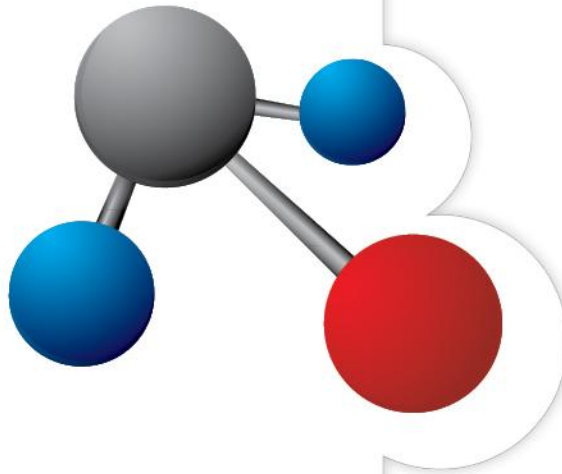


Sand Hill Water Tower Improvements



PREPARED FOR:

City of New Town

AE2S Project No. P00534-2023-007

February 2026

PROJECT MANUAL



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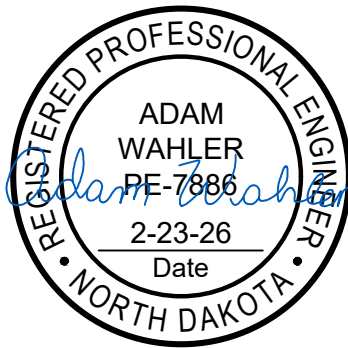
DIVISION 00 PROCUREMENT AND CONTRACTING REQUIREMENTS

**PROJECT MANUAL
FOR
SAND HILL WATER TOWER IMPROVEMENTS
NEW TOWN, ND**

February 2026

ELECTRICAL ENGINEER

I hereby certify that these Plans and Specifications were prepared by me or under my direct supervision and I am a duly Licensed Professional Engineer under the laws of the State of North Dakota.



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ADVERTISEMENT FOR BIDS
City of New Town
Sand Hill Water Tower Improvements

General Notice

Sealed bids for construction of the New Town Sand Hill Water Tower Improvements project for the City of New Town, North Dakota will be received until 10:00 A.M. local time on March 18, 2026 at New Town City Hall, located at 945 Eagle Drive (P.O. Box 309), New Town, ND 58763 at which time they will be publicly opened and read aloud.

Bids can be mailed to:

City of New Town
c/o City Auditor
945 Eagle Drive
Suite 106
P.O. Box 309
New Town, ND 58763

The Project includes the following Work:

Electrical systems and control systems in association with construction of a new 500,000-gallon composite elevated storage tank and appurtenances, connection to existing distribution system, and demolition of the existing at grade storage reservoir.

Offsite work includes upgrades to electrical at the existing water treatment plant (WTP) and booster station (BS).

The Work for the Contract is generally described as follows:

Contract No. 2 – Electrical Construction: Work at the new tower generally consists of installation of utility service, grounding electrode systems, general power and lighting systems, panelboards and SCADA equipment. Offsite work generally consists of 1 – WTP, disconnecting the three (3) existing high service pumps and reconnection once the pump upgrades are completed and wiring and integration of the new Flowmeter and 2 – BS, disconnecting the existing four (4) booster pumps and reconnecting when pump upgrades are complete.

All Bids shall be prepared according to the Instructions to Bidders contained within the Project Manual. Attached to the outside of the bid envelope must be a separate envelope containing a list of all addenda to the plans and specifications and an acknowledgment by the bidder of receipt of such addenda. The separate envelope shall also contain a bidder's bond in the amount of 5% of the full amount of bid executed by the bidder as principal and by a surety, conditioned that if the principal's bid is accepted and the contract awarded to the principal, the principal, within 10 days after notice of award shall execute a contract in accordance with the terms of the bid and a contractor's bond as required by law and the regulations and determinations of the governing body. Countersignature of a bid bond is not required under this section.

All bidders must be licensed for the full amount of the bid as required by Section 47-07-05. A copy of the Contractor's License or Certificate of Renewal thereof, issued by the Secretary of State, **must** be enclosed in the bid bond envelope as required under Section 47-07-12.

The Project has an expected substantial completion date of October 1, 2027. The estimated cost of this project is approximately \$450,000.

Obtaining the Bidding Documents

Bidding Documents for the Project can be found at the following designated website:

www.questcdn.com

Quest#: 10079614

Bidding Documents may be downloaded in PDF from QuestCDN. There is no fee to download the Bidding Documents. Prospective Bidders are required to register with QuestCDN as a plan holder. QuestCDN will be updated with any addenda that are issued during bidding period.

All official addenda and other Bidding Documents will be offered only through the sources identified above. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than those identified above.

The Issuing Office for the Bidding Documents is:

**AE2S Minot
601 18th Ave SE
Suite 102
Minot, ND 58701**

Prospective Bidders may examine the Bidding Documents at the Issuing Office on Monday through Friday between the hours of 8:00am and 5:00pm.

Pre-bid Conference

A pre-bid conference for the Project will be held at 1:00pm on March 11 2026 at 945 Eagle Drive, Suite 106, New Town, ND 58763. Attendance at the pre-bid conference is encouraged but not required. The meeting may also be attended virtually via Microsoft Teams using the following meeting ID:

Pre-bid Teams meeting ID: 246 564 319 898 70

Passcode: SF9r9NV7

Tentative Schedule of Events

Date	Event
March 18, 2026	Bid Opening.
March 25, 2026	Successful bidder submits proposed subcontractors to Owner for approval.
April 1, 2026	Notice of Award Issued.
April 11, 2026	Successful bidder returns signed Agreement and attached documents to Owner.
April 22, 2026	Owner delivers fully signed Agreement with all attachments to Contractor.
May 17th, 2026	Contract Times commence to run unless Notice to Proceed is issued sooner.

Note that this schedule of events may be accelerated pending the responsiveness of Owner and Successful Bidder/Contractor. See Instructions to Bidders for details of deadlines for specific events.

Funding

This project anticipates funding from the Drinking Water and/or Clean Water State Revolving Fund program. Bidder's attention is called to the SRF requirements in the bid package.

Bidders on this work will be required to comply with the American Iron and Steel requirements of the Consolidated Appropriations Act, 2014. The requirements for bidders and contractors under this regulation are explained in the specifications.

Bidders are required to comply with Davis-Bacon prevailing wage requirements. Bidders on this work will be required to comply with Title 40 CFR Part 33– Participation by Disadvantaged Business Enterprises in the United States Environmental Protection Agency Programs. The requirements for bidders and contractors under this regulation concern utilization of Minority Business Enterprises (MBE), Women's Business Enterprises (WBE), and Small Business Enterprises (SBE) and are explained in the specifications.

The goal for MBE is 2% of the total dollar value of the project. The goal for WBE is 3% of the total dollar value of the project. To demonstrate a good faith effort to comply, bidders must include the MBE/WBE subcontractor solicitation form in the bid package.

Bidders are required to comply with Build America, Buy America Act requirements.

Instructions to Bidders.

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.

This Advertisement is issued by:

Owner: **City of New Town**

By: **Eileen Zaun**

Title: **City of New Town City Auditor**

Date: **2/20/2026**

Publish: **2/25/2026, 3/4/2026, 3/11/2026**

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 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 ~~Bidder may register as a plan holder and obtain complete sets of Bidding Documents, in the number and format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.~~
- 2.05 ~~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.~~
- 2.06 *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). 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 2.06.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 ~~Prospective Bidders must submit required information regarding their qualifications by [insert deadline for prequalification submittals]. Owner will review the submitted information to determine which contractors are qualified to bid on the Work. Owner will issue an Addendum listing those contractors that Owner has determined to be qualified to construct the project. Bids will only be accepted from listed contractors. The information that each prospective Bidder must submit to seek prequalification includes the following:~~
 - ~~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. Prospective Bidder's state or other contractor license number, if applicable.~~
 - ~~D. Subcontractor and Supplier qualification information.~~
 - ~~E. Other required information regarding qualifications.~~
- 3.02 ~~Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:~~
 - ~~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.~~

- 3.03 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.04 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 pre-bid conference will not be conducted for this Project.~~
- 4.02 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.
- 4.03 ~~A 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. Proposals will not be accepted from Bidders who do not attend the conference. It is each Bidder's responsibility to sign in at the pre-bid conference to verify its participation. Bidders must sign in using the name of the organization that will be submitting a Bid. A list of qualified Bidders that attended the pre-bid conference and are eligible to submit a Bid for this Project will be issued in an Addendum.~~
- 4.04 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.
- ~~4. *Geotechnical Baseline Report/Geotechnical Data Report:* The Bidding Documents contain a Geotechnical Baseline Report (GBR) and Geotechnical Data Report (GDR).~~
 - ~~a. As set forth in the Supplementary Conditions, the GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations ("Baseline Conditions"). The GBR is a Contract Document.~~
 - ~~b. The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.~~
 - ~~c. Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.~~
 - ~~d. As set forth in the Supplementary Conditions, the GDR is a Contract Document containing data prepared by or for the Owner in support of the GBR.~~
- 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. In addition to the documents regarding existing Site conditions referred to in Paragraph 5.02.A, the following other documents relating to conditions at or adjacent to the Site are known to Owner and made available to Bidders for reference:~~
- ~~Owner will make copies of these other Site-related documents available to any Bidder on request.~~

- ~~B. Owner has not verified the contents of these other Site-related documents, and Bidder may not rely on the accuracy of any data or information in such documents. Bidder is responsible for any interpretation or conclusion Bidder draws from the other Site-related documents.~~
- ~~C. The other Site-related documents are not part of the Contract Documents.~~
- ~~D. Bidders are encouraged to review the other Site-related documents, but Bidders will not be held accountable for any data or information in such documents. The requirement to review and take responsibility for documentary Site information is limited to information in (1) the Contract Documents and (2) the Technical Data.~~
- E. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

- A. Bidder is encouraged to schedule a site visit to 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. Bidder must obtain permission from Owner prior to accessing 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. A Site visit is scheduled for [designate, date, time and location]. Maps to the Site will be made available upon request.~~
- D. Bidders visiting the Site are required to arrange their own transportation to the Site.
- 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 both Engineer and Owner in writing.
- 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 shall be received until Friday, March 13, noon, CST 2026.
- 7.04 Engineer shall endeavor to answer all questions or issue addenda by Monday, March 16, noon, CST 2026.
- 7.05 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 5 percent 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 All Bids shall be prepared according to the Instructions to Bidders contained within the Project Manual. Attached to the outside of the bid envelope must be **a separate envelope** containing a list of all addenda to the plans and specifications and **an acknowledgment by the bidder of receipt of such addenda**. The separate envelope shall also contain a bidder’s bond in the amount of 5% of the full amount of bid executed by the bidder as principal and by a surety, conditioned that if the principal’s bid is accepted and the contract awarded to the principal, the principal, within 10 days after notice of award shall execute a contract in accordance with the terms of the bid and a

contractor's bond as required by law and the regulations and determinations of the governing body. Countersignature of a bid bond is not required under this section.

