
None		

5. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
None		

ARTICLE 5—BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be in the form of EJCDC® C-610, Performance Bond (2010, 2013, or 2018 edition).
2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be in the form of EJCDC® C-615, Payment Bond (2010, 2013, or 2018 edition).

6.03 Contractor's Insurance

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

- D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following:

CO-OP Farm Irrigation Company and Huntsville South Bench Canal Company, its elected officials, appointed officials, employees, agents, and volunteers, and J-U-B Engineers, Inc.

- E. *Workers' Compensation and Employer's Liability*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory

- F. *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 claims for:
1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
 2. damages insured by reasonably available personal injury liability coverage, and
 3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage.
 - a. Such insurance must 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, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
 4. Underground, explosion, and collapse coverage.
 5. Personal injury coverage.
 6. 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). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.

7. 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.
- H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:
1. Any modification of the standard definition of “insured contract” (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
 2. Any exclusion for water intrusion or water damage.
 3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
 4. Any exclusion of coverage relating to earth subsidence or movement.
 5. Any exclusion for the insured’s vicarious liability, strict liability, or statutory liability (other than worker’s compensation).
 6. Any limitation or exclusion based on the nature of Contractor’s work.
 7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.
- I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$2,000,000
Products—Completed Operations Aggregate	\$1,000,000
Personal and Advertising Injury	\$10,000
Bodily Injury and Property Damage—Each Occurrence	\$1,000,000

- J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance 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 must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	\$1,000,000
Each Accident	\$2,000,000
Property Damage	
Each Accident	\$2,000,000

- K. *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. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$5,000,000
General Aggregate	\$5,000,000

- L. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of **\$3,000,000** after accounting for partial attribution of its limits to underlying policies, as allowed above.
- M. *Contractor's Pollution Liability Insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

Contractor's Pollution Liability	Policy limits of not less than:
Each Occurrence/Claim	\$1,000,000
General Aggregate	\$1,000,000

- M. *Unmanned Aerial Vehicle Liability Insurance:* If Contractor uses unmanned aerial vehicles (UAV—commonly referred to as drones) at the Site or in support of any aspect of the Work, Contractor shall obtain UAV liability insurance in the amounts stated; name Owner, Engineer, and all individuals and entities identified in the Supplementary Conditions as additional insureds; and provide a certificate to Owner confirming Contractor's compliance with this requirement. Such insurance will provide coverage for property damage, bodily injury or death, and invasion of privacy.

Unmanned Aerial Vehicle Liability Insurance	Policy limits of not less than:
Each Claim	\$500,000
General Aggregate	\$500,000

- N. *Other Required Insurance:* **None**

6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

- F. *Builder's Risk Requirements:* The builder's risk insurance must:
1. be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth

movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).

- a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.
 - b. 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 will be provided through other insurance policies acceptable to Owner and Contractor.
2. 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.
 3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of contractors, engineers, and architects).
 4. 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).
 5. extend to cover damage or loss to insured property while in transit.
 6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.
 7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.
 8. include performance/hot testing and start-up, if applicable.
 9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.
 10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds." In addition to Owner, Contractor, and Subcontractors of every tier, include as insureds the following:

a. **Not Used**

11. include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties:

a. **Not Used**

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provision:

- G. *Coverage for Completion Delays:* The builder's risk policy will include, for the benefit of Owner, loss of revenue and soft cost coverage for losses arising from delays in completion that result from covered physical losses or damage. Such coverage will include, without limitation, fixed expenses and debt service for a minimum of 12 months with a maximum deductible of 30 days, compensation for loss of net revenues, rental costs, and attorneys' fees and engineering or other consultants' fees, if not otherwise covered.

ARTICLE 6—CONTRACTOR'S RESPONSIBILITIES

7.07 Concerning Subcontractors, Suppliers, and Others

SC-7.07 Add the following new paragraph immediately after Paragraph 7.07.M. of the General Conditions:

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

7.09 Permits

SC-7.09 Add the following new paragraphs immediately after Paragraph 7.09.A. of the General Conditions:

- B. The Contractor must prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with EPA Clean Water Act and file a Notice of Intent (NOI) to execute the SWPPP under the Construction General Permit (CGP).

7.12 Record Documents

SC-7.12 Add the following new paragraph immediately after Paragraph 7.12.A. of the General Conditions:

- B. Progress payments may be withheld if the requirements of 7.12.A. are not followed.

ARTICLE 7—OTHER WORK AT THE SITE

No suggested Supplementary Conditions in this Article.

ARTICLE 8—OWNER'S RESPONSIBILITIES

No suggested Supplementary Conditions in this Article.

ARTICLE 9—ENGINEER'S STATUS DURING CONSTRUCTION

10.03 Resident Project Representative

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.B:

- C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:
1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
 2. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.
 3. *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 Contractor's proper execution of the Work.
 4. *Review of Work; Defective Work*
 - a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective.
 - c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.
 5. *Inspections and Tests*
 - a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.
 - b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.
 6. *Payment Requests:* Review Applications for Payment with Contractor.
 7. *Completion*
 - a. Participate in Engineer's visits regarding Substantial Completion.
 - b. Assist in the preparation of a punch list of items to be completed or corrected.

- c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.
 - d. Observe whether items on the final punch list have been completed or corrected.
- D. The RPR will 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 construction.
 - 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. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 10—CHANGES TO THE CONTRACT

No suggested Supplementary Conditions in this Article.

ARTICLE 11—CLAIMS

No suggested Supplementary Conditions in this Article.

ARTICLE 12—COST OF WORK; ALLOWANCES, UNIT PRICE WORK

13.01 *Cost of the Work*

SC-13.01 Supplement Paragraph 13.01.B.5.c.(2) by adding the following sentence:

The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work provisions of this Contract is the most current edition of **Rental Rate Blue Book for Construction Equipment**.

SC-13.01 Supplement Paragraph 13.01.C.2 by adding the following definition of small tools and hand tools:

- a. For purposes of this paragraph, "small tools and hand tools" means any tool or equipment whose current price if it were purchased new at retail would be less than \$500.

13.03 *Unit Price Work*

SC-13.03 Delete Paragraph 13.03.E in its entirety and insert the following in its place:

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the extended price of a particular item of Unit Price Work amounts to **five percent (5%)** 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 **twenty-five percent (25%)** from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

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

No suggested Supplementary Conditions in this Article.

ARTICLE 14—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 *Progress Payments*

SC-15.01 Amend the first sentence of paragraph 15.01.B.1. to read as follows:

1. At least ~~20~~ **30** 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.

SC-15.01 Add the following new Paragraph 15.01.F:

- F. For contracts in which the Contract Price is based on the Cost of Work, if Owner determines that progress payments made to date substantially exceed the actual progress of the Work (as measured by reference to the Schedule of Values), or present a potential conflict with the Guaranteed Maximum Price, then Owner may require that Contractor prepare and submit a plan for the remaining anticipated Applications for Payment that will bring payments and progress into closer alignment and take into account the Guaranteed Maximum Price (if any), through reductions in billings, increases in retainage, or other equitable measures. Owner will review the plan, discuss any necessary modifications, and implement the plan as modified for all remaining Applications for Payment.

SC-15.01 Delete Paragraph 15.01.D.1. in its entirety and insert the following in its place:

1. Within ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the Owner will submit the amount recommended (subject to any Owner set-offs) to the funding agencies for payment.
2. Payments to the Contractor will (subject to the provisions of paragraph 15.01.E.) become due within five working days after receipt by the Owner of payment from the funding agencies and will be paid by Owner to Contractor.

15.03 *Substantial Completion*

SC-15.03 Add the following new subparagraph to Paragraph 15.03.A:

1. The following items need not be fully complete at the time of substantial completion: Final grading, permanent hot mix asphalt placement, reseeding, and fence and gate replacement.

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

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will 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 this Article 15.

15.06 *Final Payment*

SC-15.06 Delete Paragraph 15.06.E. in its entirety and insert the following in its place:

E. Final Payment Becomes Due:

1. Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments.

ARTICLE 15—SUSPENSION OF WORK AND TERMINATION

No suggested Supplementary Conditions in this Article.

ARTICLE 16—FINAL RESOLUTIONS OF DISPUTES

17.02 *Arbitration*

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

17.02 *Arbitration*

- A. All matters subject to final resolution under this Article will be settled by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules (subject to the conditions and limitations of this Paragraph SC-17.02). Any controversy or claim in the amount of \$100,000 or less will be

settled in accordance with the American Arbitration Association's supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.

- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.
- C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages, except as may be required by statute or the Contract. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.
- D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties, but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.
- E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.
- F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.
- G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration;
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration, and which will arise in such proceedings;
 - 3. such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and
 - 4. the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.

- H. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- I. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

ARTICLE 17—MISCELLANEOUS

No suggested Supplementary Conditions in this Article.

EXHIBIT A—SOFTWARE REQUIREMENTS FOR ELECTRONIC DOCUMENT EXCHANGE

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
a.2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	Email w/ Attachment	PDF	(2)
a.3	Contractors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	Email w/ Attachment or LFE	PDF	
a.5	Layouts and drawings to be submitted to Owner for future use and modification.	Email w/ Attachment or LFE	DWG	
a.6	Correspondence, reports and Specifications to be submitted to Owner for future word processing use and modification.	Email w/ Attachment or LFE	DOC	
a.7	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	EXC	
a.8	Database files and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	DB	
Notes				
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.			
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.			
Key				
Email	Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies			
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)			
PDF	Portable Document Format readable by Adobe® Acrobat Reader Version 12 or later			
DWG	Autodesk® AutoCAD .dwg format Version 2019			
DOC	Microsoft® Word .docx format Version 1902			
EXC	Microsoft® Excel .xls or .xml format Version 1902			
DB	Microsoft® Access .mdb format Version 1902			

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WORK CHANGE DIRECTIVE NO.:

Owner:	CO-OP Farm Irrigation Co. Inc.	Owner's Project No.:	R23AP00531
Engineer:	J-U-B Engineers, Inc.	Engineer's Project No.:	55-22-047
Contractor:		Contractor's Project No.:	
Project:	CO-OP/HSBCC Canal Pressurization Project		
Contract Name:	CO-OP/HSBCC Canal Pressurization Project		
Date Issued:		Effective Date of Work Change Directive:	

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

Description:

Attachments:

Purpose for the Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

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

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

Contract Price:	\$	[increase] [decrease] [not yet estimated].
Contract Time:	_____ days	[increase] [decrease] [not yet estimated].

Basis of estimated change in Contract Price:

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

	Recommended by Engineer	Authorized by Owner
By:	_____	_____
Title:	_____	_____
Date:	_____	_____

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CHANGE ORDER NO.:

Owner: CO-OP Farm Irrigation Co. Inc. Owner's Project No.: R23AP00531
Engineer: J-U-B Engineers, Inc. Engineer's Project No.: 55-22-047
Contractor: _____ Contractor's Project No.: _____
Project: CO-OP/HSBCC Canal Pressurization Project
Contract Name: CO-OP/HSBCC Canal Pressurization Project
Date Issued: _____ Effective Date of Change Order: _____

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

Description:

Attachments:

Change in Contract Price	Change in Contract Times
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. [Number of previous Change Order] : \$ _____	[Increase] [Decrease] from previously approved Change Orders No.1 to No. [Number of previous Change Order] : Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: \$ _____	[Increase] [Decrease] this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)	Authorized by Owner
By: _____	_____
Title: _____	_____
Date: _____	_____
<u>Accepted by Contractor</u>	<u>Approved by Funding Agency (if applicable)</u>
By: _____	_____
Title: _____	_____
Date: _____	_____

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FIELD ORDER NO.:

Owner:	CO-OP Farm Irrigation Co. Inc.	Owner's Project No.:	R23AP00531
Engineer:	J-U-B Engineers, Inc.	Engineer's Project No.:	55-22-047
Contractor:		Contractor's Project No.:	
Project:	CO-OP/HSBCC Canal Pressurization Project		
Contract Name:	CO-OP/HSBCC Canal Pressurization Project		
Date Issued:		Effective Date of Field Order:	

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, 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 Section(s):

Drawing(s) / Details (s):

Description:

Attachments:

Issued by Engineer

By: _____

Title: _____

Date: _____

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**CO-OP FARM IRRIGATION COMPANY
CO-OP/HSBCC CANAL PRESSURIZATION PROJECT**

SECTION 00010
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END OF SECTION

**CO-OP FARM IRRIGATION COMPANY
CO-OP/HSBCC CANAL PRESSURIZATION PROJECT**

SECTION 01090

REFERENCE STANDARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance.
- B. Schedule of references.

1.2 RELATED SECTIONS

- A. General Conditions.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents.
- C. Maintain copy at job site during submittals, planning, and progress of the specific work, until Substantial Completion.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 SCHEDULE OF REFERENCES

AA	Aluminum Association 818 Connecticut Avenue, N.W. Washington, DC 20006
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001

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ACI	American Concrete Institute Box 19150 Reford Station Detroit, MI 48219
AGC	Associated General Contractors of America 1957 E Street, N.W. Washington, DC 20006
AIA	American Institute of Architects 1735 New York Avenue, N.W. Washington, DC 20006
AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWS	American Welding Society 550 LeJeune Road, N.W. Miami, FL 33135
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
CDA	Copper Development Association 57th Floor, Chrysler Building 405 Lexington Avenue New York, NY 10174
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, IL 60195

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DEQ	Utah Department of Environmental Quality 195 North 1950 West Salt Lake City, UT 84116
EJCDC	Engineers' Joint Contract Documents Committee American Consulting Engineers Council 1015 15th Street, N.W. Washington, DC 20005
EJMA	Expansion Joint Manufacturers Association 25 North Broadway Tarrytown, NY 10591
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407
ICBO	International Conference of Building Officials 5360 S. Workman Mill Road Whittier, CA 90601
IEEE	Institute of Electrical and Electronics Engineers 345 East 47th Street New York, NY 10017
ML/SFA	Metal Lath/Steel Framing Association 221 North LaSalle Street Chicago, IL 60601
NAAMM	National Association of Architectural Metal Manufacturers 221 North LaSalle Street Chicago, IL 60601
NCMA	National Concrete Masonry Association P.O. Box 781 Herndon, VA 22070
NEMA	National Electrical Manufacturers' Association 2101 'L' Street, N.W. Washington, DC 20037
NFPA	National Fire Protection Association Battery March Park Quincy, MA 02269

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PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077
PS	Product Standard U. S. Department of Commerce Washington, DC 20203
SSPC	Steel Structures Painting Council 4400 Fifth Avenue Pittsburgh, PA 15213
UDOT	Utah Department of Transportation 4501 South 2700 West Salt Lake City, UT 84114

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

**CO-OP FARM IRRIGATION COMPANY
CO-OP/HSBCC CANAL PRESSURIZATION PROJECT**

SECTION 01100

SUMMARY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contract description.
- B. Owner supplied products.
- C. Contractor's use of site and premises.
- D. Future work.
- E. Work sequence.
- F. Specification Conventions.

1.2 CONTRACT DESCRIPTION

- A. This contract is for the CO-OP/HSBCC Canal Pressurization Project. It includes the piping of the existing CO-OP Farm Canal and pressurization of the Huntsville South Bench Canal/Pipeline. Although it is possible that other projects are under construction during the same period of time, it is unlikely to require coordination between the different parties.
- B. The CO-OP/HSBCC Canal Pressurization Project consists of:
 - Approximately 14,900 feet of 24" to 20" fused HDPE pipe installed by open trench
 - 73 metered turnout connections
 - Precast concrete screening inlet structure
 - Air valve and drain assemblies
 - Demolition of 38 existing structures and replacing with HDPE pipe
 - Grading and reseeding
- C. Timing – Installation of pipe and structures will need to occur outside of the irrigation season which extends from May 1st to November 15th. The proposed system must be in service during the irrigation season, but some surface restoration such as final grading, reseeding, and fencing may occur during the irrigation season if contract times are extended.
- D. Perform Work of this Contract under a unit price contract with Owner in accordance with Conditions of Contract.

1.3 OWNER SUPPLIED PRODUCTS

- A. NONE

**CO-OP FARM IRRIGATION COMPANY
CO-OP/HSBCC CANAL PRESSURIZATION PROJECT**

1.4 CONTRACTOR'S USE OF SITE

- A. Limit use of site to allow:
 - 1. Use of site by the public.
- B. Construction Operations: Limited to construction and potential staging areas noted on Drawings. Contractors are responsible to arrange use of identified potential staging with the potential staging area property owner.
- C. Time Restrictions for Performing Exterior Work: 7:00 A.M. to 7:00 P.M.
- D. Utility Outages and Shutdown: No culinary water service or fire protection service will be discontinued for a period of more than 8 hours in one 24 hour period.
- E. Access to the project from STA 1+00 to STA 73+63 is along the pipeline corridor from 9500 East. All bridges crossing the South Fork of the Ogden River east of 9500 East are private bridges and cannot be crossed with construction equipment.
- F. The easement from STA 1+00 to STA 73+63 is 15 feet wide, centered on the existing pipeline. In general, the property owners are agreeable to temporary construction impacts. From STA 7+50 to STA 9+26 all construction activities must be limited to the existing easement width.
- G. Access to the project from STA 143+50 to STA 339+10 is along the pipeline corridor from public roads.
- H. Work on the Bureau of Reclamation property, approximately STA 1+00 to STA 2+30, must be coordinated with Weber Basin Water Conservancy District.

1.5 WORK SEQUENCE

- A. Construct Work in a manner to meet the requirements of Section 1.4. above during construction period, coordinate construction schedule and operations with Engineer:
- B. Submit a proposed work sequence plan with schedule at preconstruction meeting for approval. Contractor's plan may differ from the suggested work sequence plan if the Contractor has different solutions than those suggested.
- C. Proposed Work sequence should include the sequence of work that will be performed including:
 - 1. CO-OP pipeline installation schedule
 - 2. HSBCC structure demolition and pipeline installation schedule
 - 3. Silver Summit Estates pipeline schedule
 - 4. Turnout installation schedule
 - 5. Air valve assembly and drain assembly schedule
 - 6. Precast concrete screen structure schedule
 - 7. Final grading and reseeding

**CO-OP FARM IRRIGATION COMPANY
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- D. Suggested work sequence
1. Install CO-OP pipeline in a downstream direction
 2. Install precast concrete screen structure
 3. Install CO-OP turnouts, drains, air valves and other appurtenances
 4. Install Silver Summit Estates pipeline, turnouts, air valves and appurtenances
 5. Install HSBCC pipe beginning at STA 142+95 working in a downstream direction
 6. Remove existing HSBCC structures and install HDPE pipe
 7. Install HSBCC laterals, turnouts, air valves, drains and other appurtenances
 8. Install HSBCC piping from STA 321+10 working in a downstream direction

1.6 COORDINATION

- A. Between separate projects
1. Owner: primary responsibility for coordination between the various projects and contractors.
 2. Contractor: provide timely update of work sequence and schedule to Owner
 3. Use of work prior to completion: Owner reserves right to make use of any portion of the work prior to completion of the entire Contract without invalidating the Contract and without constituting acceptance of any of the work. Contractor shall cooperate, schedule, and coordinate all activities and minimize conflicts with Owner.
- B. Property Owners
1. Contractor: primary responsibility for coordination with property owners.
 2. Property owners: notified at least 24 hours prior to interruption of water service.
 3. Delays in Contractor's schedule and all costs associated such a delay due to Contractor's failure to notify property owners shall be at Contractor's sole expense.
 4. Access to business/residence: maintain during construction. If access must be impacted, limit impact to a maximum of eight (8) hours.

1.7 SPECIFICATION CONVENTIONS

- A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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**CO-OP FARM IRRIGATION COMPANY
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SECTION 01200

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Unit prices.
- B. Applications for payment.
- C. Change procedures.
- D. Defect assessment.
- E. Alternates.

1.2 UNIT PRICES

- A. Authority: Measurement methods are delineated in section 01250 Measurement and Payment.
- B. Measurement methods delineated in individual specification sections complement criteria of this section. In event of conflict, requirements of individual specification section govern.
- C. Take measurements and compute quantities. Engineer will verify measurements and quantities.
- D. Unit Quantities: Quantities and measurements indicated in Bid Form are for contract purposes only. Quantities and measurements supplied or placed in the Work shall determine payment.
 - 1. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at unit sum/prices contracted.
 - 2. When actual Work requires 25 percent or greater change in quantity than those quantities indicated, Owner or Contractor may claim for Contract Price adjustment.
- E. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application or installation of item of the Work; overhead and profit.
- F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.

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G. Measurement of Quantities:

1. Weigh Scales: Inspected, tested and certified by applicable state Weights and Measures department within past year.
2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
3. Metering Devices: Inspected, tested and certified by applicable State department within past year.
4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
5. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
6. Measurement by Area: Measured by square dimension using mean length and width or radius.
7. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
8. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

1.3 APPLICATIONS FOR PAYMENT

- A. Submit electronic copy of each included Application for Payment.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Submit signed copies to Engineer on last working day of each month.
- E. Submit with transmittal letter as specified for Submittals in Section 01330.
- F. Submit waivers.
- G. Substantiating Data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
 1. Construction progress schedules, revised and current as specified in Section 01330.
- H. Partial payment for unit price bid items and lump sum bid items only partially completed at the end of monthly pay periods will not be made. Partial payment for materials delivered and stored will not be made.

1.4 CHANGE PROCEDURES

- A. Submittals: Submit name of individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. The Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on EJCDC Form 1910-8-F Work Directive Change.
- C. The Engineer may issue a Notice of Change including a detailed description of proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with stipulation of overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within 7 days.
- D. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on Work by separate or other Contractors. Document requested substitutions in accordance with Section 01600.
- E. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under Work Directive Change. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
- F. Work Directive Change: Engineer may issue directive, on EJCDC Form 1910-8-F Work Directive Change, signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.
- G. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Engineer will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.
- H. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
- I. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.
- J. Change Order Forms: EJCDC C-941.

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CO-OP/HSBCC CANAL PRESSURIZATION PROJECT**

- K. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- L. Correlation of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
 - 2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
 - 3. Promptly enter changes in Project Record Documents.

1.5 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of Engineer.
- D. Defective Work will be partially repaired to instructions of Engineer, and unit sum/price will be adjusted to new sum/price at discretion of Engineer.
- E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.
- F. Authority of Engineer to assess defects and identify payment adjustments is final.
- G. Non-Payment for Rejected Products: Payment will not be made for rejected products for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected products.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

**CO-OP FARM IRRIGATION COMPANY
CO-OP/HSBCC CANAL PRESSURIZATION PROJECT**

SECTION 01250

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Schedule of Bid Items

1.2 SCHEDULE OF BID ITEMS – GENERAL

A. MOBILIZATION (BID ITEM 1)

1. Measurement: Lump sum.
2. Payment: Includes cost of mobilization, contract bonds, Weber County permits, UDOT permits and any other permits required for construction not listed, installation of all temporary facilities, bringing all necessary construction equipment to the site, temporary facilities, and removal of all equipment. Payment also includes all labor, material, equipment and all other items required to maintain the access roads to and in the project site during construction and to restore the access roads to equal or better than pre-construction condition after the project has been completed.

Payments for this bid item will be made as outlined below:

PAY FACTORS FOR MOBILIZATION AND TEMPORARY FACILITIES	
Percent of Original Contract Amount Earned Not Including Materials Purchased	Percent of Amount Bid for Mobilization to be Paid
5	40
15	20
40	30
50	10

Upon completion of the Work any unpaid amount of the original contract amount for the separate item of mobilization and temporary facilities will be paid.

B. GENERAL STORMWATER PERMIT (BID ITEM 2)

1. Measurement: Lump sum.
2. Payment includes all permits, fees, labor, equipment, and materials necessary to prepare, modify, obtain agency approvals, and implement the SWPPP. Also included are inspections, plan modifications, training, record keeping, obtaining N.O.I. and N.O.T., and all other requirements as per the permit and as indicated in the plans. SWPPP must be approved by the governing agency where the work is to take place.

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Payment shall be made as outlined below:

PAY FACTORS FOR STORM WATER POLLUTION PREVENTION PLAN	
Amount Paid	When Paid
25% of bid item amount	With first estimate after SWPPP measures have been established
Remaining portion of bid item paid as percentage of the contract completed	With each subsequent estimate

C. CONNECT TO EXISTING STRUCTURE (BID ITEM 3)

1. Measurement: Lump sum.
2. Payment: Includes all equipment, labor, and materials necessary to connect the HDPE pipe to the existing WBWCD diversion structure as indicated in the drawings. Includes all demolition, saw cutting, loading, and disposing of existing structures; concrete formwork, concrete, reinforcing, waterstop, electrofusion flex restraints, excavation, and backfill as indicated in the drawings. (HDPE Pipe and Reseeding will be paid by separate items).

D. FURNISH AND INSTALL SCREENED INLET STRUCTURE (BID ITEM 4)

1. Measurement: Lump sum.
2. Payment: Includes all equipment, labor, and materials necessary to construct the Screen Structure and associated appurtenances as indicated in the drawings. Includes all tree removal, clearing, and grubbing of the structure site; excavation, foundation material, precast concrete screen vault, steel reinforced plastic manhole steps, manhole ring and cover, PVC pipe, manhole boots, precast concrete pump vault, mechanical traveling screen, screen pump, ultrasonic level sensors, screen control panel, miscellaneous pump piping, pump supports, level sensor supports, screen appurtenances, backfill, site grading, electrical conduit, new power service on existing power pole, programming, and any other site electrical as indicated in the drawings; concrete formwork, free draining gravel, concrete, non-woven geotextile, riprap and grading to river; HDPE thrust restraints including concrete, reinforcing, HDPE wall anchor or electrofusion flex restraints; any other incidental items required to construct the Screen Structure as indicated in the drawings. (HDPE Pipe and Reseeding will be paid by separate items).

E. FURNISH AND INSTALL 24" MAIN LINE METER (BID ITEM 5)

1. Measurement: Lump sum.
2. Payment: Includes all equipment, labor, and materials necessary to construct the 24" Main Line Meter as indicated in the drawings. Includes all site clearing, excavation, backfill, non-woven geotextile, gravel, ADS meter barrel, meter barrel lid, screw eye, and PVC conduit; flow meter, flow meter sensors, flow meter display, connection to utility power, display box, pole, concrete foundation, grounding rod, Neptune AMI wall endpoint, MBE-modbus encodolizer, and all other items incidental to the meter vault as indicated in the drawings (HDPE Pipe will be paid by separate items).

**CO-OP FARM IRRIGATION COMPANY
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1.3 SCHEDULE OF BID ITEMS – CO-OP FARM IRRIGATION COMPANY

- A. FURNISH AND INSTALL HDPE PIPE (BID ITEMS 6 TO 7)
1. Measurement: Per linear foot along center of installed pipe through all fittings, valves and pipe transitions, up to the connection of concrete structures. No reduction in length will be made for valves and fittings.
 2. Payment: Includes furnishing and installation of pipe at specified size. Pipe installation includes trench excavation, over excavation required due to frost or unsuitable material, trench reinforcing, dewatering, embedment, pipe fusing, backfill, surface restoration, hauling of displaced materials to a suitable location onsite and incorporation into the overall project, compaction, moisture control, tracer wire, tracer wire terminal boxes, magnetic locator tape.
 3. Imported materials, HDPE fittings, pipe markers, air valve assemblies, reseeding, and surface restoration at road crossings, asphalt drive crossings, and dirt drive crossings will be paid by separate items.
- B. FURNISH AND INSTALL HDPE PIPE FITTINGS (BID ITEMS 8 TO 11)
1. Measurement: By the unit for the size and type indicated.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install the specified fitting. Installation of the fitting includes size connections, additional trench excavation and backfill required beyond that associated with pipe installation. Fittings shall be the same or greater pressure rating as the maximum pressure rating of the connecting pipe.
- C. FURNISH AND INSTALL MAIN LINE AIR VALVE ASSEMBLY (BID ITEMS 12 TO 22)
1. Measurement: By the unit for the indicated valve assembly.
 2. Payment: Includes all labor, materials, and equipment necessary to furnish and install identified air valve assembly items in the component table and related detail drawings including: HDPE branch saddle or tee, electrofusion coupler, HDPE riser, HDPE threaded brass transition, brass ball valve, galvanized NPT nipple riser, and continuous acting air release valve as specified. Additional items include galvanized pipe fittings, corrugated HDPE barrel, HDPE end plug, HDPE vent pipe, HDPE bends, non-woven geotextile, tracer wire box, crushed rock type A6, additional trench excavation and backfill required beyond that associated with pipe installation, and any other items incidental to construct the air valve assembly as shown in the drawings.
 3. HDPE pipe, pipe markers, and reseeding will be paid by separate items.
- D. FURNISH AND INSTALL CO-OP TURNOUT-01 (BID ITEM 23)
1. Measurement: Lump sum for the indicated turnout assembly.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install items identified in the turnout site plans and related detail drawings which include:
HDPE Pipe and Fittings
HDPE pipe associated with the turnout piping (main line pipe is paid by separate item), branch saddles or tees, bends, reducers, electrofusion couplers, flange adapters, back up rings, bolt packs, and concrete thrust restraints associated with the turnout piping.
Meter Barrel
48" Corrugated HDPE meter barrel as one solid piece (do not splice) and end plug, HDPE flange adapters, back up rings, bolt packs, McCrometer Dura Mag battery powered

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Electromagnetic Flow Meter, grounding rings, grounding rod, grounding wire, Neptune AMI Pit Endpoint with internal antenna, non-woven geotextile, and crushed rock type A6.

Butterfly Valve

Butterfly valve, gearbox with hand wheel & stem extension, gravel support pad, factory beveled flange adapters (or valve spacers when required), flange followers, gaskets, FM grease, 8 mil. polyethylene encasement, and valve support pad.

Pump Pit

Precast concrete manhole, lid, manhole ring and cover, manhole steps, manhole boot, cored holes, foundation material, HDPE wall anchors, concrete, reinforcing for HDPE Wall Anchor and Thrust Block.

Tracer Wire Access Box

Magnetized tracer wire access box at pump pit.

Additional

Trench excavation, backfill, compaction, grading, and dewatering required beyond that associated with pipe installation and other items shown in the detail and turnout drawings to provide for a functioning turnout.

3. Imported materials for pipe installation, reseeding, and surface restoration at dirt drive crossings will be paid by separate items.
- E. FURNISH AND INSTALL 2" CO-OP TURNOUT (BID ITEMS 24, 25, 31, 32, 34, 35, 37, 38, AND 40)
1. Measurement: Lump sum for the indicated turnout assembly.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install a 2" service as indicated on the drawings. Includes HDPE pipe associated with the service, bends (where required), fittings, trenching, backfill, branch saddle or tee, electrofusion coupler, flange adapters, back up rings, gaskets, bolt packs, valve, McCrometer Dura Mag battery powered electromagnetic flow meter, grounding rings, grounding wire, grounding rod, Neptune AMI external antenna and R900 Cellular endpoint, meter box, crushed gravel Type A6, PVC pipe, PVC cap, and all other fittings and appurtenances associated with the turnout. (Reseeding will be paid by separate items)
- F. FURNISH AND INSTALL 4" CO-OP TURNOUT (BID ITEMS 26, 27, 30, 33, 36, AND 39)
1. Measurement: Lump sum for the indicated turnout assembly.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install a 4" service as indicated on the drawings. Includes HDPE pipe associated with the turnout, bends (where required), fittings, trenching, backfill, branch saddle or tee, electrofusion coupler, flange adapters, back up rings, gaskets, bolt packs, valve, McCrometer Dura Mag battery powered electromagnetic flow meter, grounding rings, grounding wire, grounding rod, Neptune AMI external antenna and R900 Cellular endpoint, meter box, meter box extension, crushed gravel Type A6, blind flange, and all other fittings and appurtenances associated with the turnout. (Reseeding will be paid by separate items)
- G. FURNISH AND INSTALL CO-OP TURNOUT-05 (BID ITEM 28)
1. Measurement: Lump sum for the indicated turnout assembly.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install items identified in the turnout site plans and related detail drawings which include:
HDPE Pipe and Fittings

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HDPE pipe associated with the turnout piping (main line pipe is paid by separate item), branch saddles or tees, bends, reducers, electrofusion couplers, flange adapters, back up rings, bolt packs, and concrete thrust restraints associated with the turnout piping.

Turnout Air Valves

HDPE branch saddle, electrofusion coupler, HDPE riser, HDPE threaded brass transition, galvanized NPT nipple riser, brass ball valve, galvanized pipe fittings, and continuous acting air release valves as indicated.

Meter Barrel

48" Corrugated HDPE meter barrel as one solid piece (do not splice) and end plug, HDPE flange adapters, back up rings, bolt packs, McCrometer Dura Mag battery powered Electromagnetic Flow Meter, grounding rings, grounding rod, grounding wire, Neptune AML Pit Endpoint with internal antenna, non-woven geotextile, and crushed rock type A6.

Butterfly Valve

Butterfly valve, gearbox with hand wheel & stem extension, gravel support pad, factory beveled flange adapters (or valve spacers when required), flange followers, gaskets, FM grease, 8 mil. polyethylene encasement, and valve support pad.

Direct Connection Outlet

Direct connections with flange adapters w/ follower, HDPE blind flange, SS HDPE pipe stiffener insert, HDPE wall anchors, thrust blocks, verification of existing lines, and connection to existing lines.

Tracer Wire Access Box

Magnetized tracer wire access box at last air vent for direct connection.

Additional

Trench excavation, backfill, compaction, grading, and dewatering required beyond that associated with pipe installation and other items shown in the detail and turnout drawings to provide for a functioning turnout.

3. Imported materials for pipe installation, and reseeding will be paid by separate items.
- H. FURNISH AND INSTALL 4" BLIND FLANGE TURNOUT (BID ITEM 29)
1. Measurement: Lump sum.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install a 4" blind flange turnout service as indicated on the drawings. Includes HDPE pipe associated with the turnout, trenching, backfill, branch saddle or tee, electrofusion coupler, flange adapter, back up ring, gasket, bolt pack, blind flange, and all other fittings and appurtenances associated with the turnout.
 3. Imported materials for pipe installation, pipe marker, and reseeding will be paid by separate items.
- I. FURNISH AND INSTALL CO-OP TURNOUT-17A/B (BID ITEMS 41 AND 42)
1. Measurement: Lump sum for the indicated turnout assembly.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install items identified in the plans and related detail drawings which include:

HDPE Pipe and Fittings

HDPE pipe associated with the turnout piping from the main line up to the gate valve (main line pipe and additional turnout pipe is paid by separate item), branch saddles or tees,

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bends, reducers, electrofusion couplers, flange adapters, back up rings, bolt packs, and concrete thrust restraints associated with the turnout piping.

Meter Barrel

48" Corrugated HDPE meter barrel as one solid piece (do not splice) and end plug, HDPE flange adapters, back up rings, bolt packs, McCrometer Dura Mag battery powered Electromagnetic Flow Meter, grounding rings, grounding rod, grounding wire, Neptune AMI Pit Endpoint with internal antenna, non-woven geotextile, and crushed rock type A6.

Gate Valve

Gate valve, 2" operating nut, flange adaptors, back up rings, gaskets, FM grease, 8 mil. polyethylene encasement, valve support pad, and valve box.

Tracer Wire Access Box

Magnetized tracer wire access box at valve box.

Asphalt Road Crossing

Includes any necessary permitting or fees required by local, state, and federal agencies, bonds, inspections, maintenance and plan updates necessary to provide a system that functions properly and complies with all agency requirements; traffic control, potholing for existing utilities and coordination with engineer on utility conflicts, saw cutting of asphalt, removal and offsite disposal of existing roadway material or other obstructions required for pipe crossing, untreated base course Type A7, asphalt, tack coat, mill and overlay, or any other items required to return the surface equivalent to the original condition per the local, state, or federal agency requirements.

Additional

Trench excavation, backfill, compaction, grading, and dewatering required beyond that associated with pipe installation and other items shown in the detail and turnout drawings to provide for a functioning turnout.

3. Imported materials for pipe installation, and reseeding will be paid by separate items.

J. FURNISH AND INSTALL CO-OP TURNOUT-18 (BID ITEM 43)

1. Measurement: Lump sum for the indicated turnout assembly.
2. Payment: Includes all equipment, labor, and materials necessary to furnish and install items identified in the turnout site plans and related detail drawings which include:

HDPE Pipe and Fittings

HDPE pipe associated with the turnout piping (main line pipe is paid by separate item), branch saddles or tees, bends, reducers, electrofusion couplers, flange adapters, back up rings, bolt packs, and concrete thrust restraints associated with the turnout piping.

Turnout Air Valves

HDPE branch saddle, electrofusion coupler, HDPE riser, HDPE threaded brass transition, galvanized NPT nipple riser, brass ball valve, galvanized pipe fittings, and continuous acting air release valves as indicated.

Meter Barrel

48" Corrugated HDPE meter barrel as one solid piece (do not splice) and end plug, HDPE flange adapters, back up rings, bolt packs, McCrometer Dura Mag battery powered Electromagnetic Flow Meter, grounding rings, grounding rod, grounding wire, Neptune AMI Pit Endpoint with internal antenna, non-woven geotextile, and crushed rock type A6.

Butterfly Valve

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Butterfly valve, gearbox with hand wheel & stem extension, gravel support pad, factory beveled flange adapters (or valve spacers when required), flange followers, gaskets, FM grease, 8 mil. polyethylene encasement, and valve support pad.

Direct Connection Outlet

Direct connections with flange adapters w/ follower, HDPE blind flange, SS HDPE pipe stiffener insert, HDPE wall anchors, thrust blocks, verification of existing lines, and connection to existing lines.

Tracer Wire Access Box

Magnetized tracer wire access box at last air vent for direct connection.

Asphalt Road Crossing

Includes any necessary permitting or fees required by local, state, and federal agencies, bonds, inspections, maintenance and plan updates necessary to provide a system that functions properly and complies with all agency requirements; traffic control, potholing for existing utilities and coordination with engineer on utility conflicts, saw cutting of asphalt, removal and offsite disposal of existing roadway material or other obstructions required for pipe crossing, untreated base course Type A7, asphalt, tack coat, mill and overlay, or any other items required to return the surface equivalent to the original condition per the local, state, or federal agency requirements.

Additional

Trench excavation, backfill, compaction, grading, and dewatering required beyond that associated with pipe installation and other items shown in the detail and turnout drawings to provide for a functioning turnout.

3. Imported materials for pipe installation, and reseeding will be paid by separate items.

K. FURNISH AND INSTALL CO-OP DRAIN (BID ITEM 44)

1. Measurement: Lump sum for the indicated drain assembly.
2. Payment: Includes all equipment, labor, and materials necessary to construct the drain as indicated on the drawings. The drain includes:

HDPE Pipe and Fittings

HDPE pipe associated with the drain (mainline pipe is paid by separate item), branch saddle or tee, bends, electrofusion couplers, flange adapters, back up rings, slip flange, stainless steel screens, and bolt packs required for the drain.

Gate Valve

Gate valve, 2" operating nut, flange adaptors, back up rings, gaskets, FM grease, 8 mil. polyethylene encasement, valve support pad, and valve box.

Additional

Non-woven geotextile, riprap, trench excavation and backfill, compaction, grading and dewatering required beyond that associated with pipe installation and other items shown in the drain details to provide for a functioning drain.

3. Imported materials for pipe installation, and reseeding will be paid by separate items.

L. ROAD CROSSINGS (BID ITEMS 45 AND 46)

1. Measurement: Lump sum for the indicated road crossing.
2. Payment: Includes all equipment, labor, and materials necessary to construct the HDPE pipelines across the agency roadway as indicated in the individual roadway crossing site plans. Includes any necessary permitting or fees required by local, state, and federal

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- agencies, bonds, inspections, maintenance and plan updates necessary to provide a system that functions properly and complies with all agency requirements; traffic control, potholing for existing utilities and coordination with engineer on utility conflicts, saw cutting asphalt, removal and offsite disposal of existing roadway material, existing culvert, or other obstructions required for pipe crossing, cement treated fill required to fill culverts that are to remain, untreated base course Type A7, asphalt, tack coat, mill and overlay, or any other items required to return the surface equivalent to the original condition.
3. HDPE pipe and imported materials for pipe installation will be paid by separate items.
- M. REMOVE AND DISPOSE OF EXISTING STRUCTURES (BID ITEM 47)
1. Measurement: Lump sum.
 2. Payment: Includes all equipment, materials, and labor necessary to remove existing structures as indicated on the drawings, loading, hauling, disposal fees, and disposal of the removed material offsite. Removed structures will not be allowed to be buried or left on the surface of the corridor.
- N. REMOVE AND DISPOSE OF EXISTING CULVERTS (BID ITEM 48)
1. Measurement: Each.
 2. Payment: Includes all equipment, labor, and materials necessary for removal of existing culverts and offsite disposal. Includes excavation, backfill, compaction, moisture control, loading, hauling, disposal fees, and disposal of the removed culverts offsite.
- O. REMOVE AND DISPOSE OF EXISTING CONCRETE LINER (BID ITEM 49)
1. Measurement: Linear Foot.
 2. Payment: Includes all equipment, labor, and materials necessary for removal and offsite disposal of existing concrete canal liner as identified on the plans. Includes excavation, cutting, removal, loading, hauling, disposal fees, and offsite disposal of the existing concrete. Removed material will not be allowed to be buried or left on the surface of the corridor.
- P. FILL EXISTING DITCH (BID ITEM 50)
1. Measurement: Linear Foot.
 2. Payment: Includes all equipment, labor, and materials necessary to fill the existing ditch/canal as indicated on the drawings with surplus excavated material. Includes additional excavation, hauling of displaced materials from main line pipe installation, placement of displaced materials in the existing ditch/canal, compaction, moisture control, plugging existing pipe and surface restoration.
 3. Structure removal, culvert removal, reseeding, and surface restoration at dirt drive crossings will be paid by separate items.
- Q. FENCE CROSSING (BID ITEM 51)
1. Measurement: Each.
 2. Payment: Includes all equipment, labor, and materials necessary to remove and replace existing fence "in kind" to the existing fence at each location as indicated on the drawings. Includes removal and disposal of existing fence and posts, or salvage of existing fence and posts to landowners; furnishing and installation of new wood and metal posts, wire, welded wire fabric, brace panels, end panels, and appurtenances necessary to replace removed fence. Also includes furnishing and installation of temporary fence where required by the property owner until permanent fence is installed.

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- R. FURNISH AND INSALL 4FT RAIL GATE (BID ITEM 52)
1. Measurement: Each
 2. Payment: Includes all equipment, material, and labor necessary to install a 4ft rail gate at locations indicated in the plans. Includes furnishing and installation of tube gate, hinges, chain for padlock, wood posts, wire, brace panels, end panels, and appurtenances necessary to install the gate on the existing fence where required in the drawings.
- S. ASBESTOS CONCRETE PIPE CROSSING (BID ITEM 53)
1. Measurement: Each.
 2. Payment: Includes all equipment, labor, and materials necessary to cross the existing asbestos concrete pipe at locations indicated on the drawings. Includes additional excavation, demolition of the existing asbestos concrete pipe in accordance with local, state, or federal requirements, loading, hauling, disposal fees, and disposal of the asbestos material if required, and plugging of the existing pipe.
- T. DIRT DRIVE CROSSING (BID ITEM 54)
1. Measurement: Each.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install an untreated base course type A7 trench surface restoration of existing dirt roads, driveways, or crossings as identified on the drawings. The surface restoration shall be a minimum of 6-inches thick, match the width of the excavated trench, and shall match the length of the existing road, driveway, or crossing. Also includes coordination with property owner, potholing for existing utilities, placement, compaction, moisture control.
 3. HDPE pipe, Embedment, and Backfill material will be paid by separate items.
- U. ASPHALT DRIVE CROSSING (BID ITEM 55)
1. Measurement: Each.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install an asphalt surface restoration of existing driveways to match the existing asphalt thickness or 3 inches thick, whichever is greater. Includes coordination with property owner, potholing, furnish, placing, and compacting untreated base course type A7, maintaining trench until hot mix asphalt can be placed, preparing and verifying final base grade, tackifier, placement and compaction of asphalt surface, ensuring positive drainage in all locations, and other related items as indicated on the drawings and described in the specifications and contract documents.
 3. HDPE pipe, Embedment, and Backfill material will be paid by separate items.
- V. GRAVEL DRIVE RESTORATION (BID ITEM 56)
1. Measurement: Linear Foot.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install a crushed rock type A6 trench surface restoration of an existing driveway as identified on the drawings. The surface restoration shall be a minimum of 4-inches thick, match the width of the excavated trench or disturbed driveway, and shall match the length of the driveway crossing. Also includes coordination with property owner, potholing for existing utilities, placement, and compaction.
 3. HDPE pipe, Embedment, and Backfill material will be paid by separate items.
- W. FURNISH IMPORTED MATERIALS (BID ITEMS 57, 58 AND 59)
1. Measurement: By the ton as measured by weight tickets.

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2. Payment: Includes furnishing of imported material for use as pipe embedment material when excavated native material is determined to be unsuitable by engineer, trench backfill material when required, soil stabilization material, roadway shoulder material, or other imported materials as indicated on the plans.
 3. Installation, moisture control, compaction of material, and haul off of unsuitable material is included with HDPE pipe bid items.
- X. FURNISH AND INSTALL ABOVE GROUND PIPE MARKERS (BID ITEM 60)
1. Measurement: Each.
 2. Payment: Includes furnishing and installation of above ground utility markers as indicated on the drawings.
- Y. RESEEDING (BID ITEM 61)
1. Measurement: Acre.
 2. Payment: Includes furnishing and installation of seed and preparation of topsoil for all disturbed areas excluding roadways. The approximate acreage for reseeding the disturbed area for the pipeline is estimated at 10 acres. Payment also includes reseeding disturbed areas for staging areas. Acreage for staging areas is not included in the 10 acres estimate.

1.4 SCHEDULE OF BID ITEMS – HUNTSVILLE SOUTH BENCH CANAL COMPANY

- A. FURNISH AND INSTALL HDPE PIPE (BID ITEMS 62 TO 63)
1. Measurement: Per linear foot along center of installed pipe through all fittings, valves and pipe transitions, up to the connection of concrete structures. No reduction in length will be made for valves and fittings.
 2. Payment: Includes furnishing and installation of pipe at specified size. Pipe installation includes trench excavation, over excavation required due to frost or unsuitable material, trench reinforcing, dewatering, embedment, pipe fusing, backfill, surface restoration, hauling of displaced materials to a suitable location onsite and incorporation into the overall project, compaction, moisture control, tracer wire, tracer wire terminal boxes, magnetic locator tape.
 3. Imported materials, HDPE fittings, pipe markers, air valve assemblies, reseeding, and surface restoration at road crossings, asphalt drive crossings, and dirt drive crossings will be paid by separate items.
- B. FURNISH AND INSTALL HDPE PIPE FITTINGS (BID ITEMS 64 TO 67)
1. Measurement: By the unit for the size and type indicated.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install the specified fitting. Installation of the fitting includes size connections, additional trench excavation and backfill required beyond that associated with pipe installation. Fittings shall be the same or greater pressure rating as the maximum pressure rating of the connecting pipe.
- C. FURNISH AND INSTALL HSBCC METER (BID ITEM 68)
1. Measurement: Lump sum.
 2. Payment: Includes all equipment, labor, and materials necessary to construct the 20" HSBCC Meter as indicated in the drawings. Includes all site clearing, excavation, backfill, non-woven geotextile, gravel, ADS meter barrel, meter barrel lid, screw eye, and PVC conduit; flow meter sensors, UTM20 flow meter for DC power, aluminum enclosure, back plate, pole, mount bracket, cable entry conduit, 12vDC charge regulator/controller, 12vDC battery, solar panel,

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solar panel bracket, bird spikes, pipe support, concrete foundation, grounding rod, grounding wire, Neptune AMI wall endpoint, MBE-modbus encodalizer, and all other items incidental to the meter vault as indicated in the drawings (HDPE Pipe will be paid by separate items).

D. FURNISH AND INSTALL ISOLATION VALVE (BID ITEMS 69 TO 70)

1. Measurement: By the unit for the size and type indicated.

Payment: Includes all equipment, labor, and materials necessary to furnish and install the isolation valve for the size indicated in the drawings. Includes excavation, backfill, grading, flanged butterfly valve with 2" operating nut, valve box, gravel or concrete support pad, factory beveled HDPE flange adapters (or valve spacers when required), back up rings, gaskets, bolt packs, and 8 mil. polyethylene encasement. Also includes air valve assemblies consisting of HDPE branch saddle, electrofusion coupler, HDPE riser, HDPE threaded brass transition, galvanized NPT nipple riser, brass ball valve, galvanized pipe fittings, continuous acting air release valves as indicated, crushed gravel type A6, and HDPE riser for air vent protection.

2. HDPE pipe, Embedment, and Backfill material will be paid by separate items.

E. FURNISH AND INSTALL 2" AIR VALVE ASSEMBLY (BID ITEM 71)

1. Measurement: By the unit for the indicated valve assembly.

2. Payment: Includes all labor, materials, and equipment necessary to furnish and install identified items in the component table and related detail drawings including: HDPE branch saddle or tee, electrofusion coupler, HDPE riser, HDPE threaded brass transition, brass ball valve, galvanized NPT nipple riser, and continuous acting air release valve as specified. Additional items include galvanized pipe fittings, corrugated HDPE barrel, HDPE end plug, non-woven geotextile, crushed rock type A6, additional trench excavation and backfill required beyond that associated with pipe installation, and any other items incidental to construct the air valve assembly as shown in the drawings.