- 8.03 All bidders must be licensed for the full amount of the bid as required by Section 47-07-05. A copy of the Contractor's License or Certificate of Renewal thereof, issued by the Secretary of State, must be enclosed in the bid bond envelope as required under Section 47-07-12.
- 8.04 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 10 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.
- 8.05 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.
- 8.06 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 ~~Bidder must set forth in the Bid the time by which Bidder must achieve Substantial Completion, subject to the restrictions established in Paragraph 13.07 of these Instructions. The Owner will take Bidder's time commitment regarding Substantial Completion into consideration during the evaluation of Bids, and it will be necessary for the apparent Successful Bidder to satisfy Owner that it will be able to achieve Substantial Completion within the time such Bidder has designated in the Bid. The Successful Bidder's time commitments will be entered into the Agreement or incorporated in the Agreement by reference to the specific terms of the Bid.~~
- 9.03 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 without consideration during the bidding and Contract award process of possible substitute or "or equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or equal" item of~~

~~material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.~~

- 10.02 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.
- 10.03 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 ~~A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so by the Bidding Documents or in the Specifications. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.~~
- 11.02 ~~The apparent Successful Bidder, and any other Bidder so requested, must submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work within seven days after Bid opening:~~
- ~~1.—Site Civil subcontractor~~
 - ~~2.—Tower foundation subcontractor~~
- 11.03 ~~If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.~~
- 11.04 ~~If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.~~

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 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 A current North Dakota Contractor's License that has been issued at least ten days prior to the opening of bids **must be contained within the bid bond envelope.**
- 12.12 Bidder's state contractor license number must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Lump Sum*

- A. Bidders must submit a Bid on a lump sum basis as set forth in the Bid Form.
- B. The Work is comprised of one Contract: **Contract No. 2 Electrical Construction.**

13.02 ~~Base Bid with Alternates~~

- ~~A. Bidders must submit a Bid on a lump sum basis for the base Bid and include a separate price for each alternate described in the Bidding Documents and as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate.~~
- ~~B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form.~~

13.03 *Sectional Bids*

- ~~A. Bidders may submit a Bid on any individual section or any combination of sections, as set forth in the Bid Form.~~
- ~~B. Submission of a Bid on any section signifies Bidder's willingness to enter into a Contract for that section alone at the price offered.~~
- ~~C. If Bidder submits Bids on individual sections and a Bid based on a combination of those sections, such combined Bid need not be the sum of the Bids on the individual sections.~~
- ~~D. Bidders offering a Bid on one or more sections must be capable of completing the Work covered by those sections within the time period stated in the Agreement.~~

13.04 *Cost Plus Fee Bids*

- ~~A. Bidders must submit a Bid on the Contractor's fee, which must be in addition to compensation for Cost of the Work. Such fee must be either (1) a fixed fee, (2) percentages of specified categories of costs, or (3) a percentage applicable to the Cost of the Work as a whole, as set forth in the Bid Form.~~
- ~~B. If the Contractor's fee, as set forth in the Bid Form, is to be based on percentages of categories of cost, or on a percentage applicable to the Cost of the Work as a whole, then Bidders must enter a maximum amount limiting the total fee if required by the Bid Form to do so.~~
- ~~C. Bidders must submit a Bid on the Guaranteed Maximum Price, setting a maximum amount on the compensable Cost of the Work plus Contractor's fee, if required by the Bid Form to do so.~~

13.05 *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.~~

13.06 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.~~

13.07 Price-Plus-Time Bids

- ~~A. The Owner will consider the time of Substantial Completion commitment made by the Bidder in the comparison of Bids.~~
- ~~B. Bidder must designate the number of days required to achieve Substantial Completion of the Work and enter that number in the Bid Form as the total number of calendar days to substantially complete the Work.~~
- ~~C. The total number of calendar days for Substantial Completion designated by Bidder must be less than or equal to a maximum of [number], but not less than the minimum of [number]. If Bidder purports to designate a time for Substantial Completion that is less than the allowed minimum, or greater than the allowed maximum, Owner will reject the Bid as nonresponsive.~~
- ~~D. The Agreement as executed will contain the Substantial Completion time designated in Successful Bidder's Bid, and the Contractor will be assessed liquidated damages at the rate stated in the Agreement for failure to attain Substantial Completion within that time.~~
- ~~E. Bidder must also designate the time in which it will achieve Milestones, and achieve readiness for final payment. Such time commitments must be consistent with the "Time of Substantial Completion" to which Bidder commits. The Agreement as executed will contain, as binding Contract Times, Successful Bidder's time commitments regarding Milestones, as applicable, and readiness for final payment.~~

13.08 Coatings Rehab Costs

- ~~A. The Owner will consider coatings rehab costs of the 1 MG elevated storage tank as estimated by the bidder in the comparison of Bids.~~
- ~~B. Bidder must estimate total cost for coatings rehab of the elevated storage tank over a 75 year period and enter that number in the Bid Form in 2025 dollars.~~
- ~~C. For purposes of computing the O&M cost, an interest rate of 3% shall be used.~~
- ~~D. The Agreement as executed will contain the estimated coatings rehab cost designated in the Successful Bidder's Bid.~~

ARTICLE 14—SUBMITTAL OF BID

- 14.01 The Bidding Documents include a copy of the Bid Form, and, if required, the Bid Bond Form. 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.
- 14.03 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.
- 14.04 Additional requirements for submittal of bid security **in a separate envelope** are found in Article 8 of these Instruction to Bidders. **All addenda must be acknowledged on the outside of the separate envelope.**
- 14.05 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.
- 16.02 ~~Bids will be opened privately.~~

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. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner will announce to all bidders a "Base Bid plus alternates" budget after receiving all Bids, but prior to opening them. For comparison purposes alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be exceeded. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.~~
 - ~~C. For determination of the apparent low Bidder(s) when sectional bids are submitted, Bids will be compared on the basis of the aggregate of the Bids for separate sections and the Bids for combined sections that result in the lowest total amount for all of the Work.~~
 - ~~D. 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.~~
 - ~~E. For the determination of the apparent low Bidder when cost-plus-fee bids are submitted, Bids will be compared on the basis of the Guaranteed Maximum Price set forth by Bidder on the Bid Form.~~
 - ~~F. Bid prices will be compared after adjusting for differences in time of Substantial Completion (total number of calendar days to substantially complete the Work) designated by Bidders.~~

The adjusting amount will be determined at the rate set forth in the Agreement for liquidated damages for failing to achieve Substantial Completion, or such other amount that Owner has designated in the Bid Form.

- ~~1. The method for calculating the lowest bid for comparison will be the summation of the Bid price shown in the Bid Form plus the product of the Bidder specified time of Substantial Completion in calendar days times the rate for liquidated damages [or other Owner designated daily rate] in dollars per day.~~
 - ~~2. This procedure is only used to determine the lowest bid for comparison and contractor selection purposes. The Contract Price for compensation and payment purposes remains the Bid price shown in the Bid Form.~~
- G. Bid prices will be compared after adjusting for differences in coatings rehab costs designated by Bidders.
- ~~1. The method for calculating the lowest bid for comparison will be the summation of the Bid price shown in the Bid Form plus the Bidder specified coatings rehab cost.~~
 - ~~2. This procedure is only used to determine the lowest bid for comparison and contractor selection purposes. The Contract Price for compensation and payment purposes remains the Bid price shown in the Bid Form.~~

- 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 15 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 an electronic copy of the Contract Documents as stated in Paragraph SC-2.02 of the Supplementary Conditions.

- 20.02 Successful Bidder shall print a hard-copy of the Agreement, sign the Agreement in ink, and return scanned PDF version of the signed Agreement to Owner. Owner shall then print the Agreement, sign in ink, and return scanned PDF version to Contractor along with other Contract Documents as described in paragraph 20.01 above.

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: City of New Town, 945 Eagle Drive, Suite 106, P.O. Box 309, New Town, ND 58763.
- 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. A current North Dakota Contractor's License that has been issued at least ten days prior to the opening of bids **must be contained within the bid bond envelope.**
 - E. MBE/WBE Subcontractor Solicitation.
 - F. Certification Regarding Debarment.

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 Lump Sum Bids

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price(s):

1. Lump Sum Price (Multiple Lump Sums)

Contract No. 2 – Electrical Construction	
Electrical for new elevated water storage tank	\$
Electrical for water treatment plant upgrades	\$
Electrical for booster station upgrades	\$
Contract No. 2 Total	\$

ARTICLE 4—BASIS OF BID—COST PLUS FEE

4.01 The Contract Price will be the Cost of the Work, determined as provided in Paragraph 13.01 of the General Conditions, together with the following fee, and subject to the Guaranteed Maximum Price.