3. HDPE pipe, pipe markers, and reseeding will be paid by separate items.

F. FURNISH AND INSTALL 2" MAIN LINE SERVICE (BID ITEM 72)

1. Measurement: Each.

2. Payment: Includes all equipment, labor, and materials necessary to furnish and install a 2" service as indicated on the drawings. Includes HDPE pipe associated with the service, bends (where required), fittings, trenching, backfill, branch saddle or tee, electrofusion coupler, flange adapters, back up rings, gaskets, bolt packs, valve, McCrometer Dura Mag battery powered electromagnetic flow meter, grounding rings, grounding wire, grounding rod, Neptune AMI external antenna and R900 Cellular endpoint, meter box, crushed gravel Type A6, PVC pipe, PVC cap, and all other fittings and appurtenances associated with the turnout. (Reseeding will be paid by separate items)

G. FURNISH AND INSTALL 2" MAIN LINE STUB SERVICE (BID ITEM 73)

1. Measurement: Each.

2. Payment: Includes all equipment, labor, and materials necessary to furnish and install a 2" blind flange turnout service as indicated on the drawings. Includes HDPE pipe associated with the turnout, trenching, backfill, branch saddle or tee, electrofusion coupler, flange adapter, back up ring, gasket, bolt pack, blind flange, and all other fittings and appurtenances associated with the turnout.

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3. Imported materials for pipe installation, pipe marker, and reseeding will be paid by separate items.
- H. FURNISH AND INSTALL 4" MAIN LINE SERVICE (BID ITEM 74)
1. Measurement: Each.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install a 4" service as indicated on the drawings. Includes HDPE pipe associated with the turnout, bends (where required), fittings, trenching, backfill, branch saddle or tee, electrofusion coupler, flange adapters, back up rings, gaskets, bolt packs, valve, McCrometer Dura Mag battery powered electromagnetic flow meter, grounding rings, grounding wire, grounding rod, Neptune AMI external antenna and R900 Cellular endpoint, meter box, meter box extension, crushed gravel Type A6, blind flange, and all other fittings and appurtenances associated with the turnout. (Reseeding will be paid by separate items)
- I. FURNISH AND INSTALL 4" BLIND FLANGE TURNOUT (BID ITEM 75)
1. Measurement: Lump sum.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install a 4" blind flange turnout service as indicated on the drawings. Includes HDPE pipe associated with the turnout, trenching, backfill, branch saddle or tee, electrofusion coupler, flange adapter, back up ring, gasket, bolt pack, blind flange, and all other fittings and appurtenances associated with the turnout.
 3. Imported materials for pipe installation, pipe marker, and reseeding will be paid by separate items.
- J. FURNISH AND INSTALL HSBCC TURNOUT-17 (BID ITEM 76)
1. Measurement: Lump sum for the indicated turnout assembly.
 2. Payment: Includes all equipment, labor, and materials necessary to furnish and install items identified in the turnout site plans and related detail drawings which include:
 - HDPE Pipe and Fittings
HDPE pipe associated with the turnout piping (main line pipe is paid by separate item), branch saddles or tees, bends, reducers, electrofusion couplers, flange adapters, back up rings, bolt packs, and concrete thrust restraints associated with the turnout piping.
 - Turnout Air Valves
HDPE branch saddle, electrofusion coupler, HDPE riser, HDPE threaded brass transition, galvanized NPT nipple riser, brass ball valve, galvanized pipe fittings, and continuous acting air release valves as indicated.
 - Meter Barrel
48" Corrugated HDPE meter barrel as one solid piece (do not splice) and end plug, HDPE flange adapters, back up rings, bolt packs, McCrometer Dura Mag battery powered Electromagnetic Flow Meter, grounding rings, grounding rod, grounding wire, Neptune AMI Pit Endpoint with internal antenna, non-woven geotextile, and crushed rock type A6.
 - Butterfly Valve
Butterfly valve, gearbox with hand wheel & stem extension, gravel support pad, factory beveled flange adapters (or valve spacers when required), flange followers, gaskets, FM grease, 8 mil. polyethylene encasement, and valve support pad.
 - Direct Connection Outlet

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Direct connections with flange adapters w/ follower, HDPE blind flange, SS HDPE pipe stiffener insert, HDPE wall anchors, thrust blocks, verification of existing lines, and connection to existing lines.

Additional

Trench excavation, backfill, compaction, grading, and dewatering required beyond that associated with pipe installation and other items shown in the detail and turnout drawings to provide for a functioning turnout.

3. Imported materials for pipe installation, and reseeding will be paid by separate items.

K. FURNISH AND INSTALL HSBCC TURNOUT-50 (BID ITEM 77)

1. Measurement: Lump sum for the indicated turnout assembly.
2. Payment: Includes all equipment, labor, and materials necessary to furnish and install items identified in the turnout site plans and related detail drawings which include:

HDPE Pipe and Fittings

HDPE pipe associated with the turnout piping (main line pipe is paid by separate item), bends, electrofusion couplers, flange adapters, back up rings, bolt packs, and concrete thrust restraints associated with the turnout piping.

Turnout Air Valves

HDPE branch saddle, electrofusion coupler, HDPE riser, HDPE threaded brass transition, galvanized NPT nipple riser, brass ball valve, galvanized pipe fittings, and continuous acting air release valves as indicated.

Meter Barrel

48" Corrugated HDPE meter barrel as one solid piece (do not splice) and end plug, HDPE flange adapters, back up rings, bolt packs, McCrometer Dura Mag battery powered Electromagnetic Flow Meter, grounding rings, grounding rod, grounding wire, Neptune AMI Pit Endpoint with internal antenna, non-woven geotextile, and crushed rock type A6.

Butterfly Valve

Butterfly valve, gearbox with hand wheel & stem extension, gravel support pad, factory beveled flange adapters (or valve spacers when required), flange followers, gaskets, FM grease, 8 mil. polyethylene encasement, and valve support pad.

Connection to Existing Box

Excavation and preparation of existing structure, coring, grout, HDPE flange adapters, back up ring, fabricated steel pressure dissipation nozzle, bolt pack, gasket, HPE wall anchor, and thrust block concrete and reinforcing.

Additional

Trench excavation, backfill, compaction, grading, and dewatering required beyond that associated with pipe installation and other items shown in the detail and turnout drawings to provide for a functioning turnout.

3. Imported materials for pipe installation, and reseeding will be paid by separate items.

L. FURNISH AND INSTALL HSBCC LATERAL (BID ITEMS 78, 79, AND 80)

1. Measurement: Lump Sum for each indicated Lateral.
2. Payment: Includes all equipment, labor, and materials necessary to furnish and install items identified in the lateral details and related drawings which include:

HDPE Pipe and Fittings

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HDPE pipe associated with the lateral piping (main line pipe is paid by separate item), branch saddles (or tees), bends, electrofusion couplers, flange adapters, back up rings, bolt packs, and concrete thrust restraints associated with the turnout piping.

Meter Barrel

48" Corrugated HDPE meter barrel as one solid piece (do not splice) and end plug, HDPE flange adapters, back up rings, bolt packs, McCrometer Dura Mag battery powered Electromagnetic Flow Meter, grounding rings, grounding rod, grounding wire, Neptune AMI Pit Endpoint with internal antenna, non-woven geotextile, and crushed rock type A6.

Valves

Flanged gate valve for the size indicated with 2" square operating nut and valve box, flanged butterfly valve for the size indicated, gearbox with hand wheel & stem extension, gravel support pad, factory beveled flange adapters (or valve spacers when required), flange followers, gaskets, FM grease, 8 mil. polyethylene encasement, and valve support pads.

Connection to Existing Box

Excavation and preparation of existing structure, non-shrink grout, HDPE flange adapters, back up ring, fabricated pressure dissipation nozzle, bolt pack, gasket, HPE wall anchor, thrust block concrete, and reinforcing.

Additional

Trench excavation, removal and disposal of existing pipe, backfill, compaction, grading, and dewatering required beyond that associated with pipe installation and other items shown in the detail and turnout drawings to provide for a functioning turnout.

3. Pipe installation and reseeding will be paid by separate items.

M. FURNISH AND INSTALL DRAIN (BID ITEM 81)

1. Measurement: Each.
2. Payment: Includes all equipment, labor, and materials necessary to construct the main line drain for the type as indicated on the drawings. The drain includes:

HDPE Pipe and Fittings

HDPE pipe associated with the drain (mainline pipe is paid by separate item), branch saddle or tee, bends, electrofusion couplers, flange adapters, back up rings, slip flange, stainless steel screens, and bolt packs required for the drain.

Gate Valve

Gate valve with 2" operating nut, valve box, flange adaptors, back up rings, gaskets, FM grease, 8 mil. polyethylene encasement, and valve support pad.

Additional

Non-woven geotextile, ¾" free draining gravel type A6, trench excavation, backfill, compaction, grading and dewatering required beyond that associated with pipe installation and other items shown in the drain details to provide for a functioning drain.

N. CONNECT TO EXISTING HSBCC PIPE (BID ITEM 82)

1. Measurement: Lump Sum.
2. Payment: Includes all equipment, labor, and materials necessary to connect the new 20" HDPE pipe to the existing HDPE pipe at the beginning of the existing HSBCC pipeline. Includes excavation, demolition of existing structure, loading, hauling, and disposal of demolished materials; cutting and preparing existing HDPE pipe, electrofusion coupler or

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- over excavation for fusion equipment and butt fusion or HDPE flange adapters, back up rings, gaskets, bolt packs; dewatering, backfill, compaction, moisture control, and all other items necessary to connect the new pipe to the existing pipe. Removed material will not be allowed to be buried or left on the surface of the corridor.
3. HDPE pipe, embedment and backfill material for pipe, air valve assembly, pipe marker, and reseeding will be paid by separate items.
- O. 20" HDPE SPLICE AT EXISTING STRUCTURE (BID ITEMS 83, 84, AND 85)
1. Measurement: Each for the type of existing structure.
 2. Payment: Includes all equipment, labor, and materials necessary to splice a new piece of 20" HDPE pipe in place of an existing concrete structure. Includes excavation, demolition of the existing structure, loading, hauling, and disposal of demolished materials; cutting and preparing existing HDPE pipe, **20" HDPE DR32.5 (minimum) pipe as required for splice**, electrofusion couplers or over excavation for fusion equipment and butt fusion or HDPE flange adapters, back up rings, gaskets, bolt packs; backfill, dewatering, compaction, moisture control, and all other items necessary to splice the new pipe to the existing pipe. Removed material will not be allowed to be buried or left on the surface of the corridor.
 3. Embedment and backfill material for pipe, air valve assemblies, pipe marker, turnouts, laterals, and reseeding will be paid by separate items.
- P. TRAPPERS LOOP SIPHON ENTRANCE (BID ITEM 86)
1. Measurement: Lump Sum.
 2. Payment: Includes all equipment, labor, and materials necessary to splice a new piece of 20" HDPE pipe in place of an existing concrete structure at the Trappers Loop Siphon Entrance. Includes UDOT permit, excavation, demolition of the existing structure, loading, hauling, and disposal of demolished materials; cutting and preparing existing HDPE pipe, **20" HDPE DR32.5 (minimum) pipe as required for splice, 20" HDPE 45-degree bends**, electrofusion couplers or over excavation for fusion equipment and butt fusion or HDPE flange adapters, back up rings, gaskets, bolt packs; backfill, dewatering, compaction, moisture control, fence replacement, and all other items necessary to splice the new pipe to the existing pipe. Removed material will not be allowed to be buried or left on the surface of the corridor.
 3. Embedment and backfill material for pipe, air valve assembly, pipe marker, turnout, and reseeding will be paid by separate items.
- Q. TRAPPERS LOOP SIPHON EXIT (BID ITEM 87)
1. Measurement: Lump Sum.
 2. Payment: Includes all equipment, labor, and materials necessary to splice a new piece of 20" HDPE pipe in place of an existing concrete structure at the Trappers Loop Siphon Exit. Includes UDOT permit, excavation, salvage of the top portion of the existing precast concrete manhole, ring, and cover; demolition of the base of the existing structure, loading, hauling, and disposal of demolished materials; excavation and re-laying of existing HDPE pipe or new 20" HDPE DR32.5 pipe as required; cutting and preparing existing HDPE pipe, **20" HDPE DR32.5 (minimum) pipe as required for splice**, electrofusion couplers or over excavation for fusion equipment and butt fusion or HDPE flange adapters, back up rings, gaskets, bolt packs; pump access including hdpe riser, branch saddle, electrofusion coupler, flange adapter, back up ring, gasket bolt pack, blind flange with 2" threaded hole, nipple, air vent & vacuum relief valve, gravel, installation of salvaged precast concrete manhole riser, lid, ring, and cover; backfill, dewatering, compaction, moisture control, and all other items

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- necessary to splice the new pipe to the existing pipe. Removed material will not be allowed to be buried or left on the surface of the corridor.
3. Isolation Valve, Embedment and backfill material for pipe, turnout, and reseeding will be paid by separate items.
- R. EXISTING PIPE TRANSITION TO NEW PIPE (BID ITEM 88)
1. Measurement: Lump Sum.
 2. Payment: Includes all equipment, labor, and materials necessary to connect to the existing pipe and begin new pipe at 6525 East. Includes excavation, demolition of the existing structure, loading, hauling, and disposal of demolished materials; cutting and preparing existing HDPE pipe, **10" HDPE 45-degree bends**, electrofusion coupler or over excavation for fusion equipment and butt fusion; backfill, dewatering, compaction, moisture control, and all other items necessary to splice the new pipe to the existing pipe. Removed material will not be allowed to be buried or left on the surface of the corridor.
 3. **HDPE Pipe**, Isolation Valve, Embedment and backfill material for pipe, and reseeding will be paid by separate items.
- S. 10" HDPE SPLICE AT EDGEWATER RESORT MANHOLE (BID ITEM 89)
1. Measurement: Each.
 2. Payment: Includes all equipment, labor, and materials necessary to splice a new piece of 10" HDPE pipe in place of an existing concrete structure. Includes potholing, saw cutting existing asphalt where required, asphalt removal, excavation, demolition of the existing structure, loading, hauling, and disposal of removed materials; electrofusion couplers or over excavation for fusion equipment and butt fusion or HDPE flange adapters, back up rings, gaskets, bolt packs; backfill, dewatering, compaction, moisture control, untreated base course Type A7, asphalt patch, and all other items necessary to splice the new pipe at the existing manholes. Removed material will not be allowed to be buried or left on the surface of the corridor.
 3. HDPE Pipe, HDPE Bend, Slip Lining Existing Culverts, Embedment and Backfill material for pipe, and reseeding will be paid by separate items.
- T. 8900 E ROAD CROSSING (BID ITEM 90)
1. Measurement: Lump sum for the indicated road crossing.
 2. Payment: Includes all equipment, labor, and materials necessary to construct the HDPE pipeline across the agency roadway as indicated in the individual roadway crossing site plan. Includes any necessary permitting or fees required by local, state, and federal agencies, bonds, inspections, maintenance and plan updates necessary to provide a system that functions properly and complies with all agency requirements; traffic control, potholing for existing utilities and coordination with engineer on utility conflicts, saw cutting asphalt, removal and offsite disposal of existing roadway material, or other obstructions required for pipe crossing, untreated base course Type A7, asphalt, tack coat, mill and overlay, or any other items required to return the surface equivalent to the original condition.
 3. HDPE pipe and imported materials for pipe installation will be paid by separate items.
- U. SLIPLINE EXISTING PIPE (BID ITEMS 91 TO 96)
1. Measurement: Lump sum for each indicated slipline.
 2. Payment: Includes all equipment, labor, and materials necessary to slip line 10" HDPE pipe through the existing pipe as indicated on the drawings. Includes trench excavation and backfill, compaction, grading and dewatering required beyond that associated with pipe

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installation, required demolition and removal of existing structures, wood runners/sleds, steel bands, blow sand or chips or controlled low-strength material for annular space, concrete end seal, and all other items necessary to slipline the existing pipe as indicated in the drawings. (HDPE pipe and HDPE fittings will be paid by separate items).

V. REMOVE AND DISPOSE OF EXISTING CONCRETE LINER (BID ITEM 97)

1. Measurement: Linear Foot.
2. Payment: Includes all equipment, labor, and materials necessary for removal and offsite disposal of existing concrete canal liner as identified on the plans. Includes excavation, cutting, removal, loading, hauling, disposal fees, and offsite disposal of the existing concrete. Removed material will not be allowed to be buried or left on the surface of the corridor.

W. FENCE CROSSING (BID ITEM 98)

1. Measurement: Each.
2. Payment: Includes all equipment, labor, and materials necessary to remove and replace existing fence "in kind" to the existing fence at each location as indicated on the drawings. Includes removal and disposal of existing fence and posts, or salvage of existing fence and posts to landowners; furnishing and installation of new wood and metal posts, wire, welded wire fabric, brace panels, end panels, and appurtenances necessary to replace removed fence. Also includes furnishing and installation of temporary fence where required by the property owner until permanent fence is installed.

X. BENNETT CREEK IMPROVEMENTS (BID ITEM 99)

1. Measurement: Lump sum.
2. Payment: Includes all equipment, material, and labor necessary to improve Bennett Creek as indicated in the plans and as directed by the property owner. Includes coordination with the property owner, HSBCC, and engineer; dredging the existing canal four feet wide by one foot deep from the 8900 East road crossing to the existing HSBCC diversion structure (STA 143+62 to STA 150+00), removal and offsite disposal of the dredge material; saw cutting a four foot wide by one foot deep notch into the existing concrete HSBCC diversion structure to match the dredged canal, removal and offsite disposal of saw cut material, dewatering, excavation, and backfill necessary to complete the structure modifications; furnish two loads of 24" diameter minimum rock and installation on the banks of Bennett Creek as indicated in the plans and as directed by the property owner.

Y. FURNISH IMPORTED MATERIALS (BID ITEMS 100, 101, AND 102)

1. Measurement: By the ton as measured by weight tickets.
2. Payment: Includes furnishing of imported material for use as pipe embedment material when excavated native material is determined to be unsuitable by engineer, trench backfill material when required, soil stabilization material, roadway shoulder material, or other imported materials as indicated on the plans.
3. Installation, moisture control, compaction of material, and haul off of unsuitable material is included with HDPE pipe bid items.

Z. FURNISH AND INSTALL ABOVE GROUND PIPE MARKERS (BID ITEM 103)

1. Measurement: Each.
2. Payment: Includes furnishing and installation of above ground utility markers as indicated on the drawings.

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AA. RESEEDING (BID ITEM 104)

1. Measurement: Acre.
2. Payment: Includes furnishing and installation of seed and preparation of topsoil for all disturbed areas excluding roadways. The approximate acreage for reseeding the disturbed area for the pipeline is estimated at 3 acres. Payment also includes reseeding disturbed areas for staging areas. Acreage for staging areas is not included in the 3 acres estimate.

1.5 SCHEDULE OF ALTERNATE BID ITEMS – SILVER SUMMIT ESTATES

A. FURNISH AND INSTALL 6" HDPE DR17 PIPE (BID ITEM 105)

1. Measurement: Per linear foot along center of installed pipe through all fittings, valves and pipe transitions, up to the connection of concrete structures. No reduction in length will be made for valves and fittings.
2. Payment: Includes furnishing and installation of pipe at specified size. Pipe installation includes trench excavation, over excavation required due to frost or unsuitable material, trench reinforcing, dewatering, embedment, pipe fusing, backfill, surface restoration, hauling of displaced materials to a suitable location onsite and incorporation into the overall project, compaction, moisture control, tracer wire, tracer wire terminal boxes, magnetic locator tape.
3. Imported materials, HDPE fittings, pipe markers, air valve assemblies, reseeding, and surface restoration at road crossings, asphalt drive crossings, and dirt drive crossings will be paid by separate items.

B. FURNISH AND INSTALL HDPE FITTINGS (BID ITEMS 106 AND 107)

1. Measurement: By the unit for the size and type indicated.
2. Payment: Includes all equipment, labor, and materials necessary to furnish and install the specified fitting. Installation of the fitting includes size connections, additional trench excavation and backfill required beyond that associated with pipe installation. Fittings shall be the same or greater pressure rating as the maximum pressure rating of the connecting pipe.

C. FURNISH AND INSTALL 2" AIR VALVE ASSEMBLY (BID ITEM 108)

1. Measurement: By the unit for the indicated valve assembly.
2. Payment: Includes all labor, materials, and equipment necessary to furnish and install identified items in the detail including: HDPE branch saddle or tee, electrofusion coupler, HDPE riser, HDPE threaded brass transition, brass ball valve, galvanized NPT nipple riser, and continuous acting air release valve as specified. Additional items include galvanized pipe fittings, HDPE riser for air vent protection, crushed rock type A6, additional trench excavation and backfill required beyond that associated with pipe installation, and any other items incidental to construct the air valve assembly as shown in the drawings.
3. HDPE pipe and reseeding will be paid by separate items.

D. FURNISH AND INSTALL 2" SERVICE (BID ITEM 109)

1. Measurement: Each.
2. Payment: Includes all equipment, labor, and materials necessary to furnish and install a 2" service as indicated on the drawings. Includes HDPE pipe associated with the service, bends (where required), fittings, trenching, backfill, branch saddle or tee, electrofusion coupler, flange adapters, back up rings, gaskets, bolt packs, valve, McCrometer Dura Mag battery powered electromagnetic flow meter, grounding rings, grounding wire, grounding rod, Neptune AMI external antenna and R900 Cellular endpoint, meter box, crushed gravel Type

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A6, PVC pipe, PVC cap, and all other fittings and appurtenances associated with the turnout.
(Reseeding will be paid by separate items)

E. FENCE CROSSING (BID ITEM 110)

1. Measurement: Each.
2. Payment: Includes all equipment, labor, and materials necessary to remove and replace existing fence "in kind" to the existing fence at each location as indicated on the drawings. Includes removal and disposal of existing fence and posts, or salvage of existing fence and posts to landowners; furnishing and installation of new wood and metal posts, wire, welded wire fabric, brace panels, end panels, and appurtenances necessary to replace removed fence. Also includes furnishing and installation of temporary fence where required by the property owner until permanent fence is installed.

F. DIRT DRIVE RESTORATION (BID ITEM 111)

1. Measurement: By the ton as measured by weight tickets.
2. Payment: Includes all equipment, labor, and materials necessary to furnish and install an untreated base course Type A7 trench surface restoration of an existing driveway as identified on the drawings. The surface restoration shall be a minimum of 6-inches thick, match the width of the excavated trench or disturbed driveway, and shall match the length of the driveway crossing. Also includes coordination with property owner, potholing for existing utilities, placement, and compaction.
3. HDPE pipe, Embedment, and Backfill material will be paid by separate items.

G. ASPHALT ROAD CROSSING (BID ITEM 112)

1. Measurement: Lump sum for the indicated road crossing.
2. Payment: Includes all equipment, labor, and materials necessary to construct the HDPE pipeline across the agency roadway as indicated in the individual roadway crossing site plan. Includes any necessary permitting or fees required by local, state, and federal agencies, bonds, inspections, maintenance and plan updates necessary to provide a system that functions properly and complies with all agency requirements; traffic control, potholing for existing utilities and coordination with engineer on utility conflicts, saw cutting asphalt, removal and offsite disposal of existing roadway material, or other obstructions required for pipe crossing, untreated base course Type A7, asphalt, tack coat, mill and overlay, or any other items required to return the surface equivalent to the original condition.
3. HDPE pipe and imported materials for pipe installation will be paid by separate items.

H. FURNISH IMPORTED MATERIALS (BID ITEMS 113 AND 114)

1. Measurement: By the ton as measured by weight tickets.
2. Payment: Includes furnishing of imported material for use as pipe embedment material when excavated native material is determined to be unsuitable by engineer, trench backfill material when required, soil stabilization material, roadway shoulder material, or other imported materials as indicated on the plans.
3. Installation, moisture control, compaction of material, and haul off of unsuitable material is included with HDPE pipe bid items.

I. FURNISH AND INSTALL ABOVE GROUND PIPE MARKERS (BID ITEM 115)

1. Measurement: Each.
2. Payment: Includes furnishing and installation of above ground utility markers as indicated on the drawings.

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J. RESEEDING (BID ITEM 116)

1. Measurement: Acre.
2. Payment: Includes furnishing and installation of seed and preparation of topsoil for all disturbed areas excluding roadways. The approximate acreage for reseeding the disturbed area for the pipeline is estimated at 2 acres. Payment also includes reseeding disturbed areas for staging areas. Acreage for staging areas is not included in the 2 acres estimate.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01300

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Field engineering.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Pre-installation meetings.
- E. Storm Water Pollution Prevention Plan.
- F. Special procedures.

1.2 FIELD ENGINEERING

- A. Verify set-backs and easements; confirm drawing dimensions and elevations.
- B. Protect owner installed survey control points prior to starting site work; preserve permanent reference points during construction.
- C. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.

1.3 PRECONSTRUCTION MEETING

- A. Engineer will schedule meeting after Notice of Award.
- B. Attendance Required: Owner, Engineer, Utility Companies and Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of products, schedule of values.
 - 5. Designation of personnel representing parties in Contract, and Engineer.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Submission of Work sequence plan, Schedule and the notice of disruption of service that will be sent to residents.
 - 8. Scheduling activities: line shut downs, pressure testing lines, disinfecting lines and connections to existing system etc..

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- D. Engineer will record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, and those affected by decisions made.

1.4 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum weekly intervals.
- B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Engineer, as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems impeding planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.
- E. Engineer will record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, and those affected by decisions made.

1.5 PRE-INSTALLATION MEETINGS

- A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific section.
- C. Notify Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of installation, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, and those affected by decisions made.