4.02 Contractor's Fee

A. Contractor's fee will be ~~[number]~~ percent of the Cost of the Work. No fee will be payable on the basis of costs itemized as excluded in Paragraph 13.01.C of the General Conditions.

1. The maximum amount payable by Owner as a percentage fee (Guaranteed Maximum Fee) will not exceed ~~\$(insert cap amount)~~, subject to increases or decreases for changes in the Work.

B. Contractor's fee will be determined by applying the following percentages to the various portions of the Cost of the Work as defined in Article 13 of the General Conditions. No fee will be payable on the basis of costs itemized as excluded in Paragraph 13.01.C of the General Conditions:

Costs	Percent
Payroll costs (See Paragraph 13.01.B.1, General Conditions)	
Materials and Installed Equipment cost (GC 13.01.B.2)	
Amounts to be paid to Subcontractors (GC 13.01.B.3)	
Amount to be paid to special consultants (GC 13.01.B.4)	
Other costs (GC 13.01.B.5)	

1. The maximum amount payable by Owner as a percentage fee (Guaranteed Maximum Fee) will not exceed ~~\$(insert cap amount)~~, subject to increases or decreases for changes in the Work.

C. Contractor's fee will be the fixed sum of ~~\$(number)~~.

4.03 *Guaranteed Maximum Price*

- A. ~~The Guaranteed Maximum Price to Owner of the Cost of the Work including Contractor's Fee will not exceed \$[Bidder fill in GMP].~~

ARTICLE 5—PRICE-PLUS-TIME BID

5.01 *Price-Plus-Time Contract Award (Stipulated Price Contract)*

- A. ~~The Bidder to which an award of the Contract will be made will be determined in part on the basis of the Total Bid Price and the total number of calendar days to substantially complete the Work, in accordance with the following:~~

	Description		Amount
A	1. Total Bid Price		\$(number)
	2. Total number of calendar days to substantially complete the Work	[number] days	
	3. Liquidated Damages Rate (from Agreement)	\$(number)/day	
B	4. Adjustment Amount (2 x 3)		\$(number)
A+B	5. Amount for Comparison of Bids		\$(number)

- B. ~~The purpose of the process in the table above is only to calculate the lowest price-plus-time (A+B) bid amount for bid comparison purposes. The price for completion of the Work (the Contract Price) is the Total Bid Price.~~

- C. ~~Bonds required under Paragraph 6.01 of the General Conditions will be based on the Contract Price.~~

5.02 *Price-Plus-Time Contract Award (Cost Plus Fee with Guaranteed Maximum Price Contract)*

- A. ~~The Bidder to which an award of Contract will be made will be determined in part on the basis of the Guaranteed Maximum Price and the total number of calendar days to substantially complete the Work, in accordance with the following:~~

	Description		Amount
A	1. Guaranteed Maximum Price		\$(number)
	2. Total number of calendar days to substantially complete the Work	[number] days	
	3. Liquidated Damages Rate (from Agreement)	\$(number)/day	
B	4. Adjustment Amount (2 x 3)		\$(number)
A+B	5. Amount for Comparison of Bids		\$(number)

- B. ~~The purpose of the process in the table above is only to calculate the lowest price-plus-time (A+B) bid amount for bid comparison purposes. The price for completion of the Work (the Contract Price) is based on the cost of the Work, plus a fee, subject to a guaranteed maximum price, as set forth in the Agreement.~~

- C. ~~Bonds required under Paragraph 6.01 of the General Conditions will be based on the Contract Price.~~

ARTICLE 6—TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 ~~Bidder agrees that the Work will be substantially complete on or before [Bidder inserts date], and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before [Bidder inserts date].~~
- 6.03 ~~Bidder agrees that the Work will be substantially complete within [Bidder inserts number] calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within [Bidder inserts number] calendar days after the date when the Contract Times commence to run.~~
- 6.04 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

7.01 *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.

7.02 *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.

7.03 *Receipt of Addenda*

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

Addendum Number	Addendum Date

ARTICLE 8—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

8.01 *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 had the opportunity to visit the Site, conduct 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 that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports.
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.

8.02 *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 8.02.A:

- 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)

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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: City of New Town Address <i>(principal place of business)</i> : 945 Eagle Drive Suite 106 P.O. Box 309 New Town, ND 58763	Bid Project <i>(name and location)</i> : Sand Hill Water Tower Improvements Bid Due Date: March 18, 2026
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: _____ <i>(Signature)</i>	By: _____ <i>(Signature) (Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
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.

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

This Agreement is by and between the City of New Town ("Owner") and [name of contracting entity] ("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:

Construct electrical and control systems associated with a new 500,000 gallon composite elevated storage tank. After construction and commissioning the new tower, the existing adjacent ground storage tank is to be demolished and removed from the site. Demolition of existing electrical systems is included in this Contract.

Also included in the Work are electrical and control system improvements associated with upgrades to pumps at the existing water treatment plant and booster station. Demolition of existing electrical systems, as required and appropriate for installing electrical and control system improvements, is included in this Contract.

ARTICLE 2—THE PROJECT

- 2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Sand Hill Water Tower Improvements.

ARTICLE 3—ENGINEER

- 3.01 The Owner has retained Advanced Engineering and Environmental Services, LLC ("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 October 1, 2027, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before October 22nd, 2027.

~~4.03 *Contract Times: Days*~~

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

~~4.04 *Milestones*~~

- ~~A. Parts of the Work must be substantially completed on or before the following Milestone(s):
 - 1. Milestone 1 [event & date/days]
 - 2. Milestone 2 [event & date/days]
 - 3. Milestone 3 [event & date/days]~~

4.05 *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 \$500 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 \$250 for each day that expires after such time until the Work is completed and ready for final payment.
 - ~~3. *Milestones:* Contractor shall pay Owner \$[number] for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved, or until the time specified for Substantial Completion is reached, at which time the rate indicated in Paragraph 4.05.A.1 will apply, rather than the Milestone rate.~~
 - 4. 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.

- C. ~~Bonus: Contractor and Owner further recognize the Owner will realize financial and other benefits if the Work is completed prior to the time specified for Substantial Completion. Accordingly, Owner and Contractor agree that as a bonus for early completion, Owner shall pay Contractor \$[number] for each day prior to the time specified above for Substantial Completion (as duly adjusted pursuant to the Contract) that the Work is substantially complete. The maximum value of the bonus will be limited to \$[number].~~

4.06 ~~Special Damages~~

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

ARTICLE 5—CONTRACT PRICE

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

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

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

- B. ~~For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).~~

Unit Price Work					
Item No.	Description	Unit	Estimated Quantity	Unit Price	Extended Price
				\$	\$
				\$	\$
				\$	\$
				\$	\$

Unit Price Work					
Item No.	Description	Unit	Estimated Quantity	Unit Price	Extended Price
				\$	\$
Total of all Extended Prices for Unit Price Work (subject to final adjustment based on actual quantities)					\$

~~The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.~~

~~C. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment) \$[number].~~

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

ARTICLE 6—PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

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

6.02 Progress Payments; Retainage

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the 1st 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. 90 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. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions.

6.04 *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.

6.05 *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.

6.06 *Interest*

- A. All amounts not paid when due will bear interest at the rate of 3 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 (copy of list attached).
 - 6. Drawings (not attached but incorporated by reference) consisting of **[number]** sheets with each sheet bearing the following general title: **[title on Drawings]**.
 - ~~7. Drawings listed on the attached sheet index.~~
 - 8. Addenda (numbers **[number]** to **[number]**, inclusive).
 - 9. Exhibits to this Agreement (enumerated as follows):
 - a. **[list exhibits]**
 - 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.

- e. Warranty Bond, if any.
- 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 **[indicate date on which Contract becomes effective]** (which is the Effective Date of the Contract).

Owner:

Contractor:

(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.)

(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: _____

PERFORMANCE BOND

Contractor Name: Address <i>(principal place of business)</i> :	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: City of New Town Mailing address <i>(principal place of business)</i> : 945 Eagle Drive Suite 106 P.O. Box 309 New Town, ND 58763	Contract Description <i>(name and location)</i> : Sand Hill Water Tower Improvements 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: ☒ None ☐ 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: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <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 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: None.

PAYMENT BOND

Contractor Name: Address <i>(principal place of business)</i> :	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: City of New Town Mailing address <i>(principal place of business)</i> : 945 Eagle Drive Suite 106 P.O. Box 309 New Town, ND 58763	Contract Description <i>(name and location)</i> : Sand Hill Water Tower Improvements 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: ☒ None ☐ 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: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <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: None.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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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.

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

2.01 *Delivery of Bonds and Evidence of Insurance*

SC-2.01 Delete Paragraphs 2.01.B. and C. in their entirety and insert the following in their place:

- B. *Evidence of Contractor's Insurance:* When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies (including all endorsements, and identification of applicable self-insured retentions and deductibles) of insurance required to be provided by Contractor in this Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- C. *Evidence of Owner's Insurance:* After receipt from Contractor of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner in this Contract (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

2.02 *Copies of Documents*

SC-2.02 Amend the first sentence of Paragraph 2.02.A. to read as follows:

Owner shall furnish to Contractor an electronic copy of the Contract Documents (including one fully signed counterpart of the Agreement) in portable document format (PDF).