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1.6 STORM WATER POLLUTION PREVENTION PLAN

- A. Contractor must:
 - 1. Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with EPA Clean Water Act
 - 2. File a Notice of Intent (NOI) to execute the SWPPP under the Construction General Permit (CGP).
- B. The guidelines and forms for completing the SWPPP can be found at the following website. <https://www.epa.gov/npdes/stormwater-discharges-construction-activities>.
- C. Neither the Engineer or Owner assume any responsibility or liability concerning the requirement for the Contractor to properly prepare, file for coverage under the CGP, and to execute the SWPPP for this Project.
- D. The Contractor's execution of the Contract for Construction is their agreement to all provisions herein contained.
- E. Engineer may provide contractor with electronic base map files to facilitate the Contractor's preparation of the SWPPP.
- F. Payment for all labor, materials and equipment required to execute the SWPPP including preparation, filing, construction, monitoring, maintenance, decommissioning, and all other related work shall be paid by the Contractor as incidental to other Bid Items.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Proposed products list.
- D. Product data.
- E. Certificates.
- F. Manufacturer's instructions.
- G. Construction photographs.

1.2 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Engineer accepted form.
- B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- C. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite Project, and deliver to Engineer at **466 N 900 W Kaysville, UT 84037**. Coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.
- G. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- H. Allow space on submittals for Contractor and Engineer review stamps.
- I. When revised for resubmission, identify changes made since previous submission.

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- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- K. Submittals not requested will not be recognized or processed.

1.3 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedules within 15 days after date established in Notice to Proceed. After review, resubmit required revised data within ten days.
- B. Submit revised Progress Schedules with each Application for Payment.
- C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
- D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
- E. Submit computer generated horizontal bar chart with separate line for each section of Work, identifying first work day of each week.
- F. Indicate estimated percentage of completion for each item of Work at each submission.
- G. Revisions to Schedules:
 - 1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
 - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
 - 3. Prepare narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

1.4 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 PRODUCT DATA

- A. Product Data: Submit to Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Submit number of copies Contractor requires, plus two copies Engineer will retain.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

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- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01700.

1.6 CERTIFICATES

- A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

1.7 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.8 CONSTRUCTION PHOTOGRAPHS

- A. None required.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

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Submittal Control Log					
#	Reference	Description	Date Submitted	Date Returned	Comments
1	01330	Progress Schedule			
2	01500	Storm Water Pollution Prevention plan			
3	01700	Redlined Set of Record Drawings & Specifications			
4	01701	Operation & Maintenance Instructions			
5	02060	Imported Aggregate Materials: source, gradation & proctor (Roadbase, gravel)			
6	02081	Precast concrete structures			
7	02140	Dewatering Plan			
8	02371	Riprap: source, gradation & proctor, geotextile fabric			
9	02513	HDPE Pipe, Fittings, wall anchors, Bevelled Flange Adapters, Valve Spacers			
10	02513	Flange followers, all-thread,			
11	02513	Pipe appurtenances: Tracer Wire, nuts & tees, warning tape			
12	02513	Above ground irrigation pipeline markers & stickers			
13	02513	Tracer wire access boxes			
14	02513	Galvanized pipe fittings			
15	02513	Butterfly Valves, gate vales, miscellaneous valves, stems, gear boxes & wheels, Air valves			
16	02513	Ball valves for air valve			
17		Meter barrel, air vent barrel, Lid			
18	03200	Reinforcing, concrete mix design, waterstop,			
19	03200	Concrete Mix designs			

END OF SECTION

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SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance/control of installation.
- B. References.
- C. Construction observation and testing laboratory services.
- D. Manufacturers' field services and reports.
- E. Project Limits

1.2 RELATED SECTIONS

- A. Section 01090 - Reference Standards.
- B. Section 01300 - Submittals.
- C. Section 01600 - Material and Equipment.

1.3 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 REFERENCES

- A. Conform to reference standard by date of issue current on date of Contract Documents.
- B. Should specified reference standards conflict with Contract Documents, request clarification from Engineer.
- C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.5 CONSTRUCTION OBSERVATION AND TESTING LABORATORY SERVICES

- A. Owner will appoint and employ for services of Engineer to perform Construction Observation.
- B. The Engineer will observe all tests run by the Contractor in the field.
- C. The Contractor shall be responsible for providing the equipment and labor to assist the Engineer in taking tests.
- D. The Contractor shall provide the equipment and labor to conduct all tests as required in the specifications.
- E. The Contractor shall notify the Engineer of the time in which tests are to be run forty-eight (48) hours prior to testing.
- F. Reports will be submitted by the Engineer, to the Contractor indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- G. Contractor shall cooperate with Engineer, furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
 - 1. Notify Engineer 48 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with Engineer and pay for additional samples and tests required for Contractor's use.
- H. Retesting required because of non-conformance to specified requirements shall be performed by the Engineer. Payment for retesting will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum/Price.
- I. Contractor shall be responsible for obtaining Engineer's verification of thrust block or restraint prior to covering. If any thrust blocks or joint restraints are covered without Engineer's approval, then Contractor will uncover work for inspection.

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J. **Contractor shall verify with Engineer that all pipe fittings, valves and air valve assemblies, utility crossings and utility repairs and have been observed by Engineer to his satisfaction before burying such items**

a. MANUFACTURERS' FIELD SERVICES AND REPORTS

- i. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.
- ii. Contractor will report to Engineer, observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- iii. Submit report in duplicate within 15 days of observation to Engineer for review.

1.7 PROJECT LIMITS

- A. Confine all equipment, tools, and materials to the easements and project sites shown on the plans.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary heating.
 - 4. Temporary cooling.
 - 5. Temporary ventilation.
 - 6. Telephone service.
 - 7. Facsimile service.
 - 8. Temporary water service.
 - 9. Temporary sanitary facilities.
- B. Construction Facilities:
 - 1. Field offices and sheds.
 - 2. Vehicular access.
 - 3. Parking.
 - 4. Progress cleaning and waste removal.
 - 5. Project identification.
 - 6. Traffic regulation.
- C. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures and fencing.
 - 3. Security.
 - 4. Water control.
 - 5. Dust control.
 - 6. Erosion and sediment control.
 - 7. Noise control.
 - 8. Pest control.
 - 9. Pollution control.
 - 10. Rodent control.
- D. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from utility source as needed for construction operation.

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1.3 TEMPORARY WATER SERVICE

- A. Provide and pay for water service required from utility source as needed for construction operation.

1.4 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of project mobilization.

1.5 VEHICULAR ACCESS

- A. Construct temporary all-weather access roads from public thoroughfares to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.
- B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- C. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.
- D. Provide and maintain access to fire hydrants and control valves free of obstructions.
- E. Provide means of removing mud from vehicle wheels before entering streets.

1.6 PARKING

- A. Use of designated areas of existing parking facilities used by construction personnel is permitted.
- B. Do not allow heavy vehicles or construction equipment in parking areas.
- C. Do not allow vehicle parking on existing pavement.
- D. Mud from Site Vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.7 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
- B. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.
- C. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.8 TRAFFIC REGULATION

- A. Signs, Signals, And Devices:
 - 1. Post Mounted and Wall Mounted Traffic Control and Informational Signs: Per UDOT Standards.
 - 2. Traffic Cones and Drums, Flares and Lights: Per UDOT Standards
 - 3. Flagperson Equipment: Per UDOT Standards.
- B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
- C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
- D. Traffic Signs and Signals:
 - 1. Provide, operate, and maintain traffic control signs to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
 - 2. Relocate as Work progresses, to maintain effective traffic control.
- E. Removal:
 - 1. Remove equipment and devices when no longer required.
 - 2. Repair damage caused by installation.

1.9 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing buildings.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.10 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.11 DUST CONTROL

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.12 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Prepare and implement storm water pollution prevention plan in accordance with 1.6 Storm Water Pollution Prevention Plan in section 01300 Administrative Requirements.
- C. Minimize surface area of bare soil exposed at one time.
- D. Provide temporary measures including berms, dikes, and drains, and other devices to prevent water flow.
- E. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- F. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.13 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise from and noise produced by construction operations.

1.14 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.15 NOTIFICATION OF RESIDENTS

- A. Notify all property owners and residents adjacent to the streets or easements affected by construction 48 hours prior to commencing work.
 - 1. Attach a written notification to the door of each residence or place of business which reads: "(Contractor) will be working on the construction of the (Project Name) on your street starting about _____."
 - 2. Provide a copy of the notice at the pre-construction meeting.

PART 2 PRODUCTS

Not Used.

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PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01530

POTHOLE UTILITY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Potholing will be used to verify location, elevation and type of existing buried utilities.

1.2 RELATED SECTIONS Not Used

1.3 REFERENCES Not Used

1.4 DEFINITIONS Not Used

1.5 SUBMITTALS Not Used

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.1 PREPARATION

- A. Pothole locations of possible conflicts including excavation, pipe installations, sign foundations and other construction as requested by the Contractor or as directed by the Engineer in writing.
- B. Pothole after Blue Stakes has marked existing lines.
- C. Cooperate with the utility companies to protect their facilities.
- D. Inform the Engineer 24 hours prior to any pothole. Pothole utility in the presence of the Engineer if requested.

3.2 RECORDS

- A. Record coordinates of elevation and horizontal position, owner, material, size, number of ducts, casings and any other information relevant to identifying and establishing existing utility.
- B. Provide written documentation to the Engineer within 24 hours of potholing. Documentation must be stamped by a licensed surveyor of the State of Utah. All coordinates and benches are to be based on project coordinate system.

3.3 RESPONSIBILITY OF DAMAGED UTILITY

- A. The Contractor is solely responsible for any damage to utility facilities resulting from pothole operations. Furthermore, the Contractor shall not be compensated for any delays to the project schedule resulting from damages, repair time, materials or any other circumstances due to damages.

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3.4 CLEAN-UP

- A. Backfill potholed utility according to utility owner's specifications when outside of roadway prism. If pothole is inside of roadway prism, then backfill according to Vernal City, Uintah County or UDOT requirements.
- B. Backfill any potholed utility to the same depths and materials of surrounding pavement.
- C. When vac-truck is used to pothole, flowable fill is required for backfill material.

END OF SECTION

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SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Product substitution procedures.

1.2 PRODUCTS

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection.

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- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following article.

1.6 PRODUCT SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during bidding period to requirements specified in this section.
- B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 - 2. Will provide same warranty for Substitution as for specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities having jurisdiction.
- E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to Contract Documents.

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- F. Substitution Submittal Procedure:
1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
 2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
 3. Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01700

EXECUTION REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Starting of systems.
- D. Demonstration and instructions.
- E. Testing, adjusting and balancing.
- F. Protecting installed construction.
- G. Project record documents.
- H. Operation and maintenance data.
- I. Manual for materials and finishes.
- J. Manual for equipment and systems.
- K. Spare parts and maintenance products.
- L. Product warranties and product bonds.
- M. Maintenance service.

1.2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.
- B. Provide submittals to Engineer required by authorities having jurisdiction.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.3 FINAL CLEANING

- A. Clean site; sweep paved areas, rake clean landscaped surfaces.
- B. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Engineer seven days prior to start-up of each item.
- C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer's representative in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01330 that equipment or system has been properly installed and is functioning correctly.

1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.
- B. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- E. Required instruction time for each item of equipment and system is specified in individual sections.

1.6 TESTING, ADJUSTING AND BALANCING

- A. Owner will appoint, employ, and pay for services of independent firm to perform testing, adjusting, and balancing.

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- B. Reports will be submitted by independent firm to Engineer indicating observations and results of tests and indicating compliance or non-compliance with requirements of Contract Documents.

1.7 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Prohibit traffic from landscaped areas.

1.8 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Field changes of dimension and detail.
 - 3. Details not on original Contract drawings.
- G. Submit documents to Architect/Engineer with claim for final Application for Payment.

1.9 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.

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- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
- C. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- E. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Originals of warranties.

1.10 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy be reviewed and returned after final inspection, with Engineer comments. Revise content of document sets as required prior to final submission.
- D. Submit two sets of revised final volumes in final form within 10 days after final inspection.
- E. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.

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- F. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and special operating instructions.
- G. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Include control diagrams by controls manufacturer as installed.
- L. Include Contractor's coordination drawings, with color coded piping diagrams as installed.
- M. Additional Requirements: As specified in individual product specification sections.
- N. Include listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

1.11 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
 - 2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.

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3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.12 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in specification sections during warranty period.
- B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.
- D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 02055

SOILS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Subsoil materials
 - 2. Topsoil materials
- B. Related Sections:
 - 1. Section 02060 - Aggregate.
 - 2. Section 02324 - Trenching.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - 2. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 3. ASTM D2922 – Test Methods for Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 4. ASTM D3017 – Test Methods for Moisture Content of Soil and Soil Aggregate Mixtures in Place by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Materials Source: Submit name of imported materials source. Provide materials from same source throughout the course of the project.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Furnish each material from single source throughout the Work.

PART 2 PRODUCTS

2.1 SUBSOIL MATERIALS

- A. Subsoil Type S1: Excavated and reused material;

2.2 TOPSOIL MATERIALS

- A. S3 (Topsoil): Select, graded, free of roots larger than ½ inch, subsoil, debris, large weeds and foreign matter.
 - 1. Imported borrow.
 - 2. Friable loam.
 - 3. Reasonably free of roots, rocks larger than 1 inch, subsoil, debris, large weeds, and foreign matter.
 - 4. Acidity range (pH) of 5.5 to 7.5
 - 5. Containing minimum of 4 percent and maximum of 25 percent inorganic matter.

2.3 SOURCE QUALITY CONTROL

- A. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D1557.
- B. When tests indicate materials do not meet specified requirements, change material and retest.
- C. Furnish materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 EXCAVATION

- A. Excavate topsoil from areas designated. Strip topsoil to full depth of topsoil in designated areas.
- B. Stockpile excavated material meeting requirements for topsoil materials.
- C. Remove excess excavated materials not intended for reuse, from site.
- D. Remove excavated materials not meeting requirements for topsoil materials from site.

3.2 STOCKPILING

- A. Stockpile materials on site.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Stockpile topsoil 8 feet high maximum.
- E. Prevent intermixing of soil types or contamination.
- F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

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3.3 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

3.4 NATURAL GROUND SURFACE RESTORATION

- A. Unimproved areas not otherwise classified as Bituminous Surface, Gravel Surface, Gravel Shoulder or Sod Surface.
- B. Restore disturbed surfaces along trench in accordance with surface repair details of the project plans.
- C. Grade disturbed area to match previously existing terrain.

END OF SECTION

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SECTION 02060

AGGREGATE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Coarse aggregate materials.
 - 2. Fine aggregate materials.
- B. Related Sections:
 - 1. Section 02055 - Soils: Fill and grading materials.
 - 2. Section 02324 - Trenching.
 - 3. Section 02721 - Aggregate Base Course.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO M147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
- B. ASTM International:
 - 1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
 - 3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 4. ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Materials Source: Submit name of imported materials suppliers with proctor and gradation test data for each imported material.
- C. Samples: Submit, in air-tight containers, 45 lb. sample of each type of aggregate material used for fill to testing laboratory.

1.4 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.
- B. Perform Work in accordance with UDOT and Weber County standards in applicable rights-of-ways.

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PART 2 PRODUCTS

2.1 COURSE AGGREGATE MATERIAL TYPES

- A. Imported Granular Backfill Type A1: Natural stone, crushed rock, gravel or sand; free of organic matter; graded in accordance with ANSI/ASTM C136, ASTM D2487 Group Symbol GW; to the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
6 inch	100
4 inch	98-100
3 inch	98-100
2 inch	75-100
1 inch	40-80
No. 4	25-60
No. 200	5

- B. Onsite Backfill Type A2: Excavated and reused material; free of lumps larger than 8", rocks larger than 8", and debris; graded in accordance with ANSI/ASTM C136, to the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
4 inch	100
No. 200	60

- C. Imported Embedment Type A3: Natural stone, crushed rock, gravel, or sand conforming to Class I, II, or III material as defined by ASTM D2487 or D2321; free of clay, shale, organic matter; graded in accordance with ANSI/ASTM C136, ASTM D2487 Group Symbol GW, GP, SW, SP; to the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
1-1/2 inch	100
No. 200	15

- D. Onsite Embedment Type A4: Excavated and reused material conforming to Class I, II, or III material as defined by ASTM D2487 or D2321; free of clay, shale, organic matter lumps larger than 1.5", rocks larger than 1.5", and debris; graded in accordance with ANSI/ASTM C136 to the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
1-1/2 inch	100
No. 200	25

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- E. Imported Foundation Type A5: Angular stone or crushed rock; washed, free of clay, shale, organic matter; graded in accordance with ANSI/ASTM C136, ASTM D2487 Group Symbol GP; to the following limits: (Alternative gradations will be considered)

<u>Sieve Size</u>	<u>Percent Passing</u>
2 inch	100
No. 200	5

- F. 3/4" Rock Type A6: Angular stone or crushed rock; washed, free of clay, shale, organic matter; graded in accordance with ANSI/ASTM C136: (Alternative gradations will be considered)

<u>Sieve Size</u>	<u>Percent Passing</u>
3/4 inch	100
No. 4	5

2.2 FINE AGGREGATE MATERIALS

- A. Aggregate Base Course Type A7: Free of shale, clay, friable material and debris; graded in accordance with ANSI/ASTM C136, ASTM D2487 Group Symbol GW; within the following limits: (Alternative gradations will be considered)

<u>Sieve Size</u>	<u>Percent Passing</u>
¾ inch	100
½ inch	70 to 100
No. 4	41 to 68
No. 16	21 to 41
No. 40	10 to 27
No. 200	5

2.3 SOURCE QUALITY CONTROL

- A. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with, ASTM D1557, ASTM D4318, ASTM C136.
- B. Fine Aggregate Material - Testing and Analysis: Perform in accordance with, ASTM D1557, ASTM D4318, ASTM C136.
- C. When tests indicate materials do not meet specified requirements, change material, moisture condition or dry as necessary and retest.

PART 3 EXECUTION

3.1 EXCAVATION

- A. Stockpile excavated material meeting requirements for fine aggregate materials.
- B. Remove excess excavated materials from site or move and incorporate into canal fill areas.
- C. Remove unsuitable materials containing too much moisture and/or organic matter or move and incorporate into canal fill areas by mixing and locating outside of access roads.
- D. Separate material that is suitable for pipe embedment from unsuitable material.
- E. When no excavated material is suitable for pipe embedment obtain authorization from engineer to use onsite imported embedment material or pit imported embedment material.

3.2 STOCKPILING

- A. Stockpile materials on site at locations designated by Engineer.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.
- D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.3 STOCKPILE CLEANUP

- A. Remove unused stockpile materials.
- B. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

SECTION 02081

PRECAST STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Precast concrete manholes
 - 2. Precast concrete vaults
 - 3. Bedding and cover materials

- B. Related Sections:
 - 1. Section 02060 - Aggregate: Aggregate for backfill in trenches.
 - 2. Section 02315 - Excavation and Fill: Excavating for structures.
 - 3. Section 02320 - Backfill: Backfilling after structure installation.
 - 4. Section 03100 - Concrete Forms and Accessories.
 - 5. Section 03200 - Concrete Reinforcement.
 - 6. Section 03300 - Cast-in-Place Concrete: Concrete type for structure base pad construction.

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 318 - Building Code Requirements for Structural Concrete.

- B. ASTM International:
 - 1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
 - 2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. ASTM A536 - Standard Specification for Ductile Iron Castings.
 - 4. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 5. ASTM C55 - Standard Specification for Concrete Brick.
 - 6. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).
 - 7. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
 - 8. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
 - 9. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.
 - 10. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.
 - 11. ASTM D3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes.

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1.3 DESIGN REQUIREMENTS

- A. Equivalent strength: Based on structural design of reinforced concrete as outlined in ACI 318.
- B. Design of Lifting Devices for Precast Components: In accordance with ASTM C913.
- C. Design of Joints for Precast Components: In accordance with ASTM C913; maximum leakage of 0.025 gallons per hour per foot of joint at 3 feet of head.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Product Data:
 - 1. Submit baffled turnout box shop drawings (if precast) and grate shop drawings.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Comply with precast concrete manufacturer's instructions for unloading, storing and moving precast structures.
- C. Store precast concrete structures to prevent damage to Owner's property or other public or private property. Repair property damaged from materials storage.
- D. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings to indicate its intended use.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Cold Weather Requirements: ACI 318.

PART 2 PRODUCTS

2.1 MANHOLES AND STRUCTURES

- A. Manhole and structure Sections: Reinforced precast concrete in accordance with ASTM C478 with gaskets in accordance with ASTM C923

2.2 FRAMES AND COVERS

- A. Product Description: ASTM A48/A48M, Class 30B, cast iron construction, machined flat bearing surface, removable boltable lid, open checkerboard grille

2.3 COMPONENTS

- A. Manhole Steps: Fiber reinforced plastic in accordance with ASTM D3753
- B. Manhole Boot: in accordance with ASTM C-923 "Resilient Connectors Between Reinforced Concrete Manhole Structures"
- C. Bolt Anchors for Flange adaptor connection in baffle box:

2.4 CONFIGURATION

- A. Shaft Construction: lipped male/female dry joints; sleeved to receive pipe sections or grouted.
- B. Shape: Rectangular
- C. Clear Inside Dimensions: As indicated on Drawings.
- D. Design Depth: As indicated on Drawings.
- E. Clear Cover Opening: As indicated on Drawings.
- F. Pipe Entry: Furnish openings as indicated on Drawings.
- G. Steps: 12 inches wide, on center vertically, set into manhole wall.

2.5 FINISHING

- A. Finish
 - 1. $\frac{3}{4}$ " x $\frac{3}{4}$ " chamfer at all exposed corners.
 - 2. Formed Surfaces - use form materials that will impart a smooth, hard, uniform texture and arranging them orderly and symmetrically with a minimum of seams. All defective areas shall be patched and repaired with all fins or other projections completely removed and smoothed.
 - 3. Unformed Surfaces and Flatwork – hand trowel concrete to produce smooth, impervious surface, free from trowel marks.
 - 4. Top of Walls – scratch finish
- B. Tolerances
 - 1. Variation from plumb lines and surfaces: 1/4 inch per 10 feet, but not more than 1 inch. For exposed corners, control joints grooves and other conspicuous lines: 1/4 inch in 20 feet maximum; 1/2 inch maximum in 40 feet or more. Depressions In Wall Surface: Maximum 1/4 inch when 10-foot straightedge is placed on high

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points in any direction or at any location. Wall Thicknesses: Maximum 1/4 inch minus or 1/2 inch plus from dimension shown.

2. Variation from level or grade in slabs, and in arises: 1/4 inch in 10 feet, 3/8 inch in 40 feet or more. For exposed horizontal grooves and other conspicuous lines: 1/4 inch in 20 feet maximum and 1/2 inch in 40 feet or more. Slab Finish Tolerances and Slope Tolerances: Floor surface shall not have crowns so high as to prevent 10-foot straightedge from resting on 1/4-inch end blocks, nor low spots that allow a block of twice the tolerance in thickness to pass under the supported 10-foot straightedge. Thickness: Maximum 1/4 inch minus or 1/2 inch plus from thickness shown.

2.6 FINISHING - STEEL

- A. Galvanizing: ASTM A123/A123M; minimum 1.2 oz/sq ft coating thickness; galvanize after fabrication.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify items provided by other sections of Work are properly sized and located.
- C. Verify built-in items are in proper location, and ready for roughing into Work.
- D. Verify correct size of structure excavation.

3.2 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.
- B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.
- C. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage. Remove and replace damaged units.

3.3 INSTALLATION

- A. Excavation and Backfill:
 1. Excavate for structures in accordance with Section 02315 in location and to depth shown on drawings. Provide clearance around sidewalls of structure for construction operations.
 2. When groundwater is encountered, prevent accumulation of water in excavations. Place structures in dry trench.
 3. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation.

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- B. Place base pad, trowel top surface level.
- C. Place structure sections plumb and level, trim to correct elevations, anchor to base pad.
- D. Set cover frames and covers level without tipping, to correct elevations.
- E. Coordinate with other sections of Work to provide correct size, shape, and location.
- F. Lift precast components at lifting points designated by manufacturer.
- G. When lowering structures into excavations and joining pipe to units, take precautions to ensure interior of pipeline and structure remains clean.
- H. Set precast structures bearing firmly and fully on crushed stone bedding
- I. Assemble multi-section structures by lowering each section into excavation. Lower, set level, and firmly position base section before placing additional sections.
- J. Remove foreign materials from joint surfaces and verify sealing materials are placed properly. Maintain alignment between sections by using guide devices affixed to lower section.
- K. Joint sealing materials may be installed on site or at manufacturer's plant.
- L. Verify structures installed satisfy required alignment and grade.
- M. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with mortar.
- N. Cut pipe to finish flush with interior of structure.

3.4 FRAME AND COVER INSTALLATION

- A. Set frame and cover for structures as indicated on the drawings.
- B. Install structure grate as indicated on the drawings.

3.5 FIELD QUALITY CONTROL

- A. Test cast-in-place concrete in accordance with Section 03300.