~~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 [number] 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 10MB. 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 \$145 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 by adding the following subparagraphs:

5.—~~Weather-Related Delays~~

- 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. ~~The existence of abnormal weather conditions will be determined on a month-by-month basis in accordance with the following:~~
 - 1) ~~Every workday on which one or more of the following conditions exist will be considered a “bad weather day”:~~
 - i) ~~Total precipitation (as rain equivalent) occurring between 7:00 p.m. on the preceding day (regardless of whether such preceding day is a workday) through 7:00 p.m. on the workday in question equals or exceeds [threshold precipitation quantity] of precipitation (as rain equivalent, based on the snow/rain conversion indicated in the table entitled Foreseeable Bad Weather Days; such table is hereby incorporated in this SC 4.05.C by reference.~~
 - ii) ~~Ambient outdoor air temperature at 11:00 a.m. is equal to or less than the following low temperature threshold: [temperature] degrees Fahrenheit; or, at 3:00 p.m. the ambient outdoor temperature is equal to or greater than the following high temperature threshold: [temperature] degrees Fahrenheit.~~
 - 2) ~~Determination of actual bad weather days during performance of the Work will be based on the weather records measured and recorded by [name of the entity operating the weather station] weather monitoring station at [location of the weather monitoring station].~~
 - 3) ~~Contractor shall anticipate the number of foreseeable bad weather days per month indicated in the table in Exhibit [exhibit number]—Foreseeable Bad Weather Days.~~
 - 4) ~~In each month, every bad weather day exceeding the number of foreseeable bad weather days established in the table in Exhibit [exhibit number]—Foreseeable Bad Weather Days will be considered as “abnormal weather conditions.” The existence of abnormal weather conditions will not relieve Contractor of the obligation to demonstrate and document that delays caused by abnormal weather are specific to the planned work activities or that such activities thus delayed were on Contractor's then-current Progress Schedule's critical path for the Project.~~

ARTICLE 5—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
New Town Water Tank Geotechnical Engineering Report	July 2025	Boring logs, grain size distributions, and soil chemistry analysis.

- 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
No such drawings exist.		

- G. Contractor may request from Engineer copies of reports and drawings identified in SC-5.03.E and SC-5.03.F that were not included with the Bidding Documents.

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
No such reports exist.		

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
No such drawings exist.		[Identify Technical Data]

ARTICLE 6—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).

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

1. The correction period specified as one year after the date of Substantial Completion in Paragraph 15.08.A of the General Conditions is hereby revised to be 2 years after Substantial Completion. See SC-15.08.G below.
2. After Substantial Completion, Contractor shall furnish a warranty bond issued in the form of EJCDC® C-612, Warranty Bond (2018). The warranty bond must be in a bond amount of 10 percent of the final Contract Price. The warranty bond period will extend to a date 2 years after Substantial Completion of the Work. Contractor shall deliver the fully executed warranty bond to Owner prior to or with the final application for payment, and in any event no later than 11 months after Substantial Completion.
3. The warranty bond must be issued by the same surety that issues the performance bond required under Paragraph 6.01.A of the General Conditions.

6.02 *Insurance—General Provisions*

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

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

~~SC-6.02 Add the following paragraph immediately after Paragraph 6.02.H.2 of the General Conditions:~~

- ~~3. For the following Subcontractors, Suppliers, or categories of Subcontractor or Supplier, Contractor shall require the following specified insurance, with policy limits as stated: [Identify Subcontractors, Suppliers, or categories of same, and insert specific insurance requirements and policy limits]~~

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: TD&H Engineering; KLM Engineering Inc.; Alpine Geotechnical.
- 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
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Employer's Liability	
Policy limit	\$1,000,000.00

- 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	\$5,000,000.00
Products—Completed Operations Aggregate	\$5,000,000.00
Personal and Advertising Injury—Each Occurrence	\$5,000,000.00
Bodily Injury and Property Damage—Each Occurrence	\$5,000,000.00

- 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:
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	\$5,000,000.00

- 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	
General Aggregate	

- 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.
- 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	\$
General Aggregate	\$

- N. ~~*Contractor's Professional Liability Insurance:*~~ If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor's Professional Liability	Policy limits of not less than:
Each Claim	\$
Annual Aggregate	\$

- ~~Q. *Railroad Protective Liability Insurance:* Prior to commencing any Work within 50 feet of railroad owned and controlled property, Contractor shall (1) endorse its commercial general liability policy with ISO CG 24 17, removing the contractual liability exclusion for work within 50 feet of a railroad, (2) purchase and maintain railroad protective liability insurance meeting the following requirements, (3) furnish a copy of the endorsement to Owner, and (4) submit a copy of the railroad protective policy and other railroad required documentation to the railroad, and notify Owner of such submittal.~~

~~**[Insert additional specific requirements, commonly set by the railroad, here.]**~~

~~Railroad Protective Liability Insurance~~	~~Policy limits of not less than:~~
~~Each Claim~~	~~\$~~
~~Aggregate~~	~~\$~~

- ~~P. *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~~	~~\$~~
~~General Aggregate~~	~~\$~~

- ~~Q. *Other Required Insurance:* **[Here list additional types and amounts of insurance that Contractor is required to carry.]**~~

6.04 *Builder's Risk and Other Property Insurance*

~~SC-6.04~~ Delete Paragraph 6.04.A and insert the following in its place:

- ~~A. Owner 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.~~

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. ~~{Here list by legal name (not category, role, or classification) other persons or entities to be included on the builder's risk policy as named insureds. It is~~

~~generally recommended to list the insured's full legal/contractual name, address, contact person, telephone, and e-mail address. Include only persons or entities that have property at the Site that is to be insured by the builder's risk insurance. If applicable, separately identify any mortgagee or lender required to be named as a loss payee.]~~

~~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. [Here list or provide cross-reference to specific items of Owner furnished (or third-party furnished) equipment, and purchase value; do not list items whose value is already included in the Contract Price.]~~

~~12. If debris removal in connection with repair or replacement of insured property is subject to a coverage sublimit, such sublimit will be a minimum of \$[amount].~~

~~13. In addition to the coverage sublimits stated above, the following coverages are also subject to sublimits, as follows:~~

~~a. [Here list a specific coverage, or cause of loss, that has been determined to be likely to be subject to a sublimit. If not applicable, then delete Paragraph SC-6.04.F.13 in its entirety.] If this coverage is subject to a sublimit, such sublimit will be a minimum of \$[amount].~~

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.~~

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

~~H. Builder's Risk and Other Property Insurance Deductibles: The purchaser of any required builder's risk, installation floater, or other property insurance will be responsible for costs not covered because of the application of a policy deductible.~~

~~1. The builder's risk policy (or if applicable the installation floater) will be subject to a deductible amount of no more than \$[number] for direct physical loss in any one occurrence.~~

SC-6.04 — Delete Paragraph 6.04.A of the General Conditions and substitute the following in its place:

~~A. Installation Floater~~

~~1. Contractor shall provide and maintain installation floater insurance on a broad form or "all risk" policy providing coverage for materials, supplies, machinery, fixtures, and equipment that will be incorporated into the Work ("Covered Property"). Coverage under the Contractor's installation floater will include loss from covered "all risk" causes (perils) to Covered Property:~~

- a. ~~of the Contractor, and Covered Property of others that is in Contractor's care, custody, and control;~~
 - b. ~~while in transit to the Site, including while at temporary storage sites;~~
 - c. ~~while at the Site awaiting and during installation, erection, and testing;~~
 - d. ~~continuing at least until the installation or erection of the Covered Property is completed, and the Work into which it is incorporated is accepted by Owner.~~
- 2. ~~The installation floater coverage cannot be contingent on an external cause or risk, or limited to property for which the Contractor is legally liable.~~
 - 3. ~~The installation floater coverage will be in an amount sufficient to protect Contractor's interest in the Covered Property. The Contractor will be solely responsible for any deductible carried under this coverage.~~
 - 4. ~~This policy will include a waiver of subrogation applicable to Owner, Contractor, Engineer, all Subcontractors, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them.~~

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.03—*Labor; Working Hours*

SC 7.03—Add the following new subparagraphs immediately after Paragraph 7.03.C:

- 1. ~~Regular working hours will be [Here insert schedule of regular working hours].~~
- 2. ~~Owner's legal holidays are [Here insert list of legal holidays].~~

SC 7.03—Amend the first and second sentences of Paragraph 7.03.C to state "...all Work at the Site must be performed during regular working hours, [day of the week] through [day of the week]. Contractor will not perform Work on a [day of the week], [day of the week], or any legal holiday."

SC 7.03—Delete Paragraph 7.03.C in its entirety, and insert the following:

- C. ~~In the absence of any Laws or Regulations to the contrary, Contractor may perform the Work on holidays, during any or all hours of the day, and on any or all days of the week, at Contractor's sole discretion.~~

SC 7.03—Add the following new paragraph immediately after Paragraph 7.03.C:

- D. ~~[Contractor] [Owner] [choose one and delete the other] shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set off against payments due under Article 15.~~

SC 7.03—Add the following new subparagraph immediately after Paragraph SC 7.03.D:

- 1. ~~For purposes of administering the foregoing requirement, additional overtime costs are defined as [Here insert parameters for compensated overtime hours].~~

7.10—*Taxes*

SC 7.10—Add a new paragraph immediately after Paragraph 7.10.A:

- ~~B. Owner is exempt from payment of sales and compensating use taxes of the State of **[name of state where Project is located]** and of cities and counties thereof on all materials to be incorporated into the Work.~~
 - ~~1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.~~
 - ~~2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.~~

7.13—*Safety and Protection*

SC 7.13—Insert the following after the second sentence of Paragraph 7.13.G:

~~The following Owner safety programs are applicable to the Work: **[Here expressly identify by title and/or date, any such Owner safety programs. If Owner's safety programs are included in or addressed in the Specifications, SC 7.13 may be used to provide a cross-reference to the Specification section].**~~

ARTICLE 8—OTHER WORK AT THE SITE

8.02—*Coordination*

SC 8.02—Add the following new Paragraph 8.02.C immediately after Paragraph 8.02.B:

- ~~C. Owner intends to contract with others for the performance of other work at or adjacent to the Site.~~
 - ~~1. **[Here identify individual or entirety]** shall have authority and responsibility for coordination of the various contractors and work forces at the Site;~~
 - ~~2. The following specific matters are to be covered by such authority and responsibility: **[Here itemize such matters];**~~
 - ~~3. The extent of such authority and responsibilities is: **[Here provide the extent].**~~

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.13—*Owner's Site Representative*

SC 9.13—Add the following new paragraph immediately after Paragraph 9.12 of the General Conditions:

9.13—*Owner's Site Representative*

- ~~A. Owner will furnish an "Owner's Site Representative" to represent Owner at the Site and assist Owner in observing the progress and quality of the Work. The Owner's Site Representative is not Engineer's consultant, agent, or employee. Owner's Site Representative will be **[here identify individual or entity]**. The authority and responsibilities of Owner's Site~~

~~Representative follow: [Here describe the duties and activities of the Owner's Site Representative.]~~

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

~~SC-10.03 Add the following new subparagraph immediately after Paragraph 10.03.A:~~

- ~~1. On this Project, by agreement with the Owner, the Engineer will not furnish a Resident Project Representative to represent Engineer at the Site or assist Engineer in observing the progress and quality of the Work.~~

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 11—CHANGES TO THE CONTRACT

No suggested Supplementary Conditions in this Article.

ARTICLE 12—CLAIMS

No suggested Supplementary Conditions in this Article.

ARTICLE 13—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 the Rental Rate Blue Book published by EquipmentWatch.

~~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. **[or insert other threshold price.]**~~

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 **[number]** percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than **[number]** percent 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

No suggested Supplementary Conditions in this Article.

ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 Progress Payments

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.~~

15.03 *Substantial Completion*

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.~~

15.08 *Correction Period*

SC-15.08 Add the following new Paragraph 15.08.G:

- G. The correction period specified as one year after the date of Substantial Completion in Paragraph 15.08.A of the General Conditions is hereby revised to be the number of years set forth in SC-6.01.B.1.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No suggested Supplementary Conditions in this Article.

ARTICLE 17—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.

~~17.03—Attorneys' Fees~~

~~SC 17.03—Add the following new paragraph immediately after Paragraph 17.02. [Note: If there is no Paragraph 17.02, because neither arbitration nor any other dispute resolution process has been specified here in the Supplementary Conditions, then revise this to state “Add the following new Paragraph immediately after Paragraph 17.01” and revise the numbering accordingly].~~

~~17.03—Attorneys' Fees~~

- ~~A. For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.~~

ARTICLE 18—MISCELLANEOUS

~~18.08—Assignment of Contract~~

~~SC 18.08—Add the following new paragraph immediately after Paragraph 18.08.A:~~

- ~~B. The contract dated **[date]** between Owner as “buyer” and **[identify seller]** as “seller” for procurement of goods and special services (“procurement contract”) **[is hereby] [will be]** assigned to Contractor by Owner, and Contractor **[accepts] [will accept]** such assignment. A form documenting the assignment is attached as an exhibit to this Contract.~~
- ~~1. This assignment will occur on the **[Effective Date of the Contract]**, and will relieve the Owner as “buyer” from all further obligations and liabilities under the procurement contract.~~
 - ~~2. Upon assignment, the “seller” will be a Subcontractor or Supplier of the Contractor, and Contractor will be responsible for seller's performance, acts, and omissions, as set forth in Paragraph 7.07 of the General Conditions just as Contractor is responsible for all other Subcontractors and Suppliers.~~
 - ~~3. Notwithstanding this assignment, all performance guarantees and warranties required by the procurement contract will continue to run for the benefit of the Owner and, in addition, for the benefit of the Contractor.~~
 - ~~4. Except as noted in the procurement contract, all rights, duties and obligations of Engineer to “buyer” and “seller” under the procurement contract will cease **[upon the assignment to Contractor]**.~~

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 (Dropbox or similar)			
PDF	Portable Document Format			
DWG	Autodesk® AutoCAD .dwg format			
DOC	Microsoft® Word .docx format			
EXC	Microsoft® Excel .xls or .xml format			
DB	Microsoft® Access .mdb format			

EXHIBIT B—FORESEEABLE BAD WEATHER DAYS

Month	Number of Foreseeable Bad Weather Days in Month Based on Precipitation as Rain Equivalent (inches) (1)	Ambient Outdoor Air Temperature (degrees F)	
		Number of Foreseeable Bad Weather Days in Month Based on Low Temperature (at 11:00 a.m.)	Number of Foreseeable Bad Weather Days in Month Based on High Temperature (at 3:00 p.m.)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Notes:			
1. _____ Two inches of sleet equal one inch of rain. Five inches of wet, heavy snow equal one inch of rain. Fifteen inches of “dry” powder snow equals one inch of rain.			

~~EXHIBIT C—GEOTECHNICAL BASELINE REPORT SUPPLEMENT TO THE SUPPLEMENTARY CONDITIONS~~

~~1.01—Definitions~~

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

- ~~1.—*Geotechnical Baseline Report (GBR)*—The interpretive report prepared by or for Owner regarding subsurface conditions at the Site, and containing specific baseline geotechnical conditions that may be anticipated or relied upon for bidding and contract administration purposes, subject to the controlling provisions of the Contract, including the GBR’s own terms. The GBR is a Contract Document.~~
- ~~2.—*Geotechnical Data Report (GDR)*—The factual report that collects and presents data regarding actual subsurface conditions at or adjacent to the Site, including Technical Data and other geotechnical data, prepared by or for Owner in support of the Geotechnical Baseline Report. The GDR’s content may include logs of borings, trenches, and other site investigations, recorded measurements of subsurface water levels, the results of field and laboratory testing, and descriptions of the investigative and testing programs. The GDR does not include an interpretation of the data. If opinions, or interpretive or speculative non-factual comments or statements appear in a document that is labeled a GDR, such opinions, comments, or statements are not operative parts of the GDR and do not have contractual standing. Subject to that exception, the GDR is a Contract Document.~~

~~5.03—Subsurface and Physical Conditions~~

~~SC 5.03—Delete Paragraph 5.03 in its entirety and replace with the following:~~

~~5.03—Subsurface and Physical Conditions~~

~~A.—*Reports and Drawings:* The Supplementary Conditions hereby identify:~~

- ~~1.—those reports of explorations and tests of subsurface conditions at or adjacent to the Site (other than any Geotechnical Data Report or Geotechnical Baseline Report) that contain Technical Data. Such reports are as follows:~~
 - ~~a.—*Report Title:* **[Exact title of the document]**~~
 - ~~b.—*Date of Report:* **[Date report was issued]**~~
 - ~~c.—*Technical Data in report upon which Contractor may rely:* **[Identify Technical Data (for example, “Boring Log, Test Site 3”) and specify page number or other reference where Technical Data is located within the report. List multiple Technical Data line items per entry when appropriate.]**~~
- ~~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. Such drawings are as follows:~~
 - ~~a.—*Drawings Title:* **[Exact title of the drawings]**~~
 - ~~b.—*Date of Drawings:* **[Date drawings were issued]**~~

- ~~c. Technical Data in drawings upon which Contractor may rely: [Identify Technical Data (for example, "Plan View of Rock Outcroppings") in drawings, or state "All information in drawing" if entire content is Technical Data entitled to reliance; and specify drawing number, page number, or other reference where the Technical Data is located. List multiple Technical Data line items per entry when appropriate.]~~
3. Contractor may examine copies of reports and drawings identified immediately above that were not included with the Bidding Documents at **[location]** during regular business hours, or may request copies from Engineer, at the cost of reproduction.
- ~~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 SC-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 Authorized: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in 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; or~~
 - ~~2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or~~
 - ~~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.~~
- ~~E. Geotechnical Baseline Report~~
- ~~1. This Contract contains a Geotechnical Baseline Report ("GBR"), identified as follows: **[Example: Geotechnical Baseline Report for Northwest Interceptor, dated February 12, 2013, prepared by ABC Geotechnical Engineers, Inc., Sacramento, California]**. This Contract also contains a Geotechnical Data Report (GDR), identified as follows: **[Example: Geotechnical Data Report for Northwest Interceptor, dated June 15, 2012, prepared by ABC Geotechnical Engineers, Inc., Sacramento, California]**.~~
 - ~~2. The GBR and GDR are incorporated as Contract Documents. The GBR and GDR are to be used in conjunction with other Contract Documents, including the Drawings and~~

Specifications. If there is a conflict between the terms of the GBR and the GDR, the GBR's terms prevail.

- ~~3. The GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations (referred to here in the Supplementary Conditions as "Baseline Conditions"). These may include ground, geological, groundwater, and other subsurface geotechnical conditions, and baselines of anticipated Underground Facilities or subsurface structures.~~
- ~~4. The Baseline Conditions will be used to assist in the administration of the Contract's differing site conditions clause at locations where subsurface conditions have been baselined. If a condition is baselined in the GBR, then only the pertinent Baseline Conditions will be used to determine whether there is a differing site condition; and no other indication of that condition in the Contract Documents or Technical Data, or of a condition that describes, quantifies, or measures a similar characteristic of the subsurface, will be used for the differing site condition determination.~~
- ~~5. The Baseline Conditions will not be used to make differing site conditions determinations at locations that have not been baselined in the GBR, or at any location with respect to subsurface conditions that the Baseline Conditions do not address. If Underground Facilities or Hazardous Environmental Conditions are expressly addressed in the Baseline Conditions, then comparison to such Baseline Conditions will be the primary means of determining (a) whether an Underground Facility was shown or indicated with reasonable accuracy, as provided in Paragraph 5.05 of the General Conditions, or (b) whether a Hazardous Environmental Condition was shown or indicated in the Contract Documents as indicated in Paragraph 5.06.H of the General Conditions. As indicated in Paragraph SC 5.04 below, the GDR will be the primary resource for differing site conditions determinations in cases in which the GBR is inapplicable.~~
- ~~6. The descriptions of subsurface conditions provided in the GBR are based on geotechnical investigations, laboratory tests, interpretation, interpolation, extrapolation, and analyses. Neither Owner, Engineer, nor any geotechnical or other consultant warrants or guarantees that actual subsurface conditions will be as described in the GBR, nor is the GBR intended to warrant or guarantee the use of specific means or methods of construction.~~
- ~~7. The behavior of the ground during construction depends substantially upon the Contractor's selected means, methods, techniques, sequences, and procedures of construction. If ground behavior conditions are baselined in the GBR, they are based on stated assumptions regarding construction means and methods.~~
- ~~8. The GBR will not reduce or relieve Contractor of its responsibility for the planning, selection, and implementation of safety precautions and programs incident to Contractor's means, methods, techniques, sequences, and procedures of construction, or to the Work.~~