END OF SECTION

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SECTION 02140

TRENCH AND STRUCTURE DEWATERING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Dewatering plan submittal requirements.
- B. Permits for dewatering activities.
- C. Performance requirements for trench and structure dewatering.
- D. Verification of dewatering performance.
- E. Dewatering discharge and monitoring requirements
- F. Termination of dewatering.
- G. Measurement and payment for trench dewatering.

1.2 RELATED SECTIONS

- A. Section 01400 - Quality Control
- B. Section 01500 - Construction Facilities and Temporary Controls
- C. Section 02315 - Excavation
- D. Section 02324 - Trenching

1.3 SUBMITTALS

- A. Submit per Section 01300.
- B. Prior to the preconstruction conference the Contractor shall submit their dewatering plan to the Engineer and Owner to communicate the Contractors intent in regards to dewatering to achieve the required performance contained in these specifications. Submittal of a dewatering plan shall not be interpreted as an acceptance or approval by the Owner or Engineer of the Contractors dewatering plan. The dewatering plan shall include at a minimum:
 - 1. Major components of the dewatering system including size, location, spacing and details of major dewatering features the Contractor anticipates utilizing.
 - 2. Contingency plans for equipment or power failure.

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3. Procedures for verification that water levels have been lowered to the specified levels prior to trench or structure excavation and installation.
4. Location of dewatering disposal or discharge locations and the capacity to accept dewatering discharge. Provide a contingency plan for higher than anticipated flows when capacity of planned discharge and disposal locations may conceivably be exceeded.
5. Location and details of Best Management Practices (BMP's)
6. Agreements with entities accepting discharges
7. All permits obtained by the Contractor including any permit conditions and approvals for the discharge of water generated during the execution of the Work.
8. Other permits required for construction or operation of the dewatering system including the drilling of wells, temporary power drops, etc.

1.4 REFERENCES

- A. Utah Department of Environmental Quality, Division of Water Quality Storm Water Program.

1.5 PERMITS

- A. Submit a short-term activity exemption application and plan.

Contact Utah Division of Water Quality – General Permit for Construction Dewatering and/or Hydrostatic Testing for details.

<https://deq.utah.gov/legacy/permits/water-quality/utah-pollutant-discharge-elimination-system/storm-water.htm>

- B. Dewatering discharge to or across adjacent canals, drains, right-of-way, and private property outside of the designated limits of construction shall not be allowed unless the Contractor has obtained written approval from agency or property owner having jurisdiction. Provide Agreements with dewatering plan submittal as described in Part 1.3 of this section.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PREPARATION

- A. Furnish, install and prepare for operation, all necessary machinery, appliances and equipment to maintain all excavations free from water during construction.
- B. Contractor shall provide temporary power sources for all dewatering equipment that requires a power source.

3.2 TRENCH AND STRUCTURE DEWATERING

- A. Dewater and dispose of water in such a manner that it does not cause injury to public or private property, or to cause a nuisance or a menace to the general public.
- B. Comply with Utah Water Quality Standards, latest edition, for discharge of water to surface water.
- C. The Contractor will be responsible for devising a system to achieve the required level of dewatering. In addition, design and provide dewatering conveyance system to an approved disposal location. The Contractor shall submit details of this plan as described in Part 1.3 of this Section.
- D. Perform necessary dewatering activities so that the hydrostatic pressure in the trench or structure excavations is reduced to or near zero in the immediate vicinity of the bottom of the excavation as necessary to maintain the undisturbed nature of the native soils.
- E. Remove all groundwater, seepage, stormwater and other water that accumulates in the excavation during construction. All excavations shall be kept free of water during construction or until otherwise requested by the Contractor and approved by the Engineer.
- F. Prevent softening of the bottom of excavations and the formation of "quick" conditions or "boils" during excavation. The occurrence of such conditions will require over-excavation and subsequent backfilling to soils meeting the requirements of Section 02324, Trenching, at no additional cost to the Owner.
- G. Additional cost for bottom stabilization resulting from inadequate dewatering and non-compliance with the performance specifications included herein, as determined by the Engineer, will be incidental to the work.
- H. Maintain hydrostatic pressures in the excavation at or near zero during installation of the bedding and pipes or structures and continue dewatering operations until backfill is placed to finished grade or as necessary to prevent floatation of constructed improvements.
- I. Control surface runoff to prevent entry or collection of water in excavations.

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- J. Install and operate a dewatering system so that adjacent structures or property are not endangered by the reduction in the groundwater level.
- K. Monitor discharge from dewatering operations for changes in visual or odor components indicating the presence of contaminants including, but not limited to, gasoline and pesticides and other hazardous materials and toxins.
- L. Cease dewatering operations and notify Engineer and regulatory agencies immediately upon observation of conditions that may indicate the presence of hazardous contaminants in the dewatering discharge or excavation.

3.3 VERIFICATION

- A. Contractor's superintendent shall routinely observe conditions in excavations where dewatering is being performed on a daily basis to verify performance requirements are being met and that conditions in the excavation are in accordance with the Contract Documents.
- B. Notify Engineer of any observations that may jeopardize the Work or is not in accordance with the Contract Documents.
- C. Based on the verification performed by the Contractor and observations made by the Engineer in accordance with the General Conditions, the Engineer will determine if the performance requirements of the specifications as they relate to dewatering and construction of the improvements are generally being met. If the Engineer determines that the dewatering related Work is not being performed in accordance with the Contract Documents, the Contractor will be notified in accordance with the General Conditions and required to cease construction of the affected Work and revise and resubmit the described dewatering plan with appropriate adjustments to meet the requirements of the Contract Documents and implement any necessary changes to Contractor's dewatering approach and activities at no additional cost to the Owner.

3.4 DEWATERING DISCHARGE

- A. Comply with all State & Federal requirements, including (at a minimum):
 - 1. Dewatering discharge water quality and quantity.
 - 2. Dewatering discharge monitoring and sampling daily, weekly, continuous as stipulated in the permits, at any locations required therein.
 - 3. Submit monitoring and sampling report to the appropriate agencies.
- B. The Contractor shall be fully responsible for complying with State and Federal water quality requirements. Contractor shall design a dewatering discharge system to achieve such requirements. It is anticipated that stilling basins, geotextile dams, straw bales, silt fences, or siltation channels will be required to meet performance stipulations of the reference permits. Such temporary facilities may be constructed on-site, and will be required to be removed after completion of the Work. Captured sediment must be

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retained and disposed of at a site furnished by the Contractor. Discharging directly into adjacent surface waters without treatment shall not be permitted.

- C. Contractor will not be allowed to utilize the constructed pipeline to convey dewatering flows. Dewatering down the pipe is prohibited.
- D. Work required to comply with water quality and permit requirements are considered incidental and additional payment will not be made for this Work.

3.5 TERMINATION

- A. Allow groundwater to return to static level after excavations are backfilled as necessary to prevent floatation of constructed improvements.
- B. Prevent disturbance of the compacted backfill and prevent flotation or movement of installed pipelines and structures.
- C. Remove or abandon all temporary improvements associated with the dewatering system in accordance with these specifications and any applicable state and federal rules and regulations.
- D. Provide surface restoration as required to repair/replace any surface impacted by dewatering activities to a condition as good or better than preconstruction conditions at no additional cost to the Owner. Surface rehabilitation performed as a result of dewatering activities is considered incidental and no additional payment will be made.
- E. Comply with any dewatering termination requirements of any State and Federal permits.

3.6 MEASUREMENT AND PAYMENT

- A. Separate measurement and payment for the performance of trench dewatering as described in the Contract Documents will not be made. Performance of this work is considered incidental to other items and must be included therein.

END OF SECTION

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SECTION 02221

STRUCTURE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Demolishing designated structures.
 - 2. Demolishing designated foundations.
 - 3. Demolishing designated slabs-on-grade.
 - 4. Protecting items designated to remain.
 - 5. Removing demolished materials.
- B. Related Sections:
 - 1. Section 02055 - Soils: Backfill materials.
 - 2. Section 02060 - Aggregate: Backfill materials.
 - 3. Section 02230 - Site Clearing: Clearing outside periphery of structures.
 - 4. Section 02320 - Backfill.

1.2 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.

1.3 QUALITY ASSURANCE

- A. Conform to applicable code for demolition of structures, safety of adjacent structures, dust control, runoff control, and disposal.
- B. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.
- C. Obtain required permits from authorities having jurisdiction.

1.4 PROJECT CONDITIONS

- A. Owner assumes no responsibility for actual condition of structures to be demolished.
- B. Notify Engineer upon discovery of hazardous materials.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXISTING BUILDING DOCUMENTATION

- A. Document condition of adjacent structures indicated to remain.

3.2 EXAMINATION

- A. Examine existing structures indicated to be demolished before demolition.
- B. Determine where removals may result in structural deficiency or unplanned collapse during demolition. Coordinate demolition sequence and procedures to prevent structures from becoming unstable.
- C. Determine where demolition may affect structural integrity of adjacent structures indicated to remain.
 - 1. Identify measures required to protect structures from damage.
 - 2. Identify remedial work including patching, repairing, bracing, and other work required to leave structures indicated to remain in structurally sound and watertight condition.
- D. Verify hazardous material abatement is complete before beginning demolition.

3.3 PREPARATION

- A. Call Local Utility Line Information service not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Notify affected utility companies before starting work and comply with utility's requirements.
- C. Erect, and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of the Owner, and existing improvements indicated to remain.
- D. Protect existing structures indicated to remain.
- E. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.

3.4 DEMOLITION REQUIREMENTS

- A. Use of explosives is not permitted.
- B. Conduct demolition to minimize interference with adjacent structures.
- C. Cease operations immediately when adjacent structures appear to be in danger. Notify Engineer. Do not resume operations until directed.

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- D. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon or limit access to their property.
- E. Sprinkle Work with water to minimize dust. Provide hoses and water connections required for this purpose.

3.5 DEMOLITION

- A. Remove foundation walls and footings as indicated on plan.
- B. Remove concrete slabs-on-grade.
- C. Rough grade and compact areas affected by demolition to accommodate subsequent construction operations.
- D. Continuously clean-up and remove demolished materials from site. Do not allow materials to accumulate on site.
- E. Do not burn or leave materials on site. Leave site in clean condition.

3.6 ON-SITE DISPOSAL

- A. No on-site disposal will be permitted. All demolished materials must be disposed of offsite at a location coordinated by the Contractor.

END OF SECTION

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SECTION 02226

ROCK EXCAVATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Rock excavation including drilling, blasting, and related work.

1.2 RELATED SECTIONS

- A. Section 01025 - Measurement and Payment.
- B. Section 01400 - Quality Control.
- C. Section 02222 – Excavation for Structures.
- D. Section 02225 – Trenching for Pipelines.

1.3 SUBMITTALS

- A. Submit intended rock removal method.
- B. Survey Report: Submit survey report on conditions of buildings near locations of rock removal and photographs of existing conditions identifying existing irregularities.

1.4 FIELD MEASUREMENTS

- A. Verify that survey benchmark and intended elevations for the Work are as shown on Drawings.
- B. Notify Engineer if installation conditions such as trench width, depth, soils, and bedding conditions do not match those contemplated by the Contract Documents.

1.5 PROJECT RECORD DOCUMENTS

- A. If encountered utilities are not positioned as shown on the plans, notify the Engineer. Note revised locations in relation to known references on the record drawings.
- B. Provide copy of record documents to Owner prior to issuance of substantial completion.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Construction materials and equipment used for the work to meet all requirements of the Contract Documents.

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- B. Use, handle and store material in such a manner as to preserve quality and fitness for the work.
- C. Immediately remove materials from site of work that do not conform to the requirements of the Contract Documents as determined by the Engineer.

2.2 ROCK EXCAVATION

- A. Classified as material which by actual demonstration cannot be reasonable excavated, in the opinion of the Engineer, by a 55,000 lb. track hoe equipped with 33-foot ground level reach, $\frac{3}{4}$ cubic yard general duty bucket with rock points.
- B. "Rock" is solid sandstone, limestone, granite, basalt, or other solid rock of equal hardness, in ledges, bedded deposits, or unstratified masses that, in the opinion of the Engineer, will require the use of systematic drilling and blasting, splitting with a chemical, hydraulic or pneumatic rock splitter or other means of fracturing for removal.
- C. Rock excavation includes removal of boulders within the neatline dimensions of the trench which have a volume in excess of $\frac{3}{4}$ cubic yard.
- D. Cemented gravel (conglomerate), shale, clay, and other sedimentary materials are classified as rock only when, in the opinion of the Engineer, systematic drilling and blasting or other similar methods are required for removal.
- E. Loam, sand, gravel, clay, caliche, or other such material stratified between layers of rock will not be classified as rock.

PART 3 EXECUTION

3.1 GENERAL

- A. Perform rock excavation, as necessary, at the locations indicated in the Contract Documents and staked in the field for the installation of pipelines, services, utilities and ancillary items.
- B. Accurately grade bottom of trenches to the lines and grade indicated in the Contract Documents.
- C. Unless otherwise specified, remove all loam, sand, gravel, clay, or other such materials above the rock and clean off the exposed rock surface in a satisfactory manner so that the Engineer may examine the surface and obtain pay quantity measurements prior to rock removal.
- D. Comply with all requirements of Section 02324, Trenching.

3.2 ROCK REMOVAL BY MECHANICAL METHOD

- A. Rock blasting using explosives will not be allowed.

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- B. Excavate and remove rock by mechanical method.
- C. Cut away rock at bottom of excavation to form level bearing.
- D. In utility trenches, excavate to 4 inches below the bottom of the pipe and 24 inches wider than pipe diameter.
- E. Remove and dispose of excavated materials.

3.3 DISPOSAL OF EXCAVATED ROCK

- A. Haul away and dispose of all excavated rock that is unsuitable for trench backfill to areas approved by the Engineer.
- B. If the removal of excavated rock causes a deficiency in the amount of material available to complete the backfilling of any portion of the trench, import suitable backfill material in such quantity as may be required to complete the backfilling of the trench. Payment for imported trench backfill will be made under a separate bid item. Imported Trench Backfill will not be measured for over excavated areas.

END OF SECTION

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SECTION 02230

SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removing surface debris.
 - 2. Removing designated paving, curbs, and sidewalk.
 - 3. Removing designated trees, shrubs, and other plant life.
 - 4. Removing abandoned utilities.
 - 5. Excavating topsoil.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.

3.2 PREPARATION

- A. Call Local Utility Line Information service not less than two working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.

3.3 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain, from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping.
- C. Protect bench marks, survey control points, and existing structures from damage or displacement.

3.4 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.

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- B. Partially remove paving, curbs, and sidewalk, as indicated on Drawings. Neatly saw cut edges at right angle to surface 6 inches past the edge of disturbed soil.
- C. Remove abandoned utilities as required for installation of new system. Indicate removal termination point for underground utilities on Record Documents.
- D. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- E. Do not burn or bury materials on site. Leave site in clean condition.
- F. Remove roots and branches of trees, restore disturbed grounds to existing or better condition.

END OF SECTION

SECTION 02311

SITE STRUCTURE ROUGH GRADING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating topsoil.
 - 2. Excavating subsoil.
 - 3. Cutting, grading, filling, rough contouring, and compacting for site structures.
- B. Related Sections:
 - 1. Section 02055 - Soils.
 - 2. Section 02060 - Aggregate.
 - 3. Section 02221 - Structure Demolition.
 - 4. Section 02230 - Site Clearing: Excavating topsoil.
 - 5. Section 02315 - Excavation and Fill: Building excavation.
 - 6. Section 02320 - Backfill: General building area backfilling.
 - 7. Section 02324 - Trenching: Trenching and backfilling for utilities.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 3. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 4. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - 5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 6. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
 - 7. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).
 - 8. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 9. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.

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- B. Materials Source: Submit name of imported materials suppliers. Provide materials from same source throughout the course of the project.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C136, ASTM D2419, and ASTM D2434.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Topsoil: Type S3 as specified in Section 02055.
- B. Subsoil Fill: Type S1 as specified in Section 02055.
- C. Structural Fill: Type A1 as specified in Section 02060.
- D. Granular Fill: Type A6 as specified in Section 02060.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify survey benchmark and intended elevations for the Work are as indicated on Drawings.

3.2 PREPARATION

- A. Call Local Utility Line Information service not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company to remove and relocate utilities.
- D. Protect utilities indicated to remain from damage.
- E. Protect bench marks, survey control point, and existing structures from excavating equipment and vehicular traffic.

3.3 SUBSOIL EXCAVATION

- A. Stockpile excavated material in area designated on site in accordance with Section 02055.
- B. Benching Slopes: Horizontally bench existing slopes greater than 1: 4 to key placed fill material to slope to provide firm bearing.
- C. Stability: Replace damaged or displaced subsoil as specified for fill.

3.4 FILLING

- A. Place material in continuous layers as follows:
 - 1. Subsoil Fill: Maximum 8 inches compacted depth.
 - 2. Structural Fill: Maximum 8 inches compacted depth.
 - 3. Granular Fill: Maximum 6 inches compacted depth.
- B. Maintain optimum moisture content of fill materials to attain required compaction density.
- C. Slope grade away from structure minimum 2 inches in 10 ft unless noted otherwise.
- D. Make grade changes gradual. Blend slope into level areas.
- E. Repair or replace items indicated to remain damaged by excavation or filling.

3.5 TOLERANCES

- A. Section 01400 - Quality Requirements: Tolerances.
- B. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

3.6 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Testing and inspection services.
- B. Perform laboratory material tests in accordance with ASTM D1557.
- C. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.7 SCHEDULES

- A. Structural Fill:
 - 1. Compact uniformly to minimum 95 percent of maximum density.
- B. Previous Structural Fill:

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1. Compact uniformly to minimum 95 percent of maximum density.
- C. Subsoil Fill:
1. Compact uniformly to minimum 95 percent of maximum density.
- D. Topsoil Fill:
1. Compact uniformly to minimum 90 percent of maximum density.

END OF SECTION

SECTION 02315

SITE STRUCTURE EXCAVATION AND FILL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Soil densification.
 - 2. Excavating for building foundations.
 - 3. Excavating for slabs-on-grade.
 - 4. Excavating for site structures.
- B. Related Sections:
 - 1. Section 02140 - Dewatering
 - 2. Section 02311 - Rough Grading: Topsoil and subsoil removal from site surface.
 - 3. Section 02320 - Backfill.
 - 4. Section 02324 - Trenching: Excavating for utility trenches.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 3. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- B. Local utility standards when working within 24 inches of utility lines.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 PREPARATION

- A. Call Local Utility Line Information service not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.

3.2 EXCAVATION

- A. Excavate subsoil to accommodate structure foundations, slabs-on-grade, and construction operations.
- B. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 02320 and 02324.
- C. Slope banks with machine to angle of repose or less until shored.
- D. Do not interfere with 45degree bearing splay of foundations.
- E. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- F. Trim excavation. Remove loose matter.
- G. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume.
- H. Notify Engineer of unexpected subsurface conditions.
- I. Correct areas over excavated with structural fill Type A1 specified in Section 02060.
- J. Stockpile excavated material in area designated on site in accordance with Section 02055.
- K. Repair or replace items indicated to remain damaged by excavation.

3.3 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Testing and Inspection Services.
- B. Request visual inspection of bearing surfaces by Engineer before installing subsequent work.

3.4 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

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- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

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SECTION 02320

SITE STRUCTURE BACKFILL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Backfilling site structures to subgrade elevations.
 - 2. Fill under slabs-on-grade.
 - 3. Fill for over-excavation.

- B. Related Sections:
 - 1. Section 02055 - Soils.
 - 2. Section 02060 - Aggregate.
 - 3. Section 02311 - Rough Grading: Site filling.
 - 4. Section 02315 - Excavation and Fill.
 - 5. Section 02324 - Trenching: Backfilling of utility trenches.
 - 6. Section 02371 - Riprap and Rock Lining.
 - 7. Section 03300 - Cast-in-Place Concrete: Concrete materials.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 3. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - 4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
 - 7. ASTM D4253 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.

- B. Materials Source: Submit name of imported materials suppliers. Provide materials from same source throughout the course of the project.

- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Subsoil Fill: Type S1 as specified in Section 02055.
- B. Structural Fill: Type A1 as specified in Section 02060.
- C. Granular Fill: Type A6 as specified in Section 02060.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Verify structural ability of unsupported walls to support loads imposed by fill.

3.2 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural fill and compact to density equal to or greater than requirements for subsequent fill material.
- C. Scarify subgrade surface to depth of 6 inch.
- D. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Place material in continuous layers as follows:
 - 1. Subsoil Fill: Maximum 8 inches compacted depth.
 - 2. Structural Fill: Maximum 8 inches compacted depth.
 - 3. Granular Fill: Maximum 6 inches compacted depth.
- D. Employ placement method that does not disturb or damage other work.
- E. Maintain optimum moisture content of backfill materials to attain required compaction density.
- F. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise.

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- G. Make gradual grade changes. Blend slope into level areas.
- H. Remove surplus backfill materials from site.
- I. Leave fill material stockpile areas free of excess fill materials.

3.4 TOLERANCES

- A. Section 01400 - Quality Requirements: Tolerances.

3.5 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Testing and inspection services.
- B. Perform laboratory material tests in accordance with ASTM D1557.
- C. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- E. Proof roll compacted fill surfaces under slabs-on-grade.

3.6 PROTECTION OF FINISHED WORK

- A. Section 01700 - Execution Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic.

3.7 SCHEDULE

- A. Exterior Side of Foundation Walls:
 - 1. Fill Type S1, to subgrade elevation, compact uniformly to 90 percent of maximum density.
- B. Fill to Correct Over-excavation:
 - 1. Fill Type A1, flush to required elevation, compact uniformly to 95 percent of maximum density.

END OF SECTION

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SECTION 02324

TRENCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating trenches for utilities.
 - 2. Compacted fill from top of utility embedment to subgrade elevations.
 - 3. Backfilling and compaction.
- B. Related Sections:
 - 1. Section 01400 - Quality Requirements
 - 2. Section 02055 - Soils.
 - 3. Section 02060 - Aggregate.
 - 4. Section 02140 - Dewatering
 - 5. Section 02513 - Water Distribution System.
 - 6. Section 03300 - Cast-in-Place Concrete: Flowable Fill.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
 - 3. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 4. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.
- B. Common Excavation: all excavation that is not defined as "Rock Removal" or "Boulder Removal"
- C. Rock Removal: Removal of all materials which, by actual demonstration, cannot in the Engineer's opinion, be reasonably excavated with a ¾ yard 225 Caterpillar Backhoe equipped with a 30-foot boom, general dipper and rock points, or similar approved equipment and which is in fact, systematically drilled or blasted. The term refers to a method of removal and not a geological material.
- D. Boulder Removal: Removal of masses of igneous, sedimentary or metamorphic material which have one or more dimensions of 36" or greater or boulders with a displacement of

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one cubic yard, or more, which is removed without drilling, blasting or splitting as specified for rock excavation. Solid masses other than rock or of lesser dimension shall be considered as cobble or debris and shall be removed as common excavation.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Materials Source: Submit name of imported fill materials suppliers.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 COORDINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Subsoil Fill: Type S1, S2 as specified in Section 02055.
- B. Granular Fill: Type A1, A2, A3, A4, A5 as specified in Section 02060.

PART 3 EXECUTION

3.1 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.
 - 1. Engineer Owner reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

3.2 PREPARATION

- A. Make written request to Engineer for construction staking. Allow for a minimum of 7 days from the time written request is received by Engineer to the time of actual construction staking in the field.
- B. Call Local Utility Line Information service at 800-662-4111 at least two working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- C. Maintain and protect above and below grade utilities indicated to remain.

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- D. Notify Engineer of existing structures or utilities that will prevent construction before continuing with construction to allow Engineer time to make field revisions as necessary to avoid conflict with the existing utility or structure.
- E. Identify required lines, levels, contours, and datum locations.
- F. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- G. Protect bench marks, construction staking, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- H. Establish temporary traffic control and detours when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.

3.3 TRENCHING

- A. Perform excavation within 24 inches of existing utility service in accordance with utility's requirements.
- B. Provide temporary support of existing structures, as necessary, to protect the structures from settlement or other disturbances caused by construction activities.
- C. Return disturbed structures to original condition, or better.
- D. Do not advance open trench more than 1000 feet ahead of installed pipe near roadways.
- E. Remove materials that interfere with Work to a depth of no more than 6 inches below the flow line of the pipe unless directed by Engineer.
- F. Excavate bottom of trenches to minimum widths as identified on plans.
- G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and utilities.
- H. Do not interfere with 45 degree bearing splay of foundations.
- I. When Project conditions permit, slope side walls of excavation starting according to OSHA requirements. When side walls can not be sloped, provide sheeting and shoring to protect excavation as specified in this section.
- J. In roadways minimize disturbed areas by utilizing a trench shield and minimizing trench widths.
- K. Remove lumped subsoil, boulders, and rock up to a cu yd, measured by volume.
- L. When conditions requiring Rock Removal or Boulder Removal are encountered notify engineer.
- M. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by Architect/Engineer until suitable material is encountered.