~~5.04—Differing Subsurface or Physical Conditions~~

~~SC 5.04—Delete Paragraph 5.04 in its entirety and replace with the following:~~

~~5.04—Differing Subsurface or Physical Conditions~~

~~A.—Notice: If Contractor believes that any subsurface condition that is uncovered or revealed at the Site:~~

- ~~1.—differs materially from conditions shown or indicated in the GBR; or~~
- ~~2.—differs materially from conditions shown or indicated in the GDR, to the extent the GBR is inapplicable; or~~
- ~~3.—differs materially from conditions shown or indicated in Contract Documents other than the GBR or GDR, to the extent the GBR and GDR are inapplicable; or~~
- ~~4.—to the extent the GBR and GDR are inapplicable, is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or~~
- ~~5.—to the extent the GBR and GDR are inapplicable, is of such a nature as to require a change in the Drawings or Specifications; or~~
- ~~6.—to the extent the GBR and GDR are inapplicable, 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 conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.~~

~~B.—Engineer's Review: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph SC 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption or continuation 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 or continuation 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 SC 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 of the General Conditions; 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; or~~

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

~~c.—Contractor failed to give the written notice as required by Paragraph SC 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 must 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 of the General Conditions governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 of the General Conditions governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of~~

~~Paragraphs SC 5.03 and SC 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.~~

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CONTRACTOR'S NAME, ADDRESS & TELEPHONE NUMBER

Return to:

U.S. Department of Labor for OFCCP
Southwest and Rocky Mountain
Region Federal Building, Room 840
525 South Griffin St.
Dallas, TX 75202

EMPLOYER ID NUMBER OF CONTRACTOR: _____

CONTRACT INFORMATION

PROJECT AND LOCATION:				
Dollar Amount of Contract	Estimated Start Date	Estimated Completion Date	Contract No.	Geographical Area

NOTIFICATION OF SUBCONTRACTS AWARDED (>\$10,000)

Subcontractor's Name, Address, & Phone Number	Employer ID Number of Subcontractor	Estimated \$ Amount of Subcontract	Estimated Start Date	Estimated Completion Date

CIVIL RIGHTS LAWS

Because of the extraordinary reach of the civil rights laws, all assistance recipients must comply with these “super crosscutters.” Pursuant to EPA’s regulations on “Nondiscrimination in Programs receiving Federal Assistance from the Environmental Protection Agency,” the SRF agency must agree, and require all assistance recipients to agree, not to discriminate on the basis of race, color, national origin or sex. 40 C.F.R. Part 7.

Recipients of federal assistance are required to collect and maintain information to show compliance with the laws. This information includes a list of discrimination complaints, reports of any compliance reviews conducted by other agencies, descriptions of any pending discrimination-based lawsuits, and data on the racial, ethnic, national origin, sex, and handicap characteristics of populations served. If there is “reason to believe” that discrimination may be occurring based on this review, the matter will be referred to the EPA Regional Director of Civil Rights for appropriate action.

The following four laws prohibit discrimination in the provision of services or benefits, on the basis of race, color, national origin, sex, handicap or age, in programs or activities receiving federal financial assistance. If, for example, a municipality receives SRF assistance to build a wastewater treatment plant, it may not decline to provide service from that plant to a particular neighborhood because of its racial composition. As the preface to this section noted, Title VI, the Rehabilitation Act, and the Age Discrimination Act were amended in 1988 to clarify that their anti-discrimination provisions apply to the entire operations of an assistance recipient, not just to the specific program, project, or activity that is the objective of the assistance. The reach of these statutes and Section 13, which contains language instructing EPA to treat its sex discrimination provisions in a manner similar to the Civil Rights Act, extends beyond that of other cross-cutting authorities.

The following excerpts from the four laws demonstrate their prohibition of various forms of discrimination that are prohibited in federally assisted programs and activities:

Title VI of the Civil Rights Act of 1964

No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

Section 13 of the Federal Water Pollution Control Act Amendments of 1972 (CWSRF only)

No person in the United States shall, on the ground of sex be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving federal assistance under... the federal Water Pollution Control Act...

Section 504 of the Rehabilitation Act of 1973

(n)o otherwise qualified individual with a disability in the United States . . . shall, solely by reason of his or her disability, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving federal financial assistance...

Age Discrimination Act of 1975

(n)o person in the United States shall, on the basis of age, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance.

DISCOVERY OF ARCHAEOLOGICAL AND OTHER HISTORICAL ITEMS

In the event of an archaeological find during any phase of construction, the following procedure will be followed:

- (1) Construction shall be halted, with as little disruption to the archaeological site as possible.
- (2) The Contractor shall notify the Owner who shall contact local law enforcement. Local law enforcement shall provide notification to the State Historical Preservation Officer in accordance with North Dakota Administrative Code (NDAC) 40-02-03-03.
- (3) The State Historical Preservation Officer may decide to have an archaeologist inspect the site and make recommendations about the steps needed to protect the site, before construction is resumed.
- (4) The entire event should be handled as expediently as possible in order to hold the loss in construction time to a minimum while still protecting archaeological finds.

A similar procedure should be followed with regard to more recent historical resources. Should any artifacts, housing sites, etc., be uncovered, the same procedure should be followed as for an archaeological find.

In the event archaeological/historical data are evaluated to meet National Register criteria, the Advisory Council on Historic Preservation may be notified and asked to comment.

BONDING REQUIREMENTS

Bonding requirements must meet the minimums established in 2 CFR 200:

- (1) A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.
- (2) A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor’s requirements under such contract.
- (3) A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and materials in the execution of the work provided for in the contract.

WILLIAMS-STEIGER OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

A. AUTHORITY

- (1) The contractor is subject to the provisions of the Williams-Steiger Occupational Safety and Health Act of 1970.
- (2) These construction documents and the joint and several phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of the Federal law(s) , including but not limited to the latest amendment of the following:
 - a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 94-596;
 - b. Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations;
 - c. Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

B. SAFETY AND HEALTH PROGRAM REQUIREMENTS

- (1) This project, its prime contractor and its subcontractors, shall at all times be governed by Chapter XVII of Title 29, Code of Federal Regulations, Part 1926 - Safety and Health Regulations for Construction (29 CFR 22801), as amended to date.
- (2) To implement the program and to provide safe and healthful working conditions for all persons, general project safety meetings will be conducted at the site at least once each month during the course of construction, by the construction superintendent or his/her designated safety officer. Notice of such meeting shall be issued not less than three (3) days prior, stating the exact time, location, and agenda to be included. Attendance by the owner, architect, general foreman, shop steward(s), and trades, or their designated representatives, witnessed in writing as such, shall be mandatory.
- (3) To further implement the program, each trade shall conduct a short gang meeting, not less than once a week, to review project safety requirements mandatory for all persons during the coming week. The gang foreman shall report the agenda and specific items covered to the project superintendent, who shall incorporate these items in his/her daily log or report.
- (4) The prime contractor and all subcontractors shall immediately report all accidents, injuries, or health hazards to the owner and architect, or their designated representatives, in writing. This shall not obviate any mandatory reporting under the provisions of the Occupational Safety and Health Act of 1970.
- (5) This program shall become a part of the contract documents and the contract between the owner and prime contractor, prime contractor and all subcontractors, as though fully written therein.

DAVIS-BACON WAGE RATE REQUIREMENTS

The contractor acknowledges that by entering into this contract with a contracting agency, funded by an Environmental Protection Agency assistance agreement (grant), the contractor agrees to comply with the following terms and conditions in accordance with [29 CFR 5.5](#), if this contract is for activities covered under Davis-Bacon and Related Acts (DBRA) and exceeds (or will exceed) \$2,000. Definitions for many of the terms used below are provided in [29 CFR 5.2](#).

For the purposes of this clause, non-Federal entities that enter into contracts with contractors are considered “contracting agencies”. Contracting agencies may be EPA grant recipients and/or subrecipients at any tier (including borrowers). “Contracting officers” work for contracting agencies.

(a) Required Contract Clauses

(1) Minimum Wages

(i) Wage rates and fringe benefits

All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

As provided in paragraphs (d) and (e) of this section, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(v) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph (a)(4) of this section.

Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph (a)(1)(iii) of this section) and the Davis-Bacon poster (WH-1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii) Frequently recurring classifications

- (A) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR Part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph (a)(1)(iii) of this section, provided that:
 - (1) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;
 - (2) The classification is used in the area by the construction industry; and
 - (3) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.
- (B) The Administrator will establish wage rates for such classifications in accordance with paragraph (a)(1)(iii)(A)(3) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

(iii) Conformance

- (A) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:
 - (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (2) The classification is used in the area by the construction industry; and
 - (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (B) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.
- (C) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to DBAconformance@dol.gov. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- (D) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(E) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs (a)(1)(iii)(C) and (D) of this section. The contractor must furnish a written copy of such determination to each affected worker, or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph (a)(1)(iii)(C) or (D) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iv) Fringe benefits not expressed as an hourly rate

Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(v) Unfunded plans

If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(vi) Interest

In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

(2) Withholding

(i) Withholding requirements

The EPA, grant recipient, subrecipient at any tier, and/or contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in paragraph (a) of this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2).