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- N. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Onsite Embedment Type A4, Onsite Backfill Type A2, or Imported Foundation Type A5, and compact to density equal to or greater than requirements for subsequent backfill material.
- O. Trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.
- P. Correct over-excavated areas with compacted backfill as specified for authorized excavation as directed by Architect/Engineer.
- Q. Remove excess subsoil not intended for reuse, from site or dispose of material in locations approved by engineer.
- R. Separate materials that are suitable for use as embedment or trench backfill from materials that are unsuitable
- S. When excavated material is too wet for reuse as trench backfill, spread out on the surface and moisture condition until it can be used as trench backfill somewhere in the project outside of roadways.
- T. Stockpile excavated material in areas located within the site to depth not exceeding 8 and protect from erosion.

3.4 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Slope trench sides or support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be removed at completion of excavation work.
- D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 PIPE FOUNDATION

- A. Foundation Material: Onsite Backfill Type A2, Onsite Embedment Type A4, or Imported Foundation Type A5
- B. Use when soil unsuitable for a proper foundation is encountered at or below trench grade, such as muck or other deleterious material.
- C. Remove unsuitable material for the full width of trench and to a depth required to reach suitable foundation material

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- D. Obtain Engineer verification that imported or transported material is required prior to use.

3.6 PIPE EMBEDMENT

- A. Embedment Material: Onsite Embedment Type A4, or Imported Embedment Type A3
- B. Bedding depth: 4 inches below bottom of pipe typical; extend to 6 inches if rock or other non-cushioning material is encountered at the bottom of trench
- C. Remove stones and lumps which will interfere with smooth and complete bedding of the pipe.
- D. Level material to provide continuous firm support along the full length of pipe.
- E. Hand dig holes for bells and fittings to assure uniform support along pipe barrel.
- F. Place and compact in layers not exceeding an uncompacted height of eight inches, to 12 inches above top of pipe.
- G. Place material evenly on both sides of the pipe with care for the full width of the trench to displacement of or damage to the pipe.
- H. Prevent material with rocks larger than 1 inch or containing clay, deleterious or frozen material from entering the pipe embedment area.
- I. Use suitable excavated native and sorted native material before transported or imported materials.
- J. Obtain Engineer verification that imported embedment material is required prior to use.
- K. Place material and compact in accordance with the Backfill Schedule at the end of this section.

3.7 TRENCH BACKFILLING

- A. Trench Backfill Material: Onsite Backfill Type A2, or Subsoil Type S1
- B. Trench Backfill Material in Roadways: Onsite Backfill Type A2, or Imported Granular Backfill Type A1
- C. Do not place backfill in standing water; pump ground water or dewater see Section 02140 Dewatering.
- D. Backfill trenches to contours and elevations with unfrozen fill materials.
- E. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

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- F. Place fill material in continuous layers and compact in accordance with the Backfill Schedule at the end of this section.
- G. Employ placement method that does not disturb or damage, utilities in trench.
- H. Maintain optimum moisture content of fill materials to attain required compaction density.
- I. Do not leave more than 1000 feet of trench open at end of working day.
- J. Protect open trench to prevent danger to Owner and the public.
- K. Backfill with native material if suitable;
- L. Obtain Engineer verification that imported material is required prior to use
- M. If suitable native material, as determined by the Engineer, is not used for backfill then imported material will not be paid for.
- N. Native material with excessive or deficient moisture content will not be considered as unsuitable if the moisture content can be reasonably adjusted onsite to a level that will allow specified compaction.
- O. Unsuitable and excess material must be hauled offsite or to a location onsite where it can be incorporated into the project.

3.8 SURFACE RESTORATION

- A. Canal Fill
 - 1. Material: Onsite Backfill Type 2
 - 2. Minimum Depth: 12 inches
 - 3. Install to lines and grades indicated on plans
- B. Natural Ground Through Field
 - 1. Material: Subsoil Type S1
 - 2. Depth: 8 inches
 - 3. Restore to original grades unless otherwise instructed
- C. City/County Road
 - 1. Material: Aggregate Base Course Type A7
 - 2. Depth: 8 inches
 - 3. Match existing road or shoulder grades
 - 4. Avoid material contamination
- D. City/County Shoulder
 - 1. Material: Aggregate Base Course Type A7
 - 2. Depth: 12 inches
 - 3. Match existing road or shoulder grades
 - 4. Avoid material contamination

- E. General
 - 1. Cut and fill volumes are intended to balance over the entire site.
 - 2. Material hauling will be required to construct final grades per plans, and to balance cut and fill volumes.
 - 3. To facilitate the balancing of cut and fill volumes some flexibility in the finished ground cross sections will be allowed.
 - 4. Most canal fill areas can be used to treat excavated material requiring moisture treatment before use as trench backfill.

3.9 TOLERANCES

- A. Top surface of backfilling under paved areas: Plus or minus 1 inch from required elevations.
- B. Top surface of general backfilling: Plus or minus 1 inch from required elevations.
- C. Canal Fill: Plus or minus 0.15 feet to facilitate balancing of cut and fill materials so long as drainage issues are not created and smooth transitions and continuous grades are maintained. Additional subtle grade breaks in cross slopes outside of access road will also be permitted so long as the cross slope direction is maintained.

3.10 FIELD QUALITY CONTROL

- A. Field review and testing will be performed under provisions of Section 01400.
- B. Perform laboratory material tests in accordance with ASTM D1557
- C. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest at no cost to the Owner.
- E. The initial density test at any location will be paid for by the Owner. If the initial test shows that the material compaction is not as specified, the Contractor shall modify the compaction methods used, as approved by the Engineer, and have the material retested until the tests show that the compaction method meets with the Specification requirements. If the Contractor's compaction methods are not consistent and/or do not meet the requirements of these Specifications, the Owner reserves the right to undertake additional compaction tests as necessary to determine the extent of substandard compaction, and to charge the Contractor for all such tests.
- F. Frequency of compaction tests:
 - 1. At commencement of project to establish a compaction pattern
 - 2. Horizontal Locations: Start of trench with subsequent tests at every 1000' along the trench length.
 - 3. Vertical Locations: One at spring line, one at half the depth of the trench, one test at the top of the trench.

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4. At locations where materials or construction procedures change.
5. At additional locations and frequencies as directed by Engineer or Owner to verify to Engineer and Owner's satisfaction that the compaction density requirements have been met.

3.11 PROTECTION OF FINISHED WORK

- A. Section 01700 - Execution Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

3.12 BACKFILL SCHEDULE

- A. Trenching – inside roadways and roadway shoulders:
 1. Embedment: Imported Embedment Type A3
 2. Embedment Compaction: **90 percent** of maximum density (ASTM 1557).
 3. Trench Backfill: Onsite Backfill Type A2, or Imported Granular Backfill Type A1
 4. Trench Backfill Compaction: **95 percent** of maximum density (ASTM 1557).
 5. Surface Restoration: Aggregate Base Course Type A7
 6. Surface Restoration Compaction: **95 percent** of maximum density (ASTM 1557).
 - 7.
- B. Trenching – inside of natural ground and canal fill areas:
 1. Embedment: Onsite Embedment Type A4
 2. Embedment Compaction: **90 percent** of maximum density (ASTM 1557).
 3. Trench Backfill: Onsite Backfill Type A2, or Subsoil Type S1
 4. Trench Backfill Compaction: **85 percent** of maximum density (ASTM 1557).
 5. Surface Restoration: Subsoil Type S1
 6. Surface Restoration Compaction: **85 percent** of maximum density (ASTM 1557).

END OF SECTION

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SECTION 02371

RIPRAP AND ROCK LINING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Riprap placed loose.
- B. Related Sections:
 - 1. Section 02311 - Rough Grading.

1.2 REFERENCES

- A. AASHTO M 288: Geotextile Specification for Highway Applications

1.3 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. D₅₀=6" Riprap: solid and nonfriable; 3 inch minimum size, 9 inch maximum size. With D₅₀ of 6 inch minimum.
 - 1. Riprap Durability
 - a. L.A. Abrasion: 35% maximum
 - b. Soundness (Sodium Sulfate 5 cycles): 5% maximum
- B. D₅₀=8" Riprap: solid and nonfriable; 4 inch minimum size, 12 inch maximum size. With D₅₀ of 8 inch minimum.
 - 1. Riprap Durability
 - a. L.A. Abrasion: 35% maximum
 - b. Soundness (Sodium Sulfate 5 cycles): 5% maximum
- C. Separation Geotextile Fabric: Class II fabric as specified in AASHTO M 288, with Apparent Opening Size of 0.22 mm maximum average roll value.

PART 3 EXECUTION

3.1 PLACEMENT

- A. Place geotextile fabric over substrate.

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- B. Overlap geotextile edges 1 foot.
- C. Extend geotextile beyond fill material 1 foot.
- D. Repair: Place patch over damaged area and extend 1 foot beyond the perimeter of the tear or damage.
- E. Place riprap at culvert pipe ends, diversion structure and drain locations as indicated on Drawings to thicknesses indicated on Drawings.

END OF SECTION

SECTION 02513

WATER DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and fittings for distribution water line.
2. Valves.
3. Hydrants.
4. Underground pipe markers.
5. Flow Meters
6. Bedding and cover materials.

B. Related Sections:

1. Section 01400 – Quality Requirements
2. Section 02060 - Aggregate: Aggregate for backfill in trenches.
3. Section 02140 - Dewatering
4. Section 02324 - Trenching: Execution requirements for trenching required by this section.
5. Section 02514 – High Density Polyethylene (HDPE) Pipe

1.2 REFERENCES

A. ASTM International:

1. ASTM A536-84 - Standard Specification for Ductile Iron Castings.
2. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.
3. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
4. ASTM D1784 - Standard Specification for Rigid PVC Compounds and Chlorinated PVC Compounds Characteristics of Soil Using Standard Effort.
5. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
6. ASTM D2321-05 Standard Practice for Underground Installation of Thermoplastic pipe for Sewers and Other Gravity Flow Applications
7. ASTM D2837 - Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.
8. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
9. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
10. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.

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11. ASTM D3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Butt Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
12. ASTM D3350-05 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
13. ASTM D3350-02 - Standard Specification for Polyethylene Plastics Pipe and Fitting Materials
14. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
15. ASTM F 1055 - Standard Specification for Electrofusion Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing
16. ASTM F1417-92(Reapproved 1998) – Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air
17. ASTM F2620 - Standard Practice of Heat Fusion of Polyethylene Pipe and Fittings
18. ASTM F714-05 - Standard Specification for Polyethylene (PE) Pipe (SDR-PR) Based on Outside Diameter

B. American Water Works Association:

1. AWWA C104 – American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
2. AWWA C111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
3. AWWA C151 - American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
4. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service.
5. AWWA C502 - Dry-Barrel Fire Hydrants.
6. AWWA C504 - Rubber-Sealed Butterfly Valves.
7. AWWA C509 - Resilient-Seated Gate Valves for Water-Supply Service.
8. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
9. AWWA C706 - Direct-Reading, Remote-Registration Systems for Cold-Water Meters.
10. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. through 12 in., for Water Distribution.
11. AWWA C906 - Standard for Polyethylene pipe and fittings, 4 inch though 63 inch for Water Distribution.
12. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.
13. AWWA M23 - PVC Pipe – Design and Installation.
14. AWWA C909 – Standard for Molecularly Oriented Polyvinyl Chloride Pressure Pipe, 4 in. through 24 in. for Water Distribution.
15. AWWA C200 – Steel Water pipe – 6in. and larger
16. AWWA C206 – Field Welding of Steel Water Pipe
17. AWWA C207 – Steel Pipe Flanges for Waterworks Services 4 in. through 144 in.
18. AWWA C208 – Dimensions for Fabricated Steel Water Pipe Fittings

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.

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- B. Product Data: Submit data on pipe materials, pipe fittings, valves and accessories.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01700 - Execution Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

- A. Valves: Manufacturer's name and pressure rating marked on valve body.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Deliver and store valves in shipping containers with labeling in place.

PART 2 PRODUCTS

2.1 WATER PIPING

- A. Ductile Iron Pipe: Pressure Class 350:
 - 1. Fittings: AWWA C153, ductile-iron. Mechanical Joint or Flange type.
 - 2. Joints: with factory installed rubber gaskets conforming to ASTM-F477 and bell and spigot.
- B. PVC Pipe: ASTM D1785, Schedule 40 (For electrical conduit)
 - 1. Fittings: ASTM D2466, PVC.
 - 2. Joints: ASTM D2855, solvent weld.
- C. PVC P.I.P. Irrigation Pipe: PVC compounds shall meet or exceed ASTM D1784 cell class 12454.
 - 1. 6" to 15" conforming to Soil Conservation Service Specification SCS 430-DD
 - 2. 18" to 27" shall dimensionally comply with Annex A1 of ASTM D 2241.
 - 3. Joints: ring tight joints that meet or exceed ASTM D3139 and rubber gaskets that conform to ASTM F477.
- D. Corrugated HDPE Pipe:
 - 1. Slotted (perforated) ADS Drain Pipe: N-12, Type SP, conforming to AASHTO M252
 - 2. Solid (non-perforated) ADS Drain Pipe: N-12, conforming to AASHTO M252

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- E. Galvanized Steel Pipe: ASTM A53, "B Grade, Type S, Schedule 40, galvanized
 - 1. Fittings: Class 150 galvanized malleable iron
 - 2. Joints: Threaded
 - 3. Zinc Touch-up Paint: Allied "Matchmaker"
 - 4. Bolts: Stainless steel

- F. FBE Steel Pipe: ASTM A53, "B Grade, standard wall thickness
 - 1. Flanges:
 - a. ASTM A105 Grade B 150 # rating,
 - b. Flat faced and compatible with connecting pipe.
 - c. Welding neck or slip on flanges, Double weld slip on flanges
 - d. Hub style, slip-on in accordance with AWWA C207, Class D.
 - e. Flat faced or raised face: compatible with connecting pipe.
 - 2. Gasket: Sized to match mating flange, 1/16 inch thickness.
 - 3. Coating: Fused Bonded Epoxy
 - 4. Pipe and Fitting Coating: fusion-boded epoxy, Shop applied 100% solids, thermosetting, dry powder epoxy resin. Provide Scotchkote 134 or 206N, Lilly Powder Coatings "Pipeclad 1500 Red"
 - 5. Field applied epoxy coating for patching: two-component, 80% solids, liquid epoxy resin, such as Scotchkote 306.
 - 6. Polyethylene Encasement: wrap all buried fittings and flanges
 - 7. Bolts: Stainless steel

- G. Fabricated Manifolds
 - 1. Fabrication shall comply with ASME B31.3, Chapter V
 - 2. Zinc Hot-Dip Galvanized Coatings: meet requirements of ASTM A 123
 - 3. Bolts: Stainless steel

2.2 BUTTERFLY VALVES FOR TURNOUTS

- A. Manufacturers:
 - 1. Fresno Series 8500 Butterfly Valve with 2" nut for actuation
 - 2. Substitutions: Section 01600 - Product Requirements

- B. Install valve spacers to ensure the valve disk will clear the pipe material when valve is in the open position.

- C. Pipe transitions as necessary from pipe size to next smallest valve size, when the pipe size is different from an available valve size.

- D. Provide stems and stem extensions as required so hand wheel is at correct height

2.3 BUTTERFLY VALVES FOR MAIN LINE ISOLATION VALVES

- A. Main line isolation valves shall be butterfly valves of the short body type, cast iron body, cast or ductile iron disc, Type 304 stainless steel shafts, Buna-N or EPDM rubber seat bonded or molded in body only, and stainless steel seating surface. Provide fusion bonded epoxy lining and coating in compliance with AWWA C550.

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- B. Manufacturers:
 - 1. Mueller
 - 2. Clow
 - 3. Substitutions: Section 01600 - Product Requirements
- C. Install valve spacers to ensure the valve disk will clear the pipe material when valve is in the open position.
- D. Pipe transitions as necessary from pipe size to next smallest valve size, when the pipe size is different from an available valve size.
- E. Provide stems and stem extensions as required so hand wheel is at correct height

2.4 GATE VALVES

- A. Gate valves shall be iron body, non-rising bronze stem, resilient seated type, manufactured to equal or exceed all applicable AWWA standards of C515 latest revision.
- B. Manufacturers:
 - 1. Mueller
 - 2. Clow
 - 3. Substitutions: Section 01600 - Product Requirements
- C. Pipe transitions as necessary from pipe size to next smallest valve size, when the pipe size is different from an available valve size.

2.5 AIR/VACUUM VALVE

- A. Manufacturers:
 - 1. Waterman AV-150 Air vent and vacuum relief valve
 - 2. Fresno Series 3000 Air Vent & Vacuum Relief Valve
 - 3. Substitutions: Section 01600 - Product Requirements

2.6 AIR RELIEF VALVE

- A. Manufacturers:
 - 1. Crispin Air Release Valves 1" PL10 w/ 5/16" orifice, 2" PL20 w/ 3/8"
 - 2. Substitutions: Section 01600 - Product Requirements

2.7 COMBINATION AIR VALVE 2", 3" and 4"

- A. Manufacturers:
 - 1. Waterman CR-101 Continuous Acting Air Vent and Vacuum Relief Valve
 - 2. Fresno Series 3500 – Continuous Acting Air Vent
 - 3. Substitutions: Section 01600 Product Requirements.

2.8 FLOW METER

- A. Ultrasonic Transit-time
 - 1. Spirax/Sarco UTM20 Ultrasonic Transit Time Flow Meter for 12vDC

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2. Transducers
 - a. Pipe O.D. 10" diameter and greater: UTT10 Ultrasonic Transit Time Transducer 0.5 Mhz for large pipe with NEMA6P Option and cable length as indicated in the drawings
 - b. Pipe O.D. 8" diameter and smaller: UTT10 Ultrasonic Transit Time Transducer 1.0 Mhz for small pipe with NEMA6P Option and cable length as indicated in the drawings
3. Remote Power Supply Kit
 - a. White Fiberglass Enclosure with back plate, pole mount bracket and cable entry conduit with internal dimensions of 16x18x9.
 - b. 12vDC charge regulator/controller
 - c. 30-watt solar panel with bracket and 15' lead
 - d. 12vDC deep cycle marine battery
4. Local Retailer: Frontier Precision
Steve Combe
801-791-3407

- B. Electromagnetic Meter
1. McCrometer DuraMag, battery operated, with SENSUS output
 2. Substitutions: Section 01600 – Product Requirements
 3. Local Retailer: Frontier Precision
Steve Combe
801-791-3407

2.9 UNDERGROUND PIPE MARKERS

- A. Tracer Wire: 12 gauge solid HMWPE tracer wire meeting NESC standards
- B. Direct Bury Wire Nuts: 3M DBY-6 or DBR-6
- C. Magnetized Tracer Wire Access Box: "Snake Pit" brand lite duty box w/ purple colored cover
- D. Magnetic Locator Tape: 3-inch wide furnished with the words CAUTION: NONPOTABLE WATER – DO NOT DRINK in black or white printing on a purple color field.

2.10 ABOVE GROUND UTILITY MARKERS

- A. Pipe Markers
1. Description: Dual Sided Marker with above ground height of 4.0 ft. (66" long) in White with 18"x2-7/8" 2 color vinyl decal on each side of marker that reads "CAUTION" in white lettering on a purple background, "IRRIGATION PIPELINE" in purple lettering on a white background:
 - a. STA 1+24 to STA 144+00, "BEFORE DIGGING CALL CO-OP FARM IRRIGATION COMPANY"
 - b. STA 144+00 TO 339+50, "BEFORE DIGGING CALL HUNTSVILLE SOUTH BENCH CANAL COMPANY"
 - c. Irrigation company information shall be in purple lettering on a white background.

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- 2. Manufacturers:
 - a. Carsonite Composites: www.carsonite.com
1-800-648-7916
 - b. Local retailer: PMI Equipment
801-392-5700
 - c. Substitutions: Section 01600 - Product Requirements

2.11 Above Ground Utility Marker Post Driver

- A. Manufacturers:
 - 1. Carsonite brand model RMTLPDR1 postdriver (for posts 5'-6')

2.12 BEDDING AND COVER MATERIALS

- A. Foundation Material: Fill Type A5 as specified in Section 02060
- B. Embedment Material: Fill Type A4 as specified in Section 02060.
- C. Backfill Material: Fill Type A2, as specified in Section 02060.
- D. Aggregate Base Course: Fill Type A7
- E. Soil Type S1, S2, as specified in Section 02055. Subsoil with no rocks over 6 inches in diameter, frozen earth or foreign matter.

2.13 ACCESSORIES

- A. Steel bolts: ANSI /ASME B18.21, ASTM A307 hex bolt. ANSI/ASME B1.1 Class 2A thread fit.
- B. Steel nuts: ANSI /ASME B18.2, ASTM F594 A307 hex nut. ANSI/ASME B1.1 Class 2B thread fit.
- C. Gaskets: 1/8" 150# red rubber ring gasket ASTM D-1330 Class 2/ASTM D-2000 Type AA.
- D. Gaskets: 1/8" Neoprene between concrete and HDPE flange adaptor.
- E. Concrete for Thrust Restraints: Concrete type specified in Section 03300.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify building service connection and municipal utility water main size, location, and invert are as indicated on Drawings.

3.2 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.
- D. All threaded connections shall be coated in anti-seizing compound.

3.3 INSTALLATION - BEDDING

- A. Excavate pipe trench in accordance with Section 02324 for Work of this Section.
- B. Backfill around sides and to top of pipe in accordance with Section 02324.
- C. Place fill material in accordance with Section 02324.

3.4 INSTALLATION - PIPE

- A. Install piping and fittings to AWWA M55 "PE Pipe – Design and Installation".
- B. Under no circumstances shall the pipe or accessories be dropped into the trench.
- C. Install pipe in accordance with alignment and grades shown on Drawings.
- D. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- E. The open ends of all pipeline under construction shall be covered and effectively sealed at the end of the day's work.
- F. Establish elevations of buried piping with not less than 2 ft of cover or cover less than the pipe diameter for sizes greater than 2 ft in diameter unless otherwise specified.
- G. Backfill trench in accordance with Section 02324.
- H. Restore surface improvements per 02924.

3.5 INSTALLATION – PAINTING AND COATING

- A. Apply fuse-bonded epoxy coating coating per AWWA C213
- B. Painting & Coating: Coat exterior surfaces of fusion-bonded epoxy pipe in vaults
- C. Field Repairs to Coatings: Patch scratches and damaged areas incurred while installing fusion-bonded epoxy pipe with a two-component, 80% solids (minimum), liquid epoxy resin. Wire brush or sandblast the damaged areas per SSPC SP-10. Lightly abrade or sandblast the pipe lining and coating on the sides of the damaged area before applying the liquid epoxy coating. Apply the liquid epoxy coating to damaged linings and coatings to areas smaller than 20 square inches. Patched areas shall overlap the parent or base

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coating a minimum of 1/2-inch. If a damaged area exceeds 20 square inches, remove the entire pipe lining and coating and recoat the entire piping and retest. Apply the liquid epoxy coating to a minimum dry-film

- D. Thickness: of 12 mils.

3.6 INSTALLATION – PIPE MARKERS

- A. Tracer Wire: installed according to NESC standards, and installed on top of pipe. Tracer wire should be looped around valve stems and attached with zip ties.
- B. Magnetic Locator Tape: installed 24" below ground surface plus/minus 6"
- C. Above Ground Marker: installed 500 ft min along center of main line pipe and at points of curvature, tangency and at least one point on curve.

3.7 INSTALLATION – FITTINGS

- A. Ensure that branch leg of tee is plumb for vertical branches and at appropriate grade for lateral branches to avoid unnecessary high and low spots.
- B. All threaded connections shall be coated in anti-seizing compound.

3.8 INSTALLATION - VALVES

- A. Provide valve spacers at all butterfly valve locations
- B. Provide concrete or gravel support pad beneath horizontal flanged valves wrapped in plastic
- C. Center and plumb valve stem over valve. Set hand wheel to required heights above ground.

3.9 FIELD QUALITY CONTROL

- A. Section 01700 - Execution Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Compaction Testing for Bedding: In accordance with ASTM D698. ASTM D2922. ASTM D3017.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Frequency of Compaction Tests: trench in accordance with Section 02324
- E. HDPE pipe damaged during construction shall be repaired with permanent fusion. Pipe clamps may be used as a temporary repair.