The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work (or otherwise working in construction or development of the project under a development statute) all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph (a)(3)(iv) of this section, the **EPA, grant recipient, subrecipient at any tier,**

and/or contracting agency may on its own initiative and after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(ii) Priority to withheld funds

The Department has priority to funds withheld or to be withheld in accordance with paragraph (a)(2)(i) or (b)(3)(i) of this section, or both, over claims to those funds by:

- (A) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (B) A contracting agency for its reprocurement costs;
- (C) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (D) A contractor's assignee(s);
- (E) A contractor's successor(s); or
- (F) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

(3) Records and certified payrolls

(i) Basic record requirements

(A) Length of record retention

All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(B) Information required

Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(C) Additional records relating to fringe benefits

Whenever the Secretary of Labor has found under paragraph (a)(1)(v) of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(D) Additional records relating to apprenticeship. Contractors with apprentices working under

approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

(ii) Certified payroll requirements

(A) Frequency and method of submission

The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts- covered work is performed, certified payrolls to the **contracting agency** if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the certified payrolls to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to the **contracting agency**. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(B) Information required

The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph (a)(3)(i)(B) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at

<https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf> or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the sponsoring government agency (or the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records).

(C) Statement of Compliance

Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

- (1) That the certified payroll for the payroll period contains the information required to be provided under paragraph (a)(3)(ii) of this section, the appropriate information and basic records are being maintained under paragraph (a)(3)(i) of this section, and such information and records are correct and complete;
- (2) That each laborer or mechanic (including each helper and apprentice) working on the

contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and

- (3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(D) Use of Optional Form WH-347

The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(C) of this section.

(E) Signature

The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(F) Falsification

The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(G) Length of certified payroll retention

The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

(iii) Contracts, subcontracts, and related documents

The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

(iv) Required disclosures and access

(A) Required record disclosures and access to workers

The contractor or subcontractor must make the records required under paragraphs (a)(3)(i) through (iii) of this section, and any other documents that **the EPA, recipient, or subrecipient at any tier, and/or contracting agency**, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the **EPA, recipient, or subrecipient at any tier, and/or contracting agency**, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(B) Sanctions for non-compliance with records and worker access requirements

If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such

workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(C) Required information disclosures

Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the **Environmental Protection Agency** if the agency is a party to the contract, or to the Wage and Hour Division of the Department of Labor. If the Federal agency is not such a party to the contract, the contractor, subcontractor, or both, must, upon request, provide the full Social Security number and last known address, telephone number, and email address of each covered worker to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to the **EPA, recipient, or subrecipient at any tier, contracting agency**, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

(4) Apprentices and Equal Employment Opportunity

(i) Apprentices

(A) Rate of pay

Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(B) Fringe benefits

Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(C) Apprenticeship ratio

The allowable ratio of apprentices to journey workers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph (a)(4)(i)(D) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph (a)(4)(i)(A) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(D) Reciprocity of ratios and wage rates

Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journey worker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

(ii) Equal employment opportunity

The use of apprentices and journey workers under this part must be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) is reserved

(6) Subcontracts

The contractor or subcontractor must insert in any subcontracts the clauses contained in paragraphs (a)(1) through (11) of this section or a link to the **DBRA Requirements for Contractors and Subcontractors Under EPA Grants** document on EPA's Contract Provisions for Davis-Bacon and Related Acts webpage, along with the applicable wage determination(s) and such other clauses or contract modifications as the Environmental Protection Agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate.

(7) is reserved

(8) is reserved

(9) is reserved

(10) Certification of Eligibility

- (i) By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

- (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).
- (iii) The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

(11) Anti-Retaliation

It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

- (i) Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;
- (ii) Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;
- (iii) Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or
- (iv) Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

CONTRACT PROVISIONS FOR CONTRACTS IN EXCESS OF \$100,000

Under the Davis-Bacon and Related Acts (DBRA), all contracts awarded under EPA assistance agreements (grants) in excess of \$100,000 that involve the employment of mechanics or laborers require contractors and subcontractors to comply with the overtime provisions of the Contract Wage Hours and Safety Standards Act (CWHSSA) at 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations in 29 CFR Part 5 and 2 CFR 200 Appendix II(E). By accepting this contract, you agree to comply with the requirements of CWHSSA described below, in addition to the DBRA Requirements for Contractors Under EPA Grants.

These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence. For the purposes of this provision, the terms "laborers and mechanics" include watchpersons and guards.

(b) Contract Work Hours and Safety Standards Act (CWHSSA).

(1) Overtime requirements

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; Liability for Unpaid Wages; Liquidated Damages

In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall

be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of \$31 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1).

(3) Withholding for Unpaid Wages and Liquidated Damages

(i) Withholding process.

The EPA, recipient, or subrecipient at any tier, and/or contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this paragraph (b) on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

(ii) Priority to withheld funds

The Department has priority to funds withheld or to be withheld in accordance with paragraph (a)(2)(i) or (b)(3)(i) of this section, or both, over claims to those funds by:

- (A) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (B) A contracting agency for its procurement costs;
- (C) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (D) A contractor's assignee(s);
- (E) A contractor's successor(s); or
- (F) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

(4) Subcontracts

The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs (b)(1) through (5) of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (5). In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

(5) Anti-Retaliation

It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

- (i) Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;
- (ii) Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;
- (iii) Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or
- (iv) Informing any other person about their rights under CWHSSA or this part.

(INSERT APPLICABLE WAGE DECISION HERE)

"General Decision Number: ND20260041 01/16/2026

Superseded General Decision Number: ND20250041

State: North Dakota

Construction Type: Heavy
HEAVY CONSTRUCTION PROJECTS

County: Mountrail County in North Dakota.

HEAVY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	01/02/2026
1	01/16/2026

CARP1091-005 05/01/2024

	Rates	Fringes
CARPENTER.....	\$ 35.87	25.10

ELEC0714-017 07/01/2024

	Rates	Fringes
ELECTRICIAN.....	\$ 44.98	13.21+11.5%

* ENGI0049-035 10/01/2025

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Bobcat/Skid Steer/Skid		
Loader.....	\$ 34.00	22.45
Bulldozer.....	\$ 35.00	22.45
Roller.....	\$ 34.85	22.45

* ENGI0049-040 10/01/2025

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Crane.....	\$ 35.25	22.45
Forklift.....	\$ 34.85	22.45

LAB00563-010 05/01/2024

	Rates	Fringes
LABORERS		
Common or General.....	\$ 28.83	21.15
Pipelaye.....	\$ 30.80	20.45

SUND2017-004 07/31/2020

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 24.33	0.00
IRONWORKER, REINFORCING.....	\$ 25.28	0.00

OPERATOR:

Backhoe/Excavator/Trackhoe.....\$ 29.92	15.43
OPERATOR: Grader/Blade.....\$ 28.00	0.00
OPERATOR: Loader.....\$ 31.06	15.71
TRUCK DRIVER: Dump Truck.....\$ 31.95	18.80

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME

refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative

Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

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AMERICAN IRON AND STEEL (AIS) REQUIREMENTS

The Contractor acknowledges that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

One of the following certification forms should be used as documentation of compliance with the AIS requirements.

Sample Certification for AIS

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Sample Step Certification for AIS

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

LEAD SERVICE LINE REPLACEMENT (DWSRF)

The memo *Implementing Lead Service Line Replacement Projects Funded by the Drinking Water State Revolving Fund* dated May 1, 2024 and issued by the Environmental Project Agency outlines the following requirements that apply to lead service line replacements (LSLR) depending on the project type:

Stand-alone LSLR

Stand-alone LSLR projects refers to projects that are solely replacing lead service lines and are not conducting additional construction or activities that would disturb the service line, such as main replacement or meter replacement. All LSLRs conducted through a stand-alone LSLR project must replace the full lead service line (i.e., the customer-owned and system-owned portions) unless a portion has already been replaced or is concurrently being replaced with another funding source. The entire length of each property's lead service line must be replaced at the same time except where it is impractical due to access constraints or local requirements that prevent the same organization from completing the full LSLR at the same time. The time between starting and completing full LSLR should be as short as possible and should not exceed three months.

LSLR in Conjunction with Planned Infrastructure Projects

All DWSRF-funded projects involving LSLR implemented in conjunction with other planned infrastructure projects that affect the service line must plan to replace the full service line. Planned infrastructure work includes water infrastructure or capital improvement projects that do not solely replace lead service lines. Examples include, but are not limited to, water main replacement, meter replacement, and transportation-related construction projects. A partial LSLR may only be funded by the SRF where the water system shows all of the following: that the partial LSLR is done in conjunction with planned infrastructure work, that disturbance to the service line is unavoidable because of the planned infrastructure work, and that the water system has documented customer refusal showing it cannot gain access to that property to conduct a full LSLR following multiple attempts. Refusals may consist of any of the following: a refusal signed by the customer, documentation of a verbal statement refusing replacement, or documentation of no response after multiple attempts to reach the customer regarding full LSLR.

LSLR in Conjunction with Emergency Infrastructure Repair or Replacement

Emergency repair and replacement of drinking water transmission and distribution infrastructure can necessitate unexpected replacement of lead service lines. Under such circumstances, DWSRF-funded borrowers must offer to replace the full lead service line. However, the borrower may use DWSRF funding to pay for emergency partial LSLR if full replacement is not possible due to a documented customer refusal. Refusals may consist of any of the following: a refusal signed by the customer, documentation of a verbal statement refusing replacement, or documentation of no response after multiple attempts to reach the customer regarding full LSLR.

ADMINISTRATION OF THE CLEAN AIR ACT AND THE FEDERAL WATER POLLUTION CONTROL ACT WITH RESPECT TO FEDERAL CONTRACTS, GRANTS, OR LOANS

Both the CAA and the CWA prohibit federal agencies from procuring goods or services from—or extending assistance by way of grant, loan or contract to — persons who have been convicted of violations of either law. Executive Order No. 11738 was issued to coordinate enforcement of these provisions by conferring certain responsibilities on the EPA Administrator. Under section 2(b) of Executive Order No. 11738, the Administrator

shall... designate facilities which have given rise to a conviction for an offense under (the criminal provisions of the CAA and the CWA).