END OF SECTION

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SECTION 02514

HIGH DENSITY POLYETHYLENE (HDPE) PIPE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe material
 - 2. Fitting material
 - 3. Joining methods
 - 4. General installation practice
- B. Related Sections:
 - 1. Section 01400 – Quality Requirements
 - 2. Section 02060 - Aggregate: Aggregate for backfill in trenches.
 - 3. Section 02140 - Dewatering
 - 4. Section 02324 - Trenching: Execution requirements for trenching required by this section.
 - 5. Section 02513 – Water Distribution System

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM F 585 Standard Guide for Insertion of Flexible Polyethylene Pipe Into Existing Sewers
 - 2. ASTM F 714 Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter
 - 3. ASTM F 905 Standard Practice for Qualification of Polyethylene Saddle-Fused Joints
 - 4. ASTM F 1055 Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe
 - 5. ASTM F 1290 Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings
 - 6. ASTM F 1962 Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit under Obstacles, Including River Crossings
 - 7. ASTM F 2164 Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure
 - 8. ASTM F2206 Standard Specification for Fabricated Fittings of Butt-Fused Polyethylene (PE) Plastic Pipe, Fittings, Sheet Stock, Plate Stock, or Block Stock
 - 9. ASTM D 2321 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
 - 10. ASTM F 2620 Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings

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11. ASTM D 2683 Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing
 12. ASTM D 2737 Standard Specification for Polyethylene (PE) Plastic Tubing
 13. ASTM D 2774 Standard Practice for Underground Installation of Thermoplastic Pressure Piping
 14. ASTM F 2880 Standard Specification for Lap-Joint Type Flange Adapters for Polyethylene Pressure Pipe in Nominal Pipe Sizes 3/4 in. to 65 in.
 15. ASTM F 3124 Standard Practice for Data Recording the Procedure Used to Produce Heat Butt Fusion Joints
 16. ASTM D 3261 Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
 17. ASTM D 3035 Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter • ASTM D 3350 Standard Specification for Polyethylene Plastics Pipe and Fittings MaterialsASTM A536-84 - Standard Specification for Ductile Iron Castings.
- B. ANSI/AWWA:
1. ANSI/AWWA C901 Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm) for Water Service
 2. ANSI/AWWA C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm), for Water Distribution and Transmission
 3. ANSI/AWWA C651 Standard for Disinfecting Water Mains
 4. AWWA M55 Manual of Water Supply Practices, PE Pipe–Design and Installation AWWA C104
- C. Plastics Pipe Institute, PPI:
1. PPI Handbook of Polyethylene Pipe – 2009 (2ndEdition)
 2. PPI Municipal Advisory Board (MAB) Generic Electrofusion Procedure for Field Joining of 12 Inch and Smaller Polyethylene (PE) Pipe
 3. PPI Material Handling Guide for HDPE Pipe and Fittings
 4. PPI TR-33 Generic Butt Fusion Joining Procedure for Polyethylene Gas Pipe
 5. PPI TR-34 Disinfection of Newly Constructed Polyethylene Water Mains
 6. PPI TR-38 Bolt Torque for Polyethylene Flanged Joints
 7. PPI TN-42 Recommended Minimum Training Guidelines for PE Pipe Butt Fusion Joining Operators for Municipal and Industrial
 8. PPI TR-46 Guidelines for Use of Mini-Horizontal Directional Drilling for Placement of High Density Polyethylene Pipe
- 1.3 SUBMITTALS
- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Submit product data for all pipe and appurtenances.
- C. Furnish in duplicate to the Engineer confirmation that product shipped meets or exceeds the standards set forth in this specification. This shall be in the form of a written document from the manufacturer attesting to the manufacturing process meeting the standards.

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- D. Provide a statement that personnel responsible for fusing the pipe have been trained and qualified.
- E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01700 - Execution Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of piping mains, connections, thrust restraints, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

PART 2 PRODUCTS

2.1 HIGH DENSITY POLYETHYLENE MATERIALS

- A. Resin and Material Requirements
 - 1. All material shall be manufactured from a PE 4710 resin listed with the Plastic Pipe Institute (PPI) as TR-4.
 - 2. The resin material shall meet the specifications of ASTM D 3350 with a minimum cell classification of 445474C.
 - 3. HDPE pipe and fittings shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material.
 - 4. HDPE products shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects.
- B. HDPE Pipe
 - 1. Pipe shall be made of HDPE material with a minimum material designation code of PE4710 and with a minimum Cell Classification as noted in 2.1.A.
 - 2. The polyethylene compound shall be suitably protected against degradation by ultraviolet light by means of carbon black of not less than 2 percent.
 - 3. The manufacture of the HDPE resin shall certify the cell classification indicated.
 - 4. Pipe sizes 3" and larger shall have a manufacturing standard of ASTM F 714, while pipe smaller than 3" shall be manufactured to the dimensional requirements listed in ASTM D 3035.
 - 5. Dimension Ratio (DR) and Outside Diameter (IPS) shall be as specified on plans. All HDPE pipe shall be Iron Pipe Size (IPS)
 - 6. Pipe shall meet AWWA C901 (1/2" to 3") or AWWA C906 (4" to 63"), and shall be listed as meeting NSF-61.

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- C. HDPE Fittings
1. Butt Fusion Fittings
 - a. Fittings shall be made of HDPE material with a minimum material designation code of PE4710 and with a minimum Cell Classification as noted in 2.1.A.
 - b. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans or accepted by owner/engineer.
 - c. All fittings shall meet the requirements of AWWA C901 or C906.
 - 1) Molded fittings shall comply with the requirements of ASTM D 3261.
 - 2) All fabricated elbows, tees, reducing tees and end caps shall be produced and meet the requirements of ASTM F 2206.
 - a) Each fitting will be marked per ASTM F 2206 section 10 including the nominal size and fitting EDR, which will meet or exceed the pipe DR identified for the project.
 - b) Fabricated fittings shall be manufactured with recorded fusion pressure and temperature, and shall be stamped with unique joint number that corresponds to the joint report.
 - c) A graphic representation of the temperature and pressure data for all fusion joints made producing fittings shall be maintained for a minimum of 5 years as part of the quality control and will be available upon request of owner.
 - d) Test results to validate ASTM F 2206 section 7.3 and 9 shall be provided to owner or owner's representative upon request.
 - 3) Socket fittings shall meet ASTM D 2683.
 2. Electrofusion Fittings
 - a. Fittings shall be made of HDPE material with a minimum material designation code of PE 4710 and with a minimum Cell Classification as noted in 2.1.A.
 - b. Electrofusion Fittings shall have a manufacturing standard of ASTM F1055.
 - c. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans.
 3. Bolted Connections
 - a. Flanges and MJ Adapters shall be fused onto the pipe and have a minimum pressure rating equal to or greater than the pipe unless otherwise specified on the plans.
 - b. Ductile Iron back-up rings (Van-Stone style lap joint flanges), shall have a radius on the inside diameter of the bore so as to be compatible with HDPE Flanges.
 - c. Back up rings shall have bolt pattern that will mate with AWWA C207 Class D (generically known as 150 pound patterns).

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- d. Steel Bolts shall be ASTM A307 carbon steel bolts, zinc plated per ASTM B633, and conform to ANSI B18.2.1 with heavy hex steel nuts conforming to ANSI B18.2.2.
 - e. Gaskets shall be 1/8" 150# red rubber ring gasket, ASTM D1330, Grade II, SBR. Durometer 75+/-5 Shore A/Red Color.
 - f. Bolted connections shall be greased with Poly FM Grease, and Complet loop wrapped in 8 mil thick Poly Wrap after connections have been made.
 - g. Where shown on the drawings, 4" and larger transitions to mechanical joint fittings and valves shall be accomplished using a MJ Adapter with kit.
 - 1) The D.I./HDPE mechanical joint adaptor shall consist of an HDPE mechanical joint transition fitting, rubber gasket, a mechanical joint backup drive ring, and Corten mechanical joint tee bolts.
4. Mechanical Fittings:
- 1) The use of mechanical coupling and saddles shall be approved by the owner or engineer prior to installation.
 - 2) Mechanical Fittings shall be designed for use and compatible with HDPE pipe, including SS stiffeners when required by manufacturer.
 - 3) Mechanical fittings shall have a pressure rating equal to or greater than the pipe.
- D. Fusion Equipment Requirements
- 1. Butt fusion equipment must be in satisfactory working order and the hydraulic system must be leak free.
 - 2. Heater plates shall be free from scrapes, gouges, and have a consistent clean coated surface.
 - 3. The pressure gage and thermometer should be checked for accuracy.
 - 4. When requested by the owner, records showing a maintenance service/inspection within 3 months prior to use for this project shall be provided.
 - 5. Electrofusion Processors shall be maintained and calibrated per manufacturer's requirements and recommendations.

2.2 UNDERGROUND PIPE MARKERS

- A. Tracer Wire:
- 1. All HDPE pipe 4" and greater shall be installed with an extra high-strength, copper clad steel tracer wire including 30 mil HDPE jacket that has a minimum average break load of at least 300 lbs.
 - 2. The jacket shall be colored purple for reclaimed water.
 - 3. Tracer wire gauge shall be 12 AWG.
- B. Tracer Wire Splice:
- 1. Tracer wire shall be continuous between tracer wire access box with splices as necessary.
 - 2. Splices shall be made with direct bury wire nuts, 3M DBY-6 or DBR-6, or equal
- C. Tracer Wire Access Box: "Snake Pit" brand lite duty box w/ purple colored cover

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1. Tracer wire shall be continuous and brought up in Magnetized Tracer Wire Access Box as indicated on plans and/or at the following locations:
 - a. Main line air valve assemblies
 - b. Turnout boxes
 - c. Last air vent on direct connection turnouts
- D. Magnetic Locator Tape:
 1. 3-inch wide furnished with the words CAUTION: NONPOTABLE WATER – DO NOT DRINK in black or white printing on a purple color field.
 2. 5 mil minimum thickness with a solid aluminum core of 0.35 mil minimum thickness.
 3. 35 lbs./inch tensile strength.

PART 3 EXECUTION

3.1 GENERAL

- A. All HDPE pipe and fittings shall be cut, joined, and installed in accordance with the manufacturer's recommendations.
- B. Joining, laying, and pulling of polyethylene pipe shall be accomplished by personnel experienced in working with polyethylene pipe systems.

3.2 TRANSPORTATION, UNLOADING, AND STORAGE

- A. The transportation carriers shall use appropriate methods and intermittent checks to insure the pipe is properly supported, stacked and restrained during transportation such that the pipe is not nicked, gouged, or physically damaged.
- B. During loading, transportation, and unloading, every precaution should be taken to prevent damage to the pipe. Handle the pipe in accordance with the PPI Handbook of Polyethylene Pipe (2nd Edition), Chapter 2.
- C. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tiers shall be kept off the ground on timbers, rails, or concrete. Pipe shall not be stored close to heat sources.
- D. The open ends of all sections of joined and/or installed pipe (not in service) shall be plugged to prevent animals or foreign material from entering the pipe line. All sealing surfaces of mating components (i.e. flange faces) shall be kept free from dirt or debris at all times

3.3 PIPE INSPECTION

- A. All pipe and fittings shall be subjected to visual inspection at time of delivery and before they are installed or lowered into the trench to be laid.
- B. Defective, damaged, or unsound pipe will be rejected.

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- C. Cuts, punctures, or gouges that penetrate or reduce the wall thickness by 10% or more are not acceptable and must be removed and discarded.

3.4 HANDLING PIPE

- A. The handling of the pipeline shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects.
- B. Sections of the pipes with cuts and gouges exceeding 10 percent of the pipe wall thickness or kinked sections shall be removed and the ends rejoined.
- C. Refer to the PPI Material Handling Guide for HDPE Pipe and Fittings for recommendations, guidelines and instructions regarding the handling, lifting, loading, storing and installing polyethylene pipe and fittings.

3.5 PIPE JOINING AND INSTALLATION

- A. Direct Burial
 - 1. Buried HDPE pipe and fittings shall be installed in accordance with ASTM D 2321 or ASTM D 2774 for pressure systems and AWWA Manual of Practice M55 Chapter 8.
 - 2. The Design Window identified in AWWA M55 Chapter 5 (page 65 of 2006 version) shall be considered acceptable design and installation conditions.
 - 3. Unless required by the owner's engineer, no thrust blocks shall be placed in the HDPE pipe system since the fused system is fully restrained.
- B. Trenchless Installation Methods
 - 1. Installation of HDPE Pipe by Directional Boring shall follow the guidelines for ASTM F 1962 or PPI TR-46.
 - 2. Installation of HDPE Pipe by slip lining shall follow the guidelines outlined in ASTM F 585.
 - 3. Installation of HDPE Pipe by pipe bursting shall be performed by a company who is a member of the International Pipe Bursting Association (IPBA) and shall offer an installation plan that meets the IPBA Guidelines for Pipe Bursting.
- C. Fusion Joining Requirements:
 - 1. All HDPE pipe shall be joined to itself by the heat fusion process which produces homogeneous, seal, leak tight joints. Tie-ins between sections of HDPE pipe shall be made by butt fusion whenever possible.
 - 2. Butt Fusion:
 - a. The pipe shall be joined by the butt fusion procedure outlined in ASTM F 2620 or PPI TR-33.
 - b. A record or certificate of training for the fusion operator must be provided that documents training to the fundamentals of ASTM F 2620.
 - c. Considerations should be given to and provisions made for adverse weather conditions, such as temperatures below freezing, precipitation, or wind, which is accepted by the owner/engineer.
 - d. Burrs do not need to be removed.
 - 3. Electrofusion:

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- a. Electrofusion joining shall be done in accordance with the manufacturers recommended procedure.
 - b. Other sources of electrofusion joining information are ASTM F 1290, PPI TN 34, and PPI Municipal Advisory Board (MAB) Generic Electrofusion Procedure for Field Joining of 12 Inch and Smaller Polyethylene (PE) Pipe.
 - c. The electrofusion processor must be capable of reading and storing the input parameters and the fusion results for later download to a record file.
 - d. Qualification of the fusion technician shall be demonstrated by evidence electrofusion training within the past year on the equipment to be utilized for this project.
 - D. Fusion Operators:
 - 1. The employer of the fusion machine operator is responsible for the fusion joint quality of the fusion weld made by that individual. The employer is responsible for documenting all qualification and training records of that individual.
 - 2. All HDPE fusion equipment operators shall be qualified to the procedure used to perform pipe joining.
 - 3. Fusion equipment operators shall have current, formal training on all fusion equipment employed on the project.
 - 4. Training received more than two years prior to operation with no evidence of activity within the past 6 months shall not be considered current.
 - 5. For Projects with at least 5,000 feet or with pipe larger than 24 inches, operators or their supervisor must have a current McElroy Fusion Training Certificate for the equipment to be used on the project.
 - E. Butt Fusion Equipment:
 - 1. For 6" and larger pipe sizes, the pipe butt fusion machine shall be a hydraulic fusion machine capable of butt fusing HDPE pipe.
 - 2. The machine must be compatible with an electronic data recording device, McElroy DataLogger or equal.
 - 3. Accessories will include all butt fusion inserts for the specified range of pipe sizes, a pyrometer kit for checking the surface temperature of the heater, extension cord (25' minimum), and hydraulic extension hoses (minimum of four).
- 3.6 FLUSHING, CLEANING, AND DISINFECTING
- A. All mains shall be cleaned to remove all foreign matter.
 - B. Flushing of the pipeline will not be required.
 - C. Disinfection of the pipeline will not be required.
- 3.7 TESTING AND LEAKAGE
- A. A pressure test will not be required.
 - B. The system will be put into service at the beginning of the irrigation season, which will constitute a pressure test.

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- C. Any leakage that is observed after the pipeline is put into service shall be repaired immediately by the contractor at no additional cost to the Owner.
- D. The contractor shall immediately repair or replace all defective materials and/or workmanship at no additional cost to the Owner.

END OF SECTION

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SECTION 02721

AGGREGATE BASE COURSE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Aggregate Base Course.
- B. Related Sections:
 - 1. Section 02060 - Aggregate Materials.
 - 2. Section 02324 - Trenching: Compacted fill under base course.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Aggregate Base Course:
 - 1. Basis of Measurement: By Ton.
 - 2. Basis of Payment: Includes supplying and placing aggregate base course.

1.3 REFERENCES

- A. ASTM International:
 - 1. ASTM D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
 - 2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 3. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 5. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Aggregate Base Course Type A7: As specified in Section 02060.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.2 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place fill on soft, muddy, or frozen surfaces.

3.3 AGGREGATE PLACEMENT

- A. Spread aggregate over prepared substrate to a total compacted thickness as noted on the plans.
- B. Place aggregate in maximum 8 inch layers and compact to specified density.
- C. Level and contour surfaces to elevations and gradients indicated.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.4 TOLERANCES

- A. Section 01400 - Quality Requirements: Tolerances.
- B. Maximum Variation From Flat Surface: 1/4 inch measured with 10 foot straight edge.
- C. Maximum Variation From Thickness: 1/4 inch.
- D. Maximum Variation From Elevation: 1/2 inch.

3.5 FIELD QUALITY CONTROL

- A. Section 01700 - Execution Requirements: Testing, adjusting, and balancing.

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- B. Compaction testing will be performed in accordance with ASTM D1556. ASTM D1557. ASTM D2167. ASTM D2922. ASTM D3017.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Frequency of Tests: 1000 feet or as specified by Engineer.

3.6 COMPACTION

- A. Compact placed aggregate materials uniformly to achieve required compaction

END OF SECTION

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SECTION 02924

SEEDING AND SOIL SUPPLEMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Preparation of subsoil.
 - 2. Placing topsoil.
 - 3. Seeding.
 - 4. Mulching.
 - 5. Soil testing [and fertilizer].
 - 6. Maintenance.
- B. Related Sections:
 - 1. Section 02055 - Soils: Topsoil material.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

1.3 DEFINITIONS

- A. Weeds: Vegetative species other than specified species to be established in given area.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data for seed mix, and other accessories.
- C. Manufacturer's Certificate: Certify seeds meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01700 - Execution Requirements: Requirements for submittals.

1.6 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.

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1.7 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum 2 years' experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

1.9 COORDINATION

- A. Section 01300 - Administrative Requirements: Requirements for coordination.

PART 2 PRODUCTS

2.1 SEED MIXTURE

- A. Wildrye Grass Blend
 - 1. Russian Wildrye (Bozoisky Select) 100 percent
 - 2. PLS seeding rate:
 - a. 12 pounds/acre - drilled
 - b. 24 pounds/acre – broadcast seed
- B. Native Grass Mixture:
 - 1. Slender Wheatgrass: 15 percent.
 - 2. Streambank Wheatgrass: 25 percent.
 - 3. Needleandthread: 15 percent.
 - 4. Indian Ricegrass: 45 percent.
 - 5. PLS seeding rate:
 - a. 12 pounds/acre - drilled
 - b. 24 pounds/acre – broadcast seed

2.2 SOIL MATERIALS

- A. Topsoil: Excavated from site and free of weeds.

2.3 ACCESSORIES

- A. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
- B. All new seeding shall be done prior to final completion.
- C. No seeding shall be done on snow-covered soil or during unfavorable weather conditions.
- D. Verify prepared soil base is ready to receive the Work of this section.

3.2 PREPARATION OF PLANTING AREA

- A. Prepare soil to eliminate uneven areas, low spots and to ensure positive drainage. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots.
- C. Scarify subsoil to depth of 4 inches where soil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.3 DRILL SEEDING

- A. Use to seed all disturbed areas with slopes less than 6:1, except for access roads, county roads and other identified areas
- B. Apply seed at prescribed rates evenly.
- C. Do not seed access road areas.
- D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph

3.4 BROAD CAST SEEDING

- A. Use in areas that are too steep for drill seeding
- B. Apply seed at prescribed rates evenly.
- C. Do not seed access road areas.
- D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph

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3.5 FINAL ACCEPTANCE:

- A. A final inspection shall be held prior to the end of the maintenance period to insure that the seeding has reached an eighty (80) percent germination rate and general plan establishment has been obtained.
- B. Areas with less than eighty (80) percent germination rate shall be prepared and re-seeded as described in this section at the contractor's expense.

3.6 SCHEDULE

- A. Cultivated Field Restoration: Wildrye Grass Mixture.
- B. Native Surface Restoration: Native Grass Mixture.

END OF SECTION

SECTION 03100

CONCRETE FORMS AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Formwork for cast-in place concrete.
 - 2. Shoring, bracing, and anchorage.
 - 3. Form accessories.
 - 4. Form stripping.
- B. Related Sections:
 - 1. Section 03200 - Concrete Reinforcement.
 - 2. Section 03300 - Cast-in-Place Concrete.
 - 3. Section 05500 - Metal Fabrications: Product requirements for metal fabrications for placement by this Section.

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
 - 2. ACI 301 - Specifications for Structural Concrete.
 - 3. ACI 318 - Building Code Requirements for Structural Concrete.
 - 4. ACI 347 - Guide to Formwork for Concrete.
 - 5. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures
- B. American Forest and Paper Association:
 - 1. AF&PA - National Design Specifications for Wood Construction.
- C. The Engineered Wood Association:
 - 1. APA/EWA PS 1 - Voluntary Product Standard for Construction and Industrial Plywood.
- D. ASTM International:
 - 1. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- E. West Coast Lumber Inspection Bureau:
 - 1. WCLIB - Standard Grading Rules for West Coast Lumber.

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1.3 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring and bracing to conform to design and code requirements to achieve concrete shape, line and dimension as indicated on Drawings.

1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 347.
- B. For wood products furnished for work of this Section, comply with AF&PA.

1.6 COORDINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate this Section with other sections of work, requiring attachment of components to formwork.

PART 2 PRODUCTS

2.1 WOOD FORM MATERIALS

- A. Form Materials: At discretion of Contractor.

2.2 PREFABRICATED FORMS

- A. Manufacturers:
 - 1. Aluma-Systems Inc., Burke Co.
 - 2. Economy Forms Corp.
 - 3. Molded Fiber Glass Concrete Forms Co.
 - 4. Perma Tubes.
 - 5. Sonoco Products Co.
 - 6. Symons Corp.
 - 7. Western Forms, Inc.
 - 8. Substitutions: Section 01600 - Product Requirements

2.3 FORMWORK ACCESSORIES

- A. Form Ties: Removable or Snap-off type, galvanized metal, adjustable length, cone type, with waterproofing washer, free of defects capable of leaving holes larger than 1 inch in concrete surface.

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- B. Spreaders: Standard, non-corrosive metal form clamp assembly, of type acting as spreaders and leaving no metal within 1 inch (25 mm) of concrete face. Wire ties, wood spreaders or through bolts are not permitted.
- C. Form Anchors and Hangers:
 - 1. Do not use anchors and hangers exposed concrete leaving exposed metal at concrete surface.
 - 2. Symmetrically arrange hangers supporting forms from structural steel members to minimize twisting or rotation of member.
 - 3. Penetration of structural steel members is not permitted.
- D. Form Release Agent: Colorless mineral oil that will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.
 - 1. Manufacturers:
 - a. Arcal Chemical Corporation Arcal-80.
 - b. Industrial Synthetics Company Synthex.
 - c. Nox-Crete Company Nox-Crete Form Coating.
 - d. Substitutions: Section 01600 - Product Requirements.
- E. Corners: Chamfer corners and edges $\frac{3}{4} \times \frac{3}{4}$ inch
- F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size, strength and character to maintain formwork in place while placing concrete.
- G. Plastic Water Stops: Polyvinyl chloride, minimum 1,750 psi tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, 4 inch wide, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.
 - 1. Manufacturers:
 - a. Sika Greenstreak PVC Waterstop.
 - b. Vinylex Corp.
 - c. BoMetals, Inc.
 - d. Substitutions: Section 01600 - Product Requirements.
- H. Hydrophilic Waterstop: Flexible strip of nonbentonite hydrophilic compound in coil form for joints in concrete construction.
 - 1. Sika Hydrotite Model CJ-1020-2K with Sikaflex Leakmaster LV-Z adhesive and sealant.
 - 2. JLM Associates, Adeka Ultra Seal Model MC-2010MN with 3M-2141 adhesive and P-121 sealant. (between two mats of rebar only)
 - 3. Substitutions: Section 01600 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.

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- B. Verify lines, levels, and centers before proceeding with formwork. Verify dimensions agree with Drawings.
- C. When formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Architect/Engineer.

3.2 INSTALLATION

- A. Earth Forms:
 - 1. Earth forms are not permitted.
- B. Formwork - General:
 - 1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.
 - 2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
 - 3. Camber forms where necessary to produce level finished soffits unless otherwise shown on Drawings.
 - 4. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
 - 5. Complete wedging and bracing before placing concrete.
- C. Forms for Smooth Finish Concrete:
 - 1. Use steel, plywood or lined board forms.
 - 2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
 - 3. Install form lining with close-fitting square joints between separate sheets without springing into place.
 - 4. Use full size sheets of form lines and plywood wherever possible.
 - 5. Tape joints to prevent protrusions in concrete.
 - 6. Use care in forming and stripping wood forms to protect corners and edges.
 - 7. Level and continue horizontal joints.
 - 8. Keep wood forms wet until stripped.
- D. Framing, Studding and Bracing:
 - 1. Space studs at 16 inches on center maximum for boards and 12 inches on center maximum for plywood.
 - 2. Size framing, bracing, centering, and supporting members with sufficient strength to maintain shape and position under imposed loads from construction operations.
 - 3. Construct beam soffits of material minimum of 2 inches thick.
 - 4. Distribute bracing loads over base area on which bracing is erected.
 - 5. When placed on ground, protect against undermining, settlement or accidental impact.
- E. Erect formwork, shoring, and bracing to achieve design requirements, in accordance with requirements of ACI 301.

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- F. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- G. Obtain Engineer's approval before framing openings in structural members not indicated on Drawings.
- H. Install chamfer strips on external corners of walls.
- I. Do not reuse wood formwork more than 2 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.3 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces are indicated to receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.
- D. Reuse and Coating of Forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer's specifications. Do not coat forms for concrete indicated to receive "scored finish". Apply form coatings before placing reinforcing steel.

3.4 INSTALLATION - INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Install formed openings for items to be embedded in or passing through concrete work.
- B. Locate and set in place items required to be cast directly into concrete.
- C. Coordinate with Work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
- D. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- E. Install water stops continuous without displacing reinforcement.
- F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.
- H. Form Ties:
 - 1. Use sufficient strength and sufficient quantity to prevent spreading of forms.

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2. Place ties at least 1 inch (25 mm) away from finished surface of concrete.
 3. Leave inner rods in concrete when forms are stripped.
 4. Space form ties equidistant, symmetrical and aligned vertically and horizontally unless otherwise shown on Drawings.
- I. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.
- J. Construction Joints:
1. Install surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints.
 2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
 3. Show no overlapping of construction joints. Construct joints to present same appearance as butted plywood joints.
 4. Arrange joints in continuous line straight, true and sharp.
- K. Embedded Items:
1. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.
 2. Do not embed wood or uncoated aluminum in concrete.
 3. Obtain installation and setting information for embedded items furnished under other Specification sections.
 4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
 5. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318, Section 6.3.
- L. Openings for Items Passing Through Concrete:
1. Frame openings in concrete where indicated on Drawings. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.
 2. Coordinate work to avoid cutting and patching of concrete after placement.
 3. Perform cutting and repairing of concrete required as result of failure to provide required openings.
- M. Screeds:
1. Set screeds and establish levels for tops of concrete slabs and levels for finish on slabs.
 2. Slope slabs to drain where required or as shown on Drawings.
 3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms. Remove freestanding water.
- N. Cleanouts and Access Panels:
1. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris and waste material.
 2. Clean forms and surfaces against which concrete is to be placed. Remove chips, saw dust and other debris. Thoroughly blow out forms with compressed air just before concrete is placed.

3.5 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
- C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
- D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.6 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads and removal has been approved by Architect/Engineer.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.
- D. Leave forms in place for minimum number of days as specified in ACI 347.

3.7 ERECTION TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 301.
- B. Tolerances: Construct formwork to produce completed concrete surfaces within construction tolerances specified in ACI 117.

3.8 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.
- C. Notify Engineer after placement of reinforcing steel in forms, but prior to placing concrete.
- D. Schedule concrete placement to permit formwork inspection before placing concrete.

END OF SECTION

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SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Reinforcing bars.
 - 2. Welded wire fabric.
 - 3. Reinforcement accessories.
- B. Related Sections:
 - 1. Section 03100 - Concrete Forms and Accessories.
 - 2. Section 03300 - Cast-in-Place Concrete.

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 318 - Building Code Requirements for Structural Concrete.
 - 3. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures.
 - 4. ACI SP-66 - ACI Detailing Manual.
- B. ASTM International:
 - 1. ASTM A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - 2. ASTM A184/A184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
 - 3. ASTM A497 - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
 - 4. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 - 5. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - 6. ASTM A704/A704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
 - 7. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
 - 8. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
 - 9. ASTM A775/A775M - Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
 - 10. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement.
 - 11. ASTM A934/A934M - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.

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- 12. ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.
- 13. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Reinforcing Steel Bars.
- C. American Welding Society:
 - 1. AWS D1.4 - Structural Welding Code - Reinforcing Steel.
- D. Concrete Reinforcing Steel Institute:
 - 1. CRSI - Manual of Standard Practice.
 - 2. CRSI - Placing Reinforcing Bars.
- 1.3 SUBMITTALS
 - A. Section 01330 - Submittal Procedures: Submittal procedures.
 - B. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel, bending and cutting schedules, and supporting and spacing devices.
 - C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
 - D. Submit certified copies of mill test report of reinforcement materials analysis.
- 1.4 QUALITY ASSURANCE
 - A. Perform Work in accordance with CRSI - Manual of Standard Practice.
- 1.5 COORDINATION
 - A. Section 01300 - Administrative Requirements: Coordination and project conditions.
 - B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

- 2.1 REINFORCEMENT
 - A. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade; deformed billet steel bars, unfinished.
- 2.2 ACCESSORY MATERIALS
 - A. Tie Wire: Minimum 16 gage annealed type.
 - B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.3 FABRICATION

- A. Fabricate concrete reinforcement in accordance with CRSI Manual of Practice.
- B. Locate reinforcement splices not indicated on Drawings, at point of minimum stress. Review location of splices with Engineer.

PART 3 EXECUTION

3.1 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor retarder.
- C. Accommodate placement of formed openings.
- D. Maintain concrete cover around reinforcement as follows:

Item	Coverage
Walls (exposed to weather or backfill)	2 inch
Footings and Concrete Formed Against Earth	3 inch
Slabs on Fill	3 inch

- E. Splice reinforcing where indicated on Drawings.

3.2 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Testing and Inspection Services.

END OF SECTION

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SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete for the following:
 - 1. Foundation walls.
 - 2. Slabs on grade.
 - 3. Control, expansion and contraction joint devices.
 - 4. Site Structures.
- B. Related Sections:
 - 1. Section 03100 - Concrete Forms and Accessories: Formwork and accessories.
 - 2. Section 03200 - Concrete Reinforcement.
 - 3. Section 03390 - Concrete Curing.

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 305 - Hot Weather Concreting.
 - 3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
 - 4. ACI 318 - Building Code Requirements for Structural Concrete.
 - 5. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures.
- B. ASTM International:
 - 1. ASTM C33 - Standard Specification for Concrete Aggregates.
 - 2. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
 - 3. ASTM C150 - Standard Specification for Portland Cement.
 - 4. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 - 5. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
 - 6. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
 - 7. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
 - 8. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - 9. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
 - 10. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
 - 11. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

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12. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
13. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on joint devices, attachment accessories, and admixtures.
- C. Design Data:
 1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
 - a. Hot and cold weather concrete work.
 - b. Air entrained concrete work.
 2. Identify mix ingredients and proportions, including admixtures.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301.
- B. Acquire cement and aggregate from one source for Work.
- C. Conform to ACI 305 when concreting during hot weather.
- D. Conform to ACI 306.1 when concreting during cold weather.

1.5 COORDINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement:
 1. ASTM C150, Type I – Normal or Type II - Moderate Portland type.
 2. ASTM C595, Type 1L (MS)
 3. ASTM C1157, Type MS
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Water: Clean and not detrimental to concrete.

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2.2 ADMIXTURES

- A. Air Entrainment: ASTM C260.
- B. Chemical: ASTM C494/C494M Type A - Water Reducing, or Type D - Water Reducing and Retarding.
- C. Fly Ash: ASTM C618 Class C or F.
- D. Plasticizing: ASTM C1017/C1017M Type I, plasticizing, or Type II, plasticizing and retarding.

2.3 ACCESSORIES

- A. Bonding Agent: Two component modified epoxy resin.
 - 1. Manufacturers:
 - a. Edoco Technical Prod. Model Edoco 2118 Epoxy Adhesive.
 - b. Sika Chemical Corp. Model Sikadur Hi-Mod.
 - c. Euclid Chemical Corp. Model Euco Epoxy 463 or 615.
 - d. Substitutions: Section 01600 - Product Requirements.
- B. Non-Shrink Grout: ASTM C1107, Grade A; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of **2,400 psi** in 48 hours and **7,000 psi** in 28 days.
 - 1. Manufacturers:
 - a. Master Builders Co. Model SET nonshrink grout
 - b. L&M Construction Chemicals Model Crystex.
 - c. Euclid Chemical Co. Model EUCO NS grout.
 - d. Substitutions: Section 01600 - Product Requirements

2.4 CONCRETE MIX

- A. Mix concrete in accordance with ACI 301. Deliver concrete in accordance with ASTM C94/C94M.
- B. Provide concrete for Liquid Retaining Concrete Structural Walls and Slabs to the following criteria:

<u>Unit</u>	<u>Measurement</u>
Compressive Strength (28 day)	4,500 psi
Water/Cement Ratio	Maximum 0.45 by weight (mass)
Air Entrained	6 percent +/- 1.5 percent
Fly Ash Content:	Maximum 20 percent of cement content.
Slump	4 inches (plus or minus 1 inch).
- C. Provide concrete for all other structural concrete to the following criteria:

<u>Unit</u>	<u>Measurement</u>
Compressive Strength (28 day)	4,000 psi
Water/Cement Ratio	Maximum 0.50 by weight (mass)

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Air Entrained	6 percent +/- 1.5 percent
Fly Ash Content:	Maximum 20 percent of cement content.
Slump	4 inches (plus or minus 1 inch).

- D. Admixtures: Include admixture types and quantities indicated in concrete mix designs approved through submittal process.
1. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.
 2. Use set retarding admixtures during hot weather.
 3. Add air entraining agent to normal weight concrete mix for work exposed to exterior.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent.
- B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.3 PLACING CONCRETE

- A. Place concrete in accordance with ACI 301.
- B. Notify /Engineer minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, and formed expansion and contraction joints are not disturbed during concrete placement.
- D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E. Place concrete continuously between predetermined expansion, control, and construction joints.
- F. Saw cut joints within 12 hours after placing. Use 3/16 inch thick blade, cut into 1/4 depth of slab thickness.

- G. Screed slabs on grade level, maintaining surface flatness of maximum 1/4 inch in 10 ft.

3.4 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Cure concrete floor surfaces to requirements of Section 03390.

3.5 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Requirements: Testing and Inspection Services
- B. Field inspection and testing will be performed in accordance with ACI 301 and under provisions of Section 01400.
- C. Provide free access to Work and cooperate with appointed firm.
- D. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.
- E. Submit concrete truck tickets to field engineer prior to placing concrete.
- F. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.
- G. Three concrete test cylinders will be taken for every 75 or less cu yds of each class of concrete placed.
- H. One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete it represents.
- I. One slump test will be taken for each set of test cylinders taken.
- J. One air content test will be made for each set of test cylinders taken.
- K. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.6 PATCHING

- A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.
- C. Patch imperfections in accordance with ACI 301.

3.7 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

3.8 SCHEDULE - CONCRETE TYPES AND FINISHES

- A. Liquid Retaining Concrete Structures: 4,500 psi 28 day concrete
 - 1. Interior surfaces from top of wall to floor slab, exterior and top surfaces exposed to view to 6 inches below grade. Provide a Grout-cleaned finish per ACI 301.
 - 2. Surfaces below grade and not exposed to view. Provide a "Smooth-rubbed finish" per ACI 301.
- B. Unformed Concrete Surfaces: 4,000 psi 28 day concrete
 - 1. Top surfaces of walls. Provide a "Scratched finish" per ACI 301.
 - 2. Exterior surfaces. Provide a Nonslip finish per ACI 301.

END OF SECTION

SECTION 03390

CONCRETE CURING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes initial and final curing of horizontal and vertical concrete surfaces.
- B. Related Sections:
 - 1. Section 03300 - Cast-In-Place Concrete.

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 302.1 - Guide for Concrete Floor and Slab Construction.
 - 3. ACI 308 - Standard Practice for Curing Concrete.
- B. ASTM International:
 - 1. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete.
 - 2. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - 3. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
 - 4. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Submittal procedures.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 302.1.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Deliver curing materials in manufacturer's packaging including application instructions.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Membrane Curing Compound: ASTM C309 dissipating resin.

- B. Waterproof Paper: ASTM C171, treated to prevent separation during handling and placing, standard.
- C. Polyethylene Film: ASTM C171

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Coordination and project conditions.
- B. Verify substrate surfaces are ready to be cured.

3.2 INSTALLATION - HORIZONTAL SURFACES

- A. Cure floor surfaces in accordance with ACI 308.
- B. Membrane Curing Compound: Apply curing compound in one coat.
- C. Polyethylene Film: Spread over floor slab areas, lap edges and sides, seal with pressure sensitive tape and cover with plywood; maintain in place for 7 days.

3.3 INSTALLATION - VERTICAL SURFACES

- A. Cure surfaces in accordance with ACI 308.
- B. Membrane Curing Compound: Apply compound in one coat.

3.4 PROTECTION OF FINISHED WORK

- A. Section 01700 - Execution Requirement: Protecting finished Work.
- B. Do not permit traffic over unprotected floor surface.

3.5 SCHEDULES

- A. Retaining Walls: Membrane curing compound, acrylic type, clear color.
- B. Concrete Pavement: Membrane curing compound, opaque color.
- C. Other Floor Areas: Membrane curing compound, acrylic type, translucent color.

END OF SECTION

SECTION 16050

ELECTRICAL GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 DESCRIPTION

- A. It is the intent of this part of the Contract Documents to cover all work and materials necessary for erecting complete, ready for continuous use, a tested and working electrical system, substantially as indicated on the Plans and as hereinafter specified.
- B. Contractor shall furnish and install a Flow Meter at each turnout site as shown on the drawings. The Contractor shall furnish and install an AMI antenna that shall communicate via radio/cellular to a cloud database.

1.2 GENERAL PROVISIONS

- A. Minimum sizes of equipment, electric devices, etc., are indicated but it is not intended to show every offset and fitting, nor every structural or mechanical difficulty that will be encountered during the installation of the work.
- B. All work indicated on the Plans is approximately to scale, but actual dimensions and detailed drawings should be followed as closely as field conditions permit. Field verification of scale dimensions on Plans is directed since actual locations, distances, levels, etc. will be governed by field conditions.
- C. Discrepancies indicated on different Plans, between Plans and actual field conditions, or between Plans and Contract Documents shall be promptly brought to the attention of the ENGINEER for a decision.
- D. The alignment of equipment and conduit shall be varied due to architectural changes, or to avoid work of other trades, without extra expense to OWNER.
- E. CONTRACTOR shall furnish and install all parts and pieces necessary to the installation of equipment in accordance with the best practice of the trade and in conformance with the requirements of these Contract Documents.
- F. All items not specifically mentioned in these Contract Documents or noted on the Plans or accepted shop drawings, but which are obviously necessary to make a complete working installation, shall be deemed to be included herein.
- G. CONTRACTOR shall furnish and install all inserts and hangers required to support conduits and other electrical equipment. If the inserts, hangers, sleeves, etc. are improperly placed or installed, CONTRACTOR shall do all necessary work, at his own expense, to rectify the errors.

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- H. All electrical equipment shall be capable of operating successfully at full-rated load, without failure, at an ambient air temperature of 40 degrees C, and specifically rated for an altitude of 5,090 feet.
- I. CONTRACTOR shall submit shop drawings, data and details to the ENGINEER on all controls, fixtures, wiring, electrical equipment, conduit, etc. for review and acceptance prior to use of any components in the work.
- J. All materials, equipment, and parts comprising any unit or part thereof specified or indicated on the Plans shall be new and unused, of current manufacture, and of highest grade consistent to the state of the art. Damaged materials, equipment and parts are not considered to be new and unused and will not be accepted.

1.3 REGULATIONS AND CODES

- A. Electrical work, including connection to electrical equipment integral with mechanical equipment, shall be performed in accordance with the latest published regulations of each of the following as well as all State and local codes.
 - NATIONAL ELECTRICAL CODE (NEC)
 - NATIONAL ELECTRICAL SAFETY CODE (NESC)
 - INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
 - AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 - AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
 - INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)
 - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
 - NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA)
 - FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
 - UNDERWRITERS' LABORATORIES, INC. (UL)

1.4 COORDINATION OF THE ELECTRICAL SYSTEM

- A. CONTRACTOR shall verify all actual equipment. The necessary minimum equipment, wire, and conduit sizes are indicated on the Plans. If CONTRACTOR furnishes equipment of different ratings, CONTRACTOR shall coordinate the actual current rating of equipment furnished with the branch circuit conductor size, the overcurrent protection, and the branch circuit overcurrent protection. The branch circuit conductors shall have a carrying capacity of not less than 125 percent of the actual full-load current rating. The size of the branch circuit conductors shall be such that the voltage drop from the overcurrent protection devices up to the equipment shall not be greater than 2 percent when the equipment is running at full-load and rated voltage.

1.5 TEST

- A. The electrical work shall be free from improper grounds and from short circuits. The correctness of the wiring shall be verified first by visual comparison of the conductor connections with connection diagrams. Individual circuit continuity checks shall next be made by using electrical circuit testers. Last, the correctness of the wiring shall be verified by the actual electrical operation of the electrical and mechanical devices. Any deviation

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from the wiring indicated on the Plans or accepted drawings shall be corrected and indicated on the Plans.

1.6 CONFORMS TO RECORD DOCUMENTS DRAWINGS

- A. Prior to completion of the Contract, CONTRACTOR shall furnish the ENGINEER with a set of electrical plans marked with any changes, deviations or additions to any part of the electrical work.
- B. Each conductor shall be identified as required by the Contract Documents. This identification shall be indicated on the record documents drawings to enable rapid and accurate circuit tracing by maintenance personnel.

1.7 SUBMITTALS

- A. Submittals shall be in accordance with Section 01300, CONTRACTOR Submittals.

PART 2 PRODUCTS

2.1 NAMEPLATES

- A. Where indicated on the Plans, CONTRACTOR shall furnish and install nameplates which shall be black lamicaid with white letters. The nameplates shall be fastened to the various devices with round head brass screws. Each disconnect means for service, feeder, branch, or equipment conductors shall have nameplates indicating its purpose. All nameplates shall have 3/8-inch high lettering. RTU and Control Panel nameplates shall be 3" high white with 2" black lettering.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 16111

CONDUIT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section includes flexible or rigid conduits, supports, and nonmetallic ducts.
- B. All conduit shall be rigid steel unless specifically indicated otherwise on the Plans. All wiring, except as otherwise noted, shall be in conduit. Conduit size shall not be less than the National Electrical Code (NEC) size required for the conductors therein and shall not be smaller than 3/4-inch.
- C. Conduit runs are schematic only, and shall be modified as required to suit field conditions, subject to review and acceptance by the ENGINEER.

1.2 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

NSI C80.1	Rigid Steel Conduit - Zinc-Coated
ANSI C80.3	Electrical Metallic Tubing - Zinc-Coated

FEDERAL SPECIFICATIONS (FS)

FS W-F-406	Fittings for Cable, Power, Electrical and Conduit, Metal Flexible
FS WW-C-566	Conduit, Metal, Flexible

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA TC6	PVC and ABS Plastic Utilities Duct for Underground Installation
NEMA TC7	Smooth-Wall Coilable Electrical Polyethylene Conduit
NEMA TC9	Fittings for ABS and PVC Plastic Utilities Duct for Underground Installation

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	National Electric Code
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UNDERWRITER'S LABORATORIES, INC. (UL)

UL	Underwriter's Laboratories, Inc.
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PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

- A. Provide metal conduit, tubing and fittings for types, grades, sizes and weights (wall thickness) as indicated; with minimum trade size of 3/4 inch.
- B. Rigid Metal Conduit (RMC): ANSI C80.1
- C. Rigid and Intermediated Steel Conduit Fittings: Provide fully treaded malleable steel couplings; raintight and concrete tight where required by application. Provide double locknuts and metal bushings at conduit termination, use OZ type B bushings on conduits 1-1/4 inch and larger.

2.2 NONMETALLIC CONDUIT AND DUCTS

- A. Polyvinyl Chlorine (PVC): Where specifically indicated on the Plans, or elsewhere specified, conduit may be high density Schedule 40, 90 degrees C, heavy duty PVC. The conduit shall be manufactured from virgin polyvinyl chloride compound which meets NEMA TC6, Type I for encased burial in concrete and Type II for direct burial. Duct fittings shall meet NEMA TC9 and match duct type and materials. Encasement shall be reinforced as indicated on the Plans. Conduit supports shall be installed at 2-1/2 foot intervals, minimum trade size is 3/4-inch.
- B. High Density Polyethylene Conduit. HDPE conduit shall be in accordance with ASTM D 3035 SDR11. Conduit shall be EPEC-40. Fittings for HDPE conduit shall be in accordance with ASTM D 2683. Epoxy used for the fittings shall be in accordance with the conduit manufacturer's recommendations.
 - 1. Description: Color shall be black with red longitudinal stripes. Conduit shall be marked at intervals of approximately five feet with manufacturer's name, HDPE material designation, trade size, month & year of manufacturer. Conduit shall be supplied with cabling pre-installed.

2.3 CONDUIT, TUBING, AND DUCT ACCESSORIES

- A. Provide conduit, tubing and duct accessories of types and sized, and materials, complying with manufacturer's published product information, which mate and match conduit and tubing. Provide manufactured spacers in all duct bank runs.

2.4 LOCKNUTS, BUSHINGS, CONNECTORS, COUPLINGS AND SUPPORTS

- A. General: Provide malleable bushings, except that plastic bushings may be used in lieu of phenolic-lined malleable bushings where "insulating bushings" are required.
- B. Provide "double-locknut" system (2 locknuts) throughout, each being tightened wrench tight as to effectively bond outlet box or cabinet to conduit.

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- C. Sealing Bushing: OZ Type FSK, WSK, or CSMI as required by application. Provide OZ type CSD internal sealing bushings.
- D. Provide insulated-through type ground bushing of the malleable type.
- E. Provide connectors or couplings that are proper for the conduit they are used with. Make watertight when required.
- F. Provide cadmium plated or galvanized fittings.
- G. Provide fittings with die-cut threads unless approved otherwise.

2.5 CONDUIT OUTLET BODIES

- A. Refer to Section 16135.

2.6 SCHEDULE OF LOCATIONS

- A. Galvanized steel conduit in concrete.
- B. RMC conduit shall be used for all underground bends and for all conduit penetrations through concrete. Tape conduit penetrations through concrete.
- C. Conduit risers from embedment to the RTU enclosure shall be RMC.
- D. For underground conduit use welded PVC Schedule 40 conduit.
- E. Antenna and solar collector supports shall be RMC.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install conduit installed in all areas and connections to surface cabinets.
- B. For exposed runs attach surface-mounted conduit with clamps.
- C. Install conduit free from dents and bruises. Plug ends to prevent entry of dirt and moisture.
- D. Clean out conduit before installation of conductor.
- E. Provide a permanent cap on the conduit for the future valve actuator. Tapping with duct tape is not acceptable.
- F. Alter conduit routing to avoid structural obstructions, minimizing crossovers.

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- G. Route all exposed conduits parallel or perpendicular to equipment lines.
- H. Make interconnections between different types of raceways with manufactured fittings approved by UL.
- I. Size raceways in accordance with NFPA 70 tables. Do not reduce from any sized indicated.
- J. Do not exceed number of bends allowed in conduit by NFPA 70.
- K. Make joints wrench tight or otherwise with minimum resistance to the flow of fault currents.
- L. Test conduit runs with lignum vitale ball (mandrel) of 85 percent of conduit diameter.
- M. Cut conduit with hacksaw or other approved pipe cutting tool and ream ends to clean out all burrs before connecting.

3.2 PULL BOXES

- A. Furnish as indicated, plus any such items required to assemble conduits and other raceways. Provide Section 16135 pull boxes as dictated by wire pulling requirements.
- B. Construction: Heavy duty polymer concrete and sized strictly in conformance with NFPA 70 requirements.
- C. Finish: Free of burrs, sharp edges unreamed holes, and sharp-pointed screw or bolts.

3.3 ANCHORS, FASTENERS, AND MISCELLANEOUS SUPPORTS

- A. Make exposed conduit fastenings with one-piece, malleable conduit clamps. Two hole, galvanized sheet metal pipe straps may be used on all concealed installations.
- B. Use companion bases or backs with conduit clamps when conduit is exposed to weather or continuous moisture.
- C. Do not hang or support electrical equipment and materials from piping.

END OF SECTION

SECTION 16135

ELECTRICAL BOXES AND FITTINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section includes the types of electrical boxes and electrical fitting work.

1.2 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA OS 1 Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports

NEMA OS 2 Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 National Electric Code

UNDERWRITERS' LABORATORIES, INC. (UL)

UL Underwriters' Laboratories, Inc.

1.3 QUALITY ASSURANCE

- A. Comply with NFPA 70 as applicable for installation of electrical boxes and fittings.
- B. Comply with NEMA OS 1 and NEMA OS 2 as applicable for outlet boxes, device boxes, covers and box supports.
- C. Provide electrical boxes and fittings which have been UL-listed and labeled.

PART 2 - PRODUCT

2.1 JUNCTION AND PULL BOXES

- A. Heavy Duty Polycarbonate body and cover; of types, shapes and sizes to suit each respective location and installation; equipped with stainless steel nuts, bolts, screws and washers.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate installation of electrical boxes and fittings with wire/cable and raceway installation work.
- B. Provide knockout closures to cap unused knockout holes where blanks have been removed.

3.2 INSTALLATION OF ELECTRICAL BOXES AND FITTINGS

- A. Install where indicated, complying with manufacturer's written instruction applicable requirements of NFPA 70 and NEMA's "Standard of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.
- B. Install boxes and fittings to ensure ready accessibility of electrical wiring. Install recessed boxes with face of box or ring flush with adjacent surface.
- C. Fasten boxes rigidly to substrates or structural surfaces to which attached, or solidly embed boxes in concrete or masonry. Use bar hangers for stud construction. Use of nails for securing boxes is prohibited. Set boxes on opposite sides of common wall with minimum 10 inches of conduit between them.

-END OF SECTION-