The Executive Order also prohibits federal agencies from extending assistance to facilities that are not in compliance with either Act. Section 3(b) of Executive Order No. 11738 provides that:

(N)o federal agency authorized to extend federal assistance by way of grant, loan or contract shall extend such assistance in any case in which it is to be used to support any activity or program involving the use of a facility then designated by the Administrator pursuant to section 2.

The prohibition of section 3(b) does not apply if the purpose of the assistance is to remedy the cause of the CAA or CWA violation.

GUIDANCE FOR UTILIZATION OF SMALL, MINORITY AND WOMEN BUSINESS ENTERPRISES REQUIREMENTS

The North Dakota Drinking Water State Revolving Fund (DWSRF) and Clean Water State Revolving Fund (CWSRF), receive federal funds from the U.S. Environmental Protection Agency (EPA) to provide low interest rate loans to finance water infrastructure projects. As a condition of federal grant awards, EPA regulations require that loan recipients and sub-recipients (i.e., prime contractors and subcontractors) make a good-faith effort to award a fair share of work to DBE's who are minority business enterprises (MBE's) and women's business enterprises (WBE's). DBE requirements can be found in 40 CFR Part 33.

To ensure compliance with EPA's DBE requirements, both **Project Owners (Loan Recipients)** and **Prime Contractors must** undertake the good faith efforts to provide opportunities for DBE companies to participate in procurements. EPA regulations require evidence of the demonstration of the six good faith efforts in trying to achieve the DBE participation goals. DWSRF and CWSRF negotiated DBE participation goals with EPA of **2%** for MBEs and **3%** for WBEs. The DBE goals are not a quota.

Good Faith Efforts – 40 CFR 33.301

The following good faith efforts which apply to the procurement categories involving EPA financial assistance funds can be found in **40 CFR, Subpart C, Part 33** of EPA's Disadvantaged Business Enterprise Program Rule.

1. Ensure DBE's are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities.
2. Search DBE lists for potential subcontracts/suppliers.
 - a. The DBE lists are updated frequently, so search on-line for the most current list.
 - b. Contact at least one DBE for each subcontract/supplier needed.
3. Provide notice to DBE organizations of opportunities to bid.
4. Arrange time frames for contracts and establish delivery schedules in a way that encourages and facilitates participation by DBEs in the competitive process.
5. Divide total requirements into smaller tasks or quantities and using DBE prime contractors and subcontractors when feasible to permit maximum DBE participation.
6. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
7. Use the services and assistance of the Small Business Administration (SBA), Department of Transportation (DOT) and Minority Business Development Agency of the U. S. Department of Commerce.
8. If the Prime Contractor awards subcontracts, require the prime contractor to take these same Good Faith Efforts.

TO PROVIDE PROCUREMENT OPPORTUNITIES TO DBE FIRMS, THE PROJECT OWNER SHOULD:

- Conduct pre-bid meetings to inform potential bidders/contractors about DBE requirements and provide guidance in undertaking the required good faith efforts found at 40 CFR 33.301.
- When appropriate invite DBE companies to meetings, conferences, etc., to inform them of procurement opportunities.
- Use listings of certified DBEs from the U.S. Small Business Administration (SBA), North Dakota Department of Transportation (NDDOT), and EPA's Office of Small Business Programs (OSBP) etc, to solicit DBE companies as prime contractors whenever they are potential. The SBA maintains a list that can be found at the following link http://dsbs.sba.gov/search/dsp_dsbs.cfm. The NDDOT

maintains a list which can be found at the following link <http://dotnd.diversitycompliance.com>. EPA's OSBP maintains a list located on EPA's OSBP Home Page (<http://www.epa.gov/smallbusiness/>).

Procurement, Recordkeeping and Reporting

1. PROJECT OWNERS ARE REQUIRED TO:

- A. Ensure all prime contractors apply the Good Faith Efforts and submit required forms as listed below.
- B. Project Owners must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the project owner/recipient. 40 CFR 33.302(a)
- C. Maintain copies of all DBE documentation and forms.

2. PRIME CONTRACTORS ARE REQUIRED TO:

- A. Notify the loan recipient in writing prior to any termination of a DBE subcontractor by the prime contractor. 40 CFR 33.302(b)
- B. Follow the six good faith efforts if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. 40 CFR 33.302(c)
- C. Follow the six good faith efforts for all subcontract and/or supplier procurements even if the prime contractor has achieved its fair share objectives. 40 CFR 33.302(d)

3. All SRF loan recipients are required to create and maintain a bidders list in accordance with 40 CFR, Subpart E, Part 33 of EPA's Disadvantaged Business Enterprise Program rule, (40 CFR 33.501(b)). The bidder's list must include all companies that bid/quote on prime contracts and/or bid/quote on subcontracts and supplies for SRF funded projects (including DBEs and non-DBEs). The bidder's list must include the following prime and subcontractor information (40 CFR 33.501): entity's name and the name of the person contacted; entity's mailing address, telephone number, and e-mail address; the task or material on which the entity bid/quoted, the amount and date of bid/quote; and the entity's status as an MBE/WBE or non-MBE/WBE.

4. The recipient/contractor shall supply the Department of Environmental Quality with information concerning the award of contracts to MBE/WBE's upon request. This may include copies of subcontracts, purchase orders, and receipts which verify contract amounts and utilization.

5. Bidders/offerors shall demonstrate compliance with good faith efforts in order to be deemed responsible. Demonstration of compliance includes completion of the following MBE/WBE Subcontractor Solicitation Information form and inclusion in the bid envelope. The bidder must solicit quotes from at least three certified MBEs and three certified WBEs and include the required information on the form. The bidder must also include similar information on the form for non MBE/WBE subcontractors from which quotes were received for the same work offered to MBE/WBEs.

MBE/WBE SUBCONTRACTOR SOLICITATION INFORMATION

Name, Address, & Phone Number of Subcontractor Contacted	Date that Quote was Requested	Description of Work Offered	Date of Follow-up & Person Contacted	Amount of Quote or Reason Not Quoting *	Quote Accepted? If not, List Reason for Rejection*	Indicate if MBE/WBE or non MBE/WBE

* Use additional sheets if necessary.

The contractor shall supply copies of subcontracts, purchase orders, and receipts which verify contract amounts and utilization of MBE/WBE subcontractors following contract award.

The undersigned hereby certifies that the above information is true and correct.

Contractor

By:

Signature

Title

Date

SRF Specification Package July 2025

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Equivalency Projects

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

A. INSTRUCTIONS

Under Executive Order 12549, an individual or organization debarred or excluded from participation in Federal assistance or benefit programs may not receive any assistance award under a Federal program, or a subagreement thereunder for \$25,000 or more. The status of prospective individuals or organizations can be checked at:

<http://www.sam.gov>

Accordingly, each prospective recipient of an EPA grant, loan, or cooperative agreement and any contract or subagreement participant thereunder must complete the attached certification or provide an explanation why they cannot complete the certification. For further details, see 40 CFR 32.510, Participants Responsibilities.

B. WHERE TO SUBMIT

A prospective prime contractor must submit a completed certification or explanation to the project owner for the project. Each prospective subcontractor must submit a completed certification or explanation to the prime contractor for the project.

C. HOW TO OBTAIN FORMS

Additional forms may be obtained from the State and may be reproduced.

United States Environmental Protection Agency
Washington, DC 20460

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
- (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative

Date

_____ I am unable to certify to the above statements. My explanation is attached.

PROHIBITION AGAINST LISTED VIOLATED FACILITIES

A. REQUIREMENTS

- (1) To comply with all the requirements of section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq., as amended by Pub. L. 92-604) and section 308 of the Clean Water Act (33 U.S.C. 1251, as amended), respectively, which relate to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the award of this contract.
- (2) That no portion of the work required by this prime contract will be performed in a facility listed on the Environmental Protection Agency list of violating facilities on the date when this contract was awarded unless and until the EPA eliminates the name of such facility or facilities from the listing.
- (3) To use his best efforts to comply with clean air and clean water standards at the facilities in which the contract is being performed.
- (4) To insert the substance of the provisions of this clause, including this paragraph (4), in any nonexempt subcontract.

B. DEFINITIONS

- (1) Air Act means the Clean Air Act, as amended (42 U.S.C. 1857 et seq.).
- (2) Water Act means the Clean Water Act, as amended (33 U.S.C. 1251 et seq.).
- (3) Clean Air Standards means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted under the Air Act or Executive Order 11738, an applicable implementation plan as described in section 110 (d) of the Air Act (42 U.S.C. 1857c-5(d)), an approved implementation procedure or plan under section 111 (c) or section 111(d), or an approved implementation procedure under section 112(d) of the Air Act (42 U.S.C. 1857c-7(d)).
- (4) Clean Water Standards means any enforceable limitation, control, condition, prohibition, standard, or other requirement which is promulgated under the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by section 402 of the Water Act (33 U.S.C. 1342), or by a local government to ensure compliance with pretreatment regulations as required by section 307 of Water Act (33 U.S.C. 1317).
- (5) Compliance means compliance with clean air or water standards. Compliance shall also mean compliance with a schedule or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency in accordance with the requirements of the Air Act or Water Act and regulations.
- (6) Facility means any building, plant, installation, structure, mine, vessel, or other floating craft, location, or site of operations, owned, leased, or supervised by a contractor or subcontractor, to be used in the performance of a contract or subcontract. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location or site shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are located in one geographical area.

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

This term and condition implements 2 CFR 200.216 and is effective for obligations and expenditures of EPA financial assistance funding on or after 8/13/2020.

As required by 2 CFR 200.216, EPA recipients and subrecipients, including borrowers under EPA funded revolving loan fund programs, are prohibited from obligating or expending loan or grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities). Recipients, subrecipients, and borrowers also may not use EPA funds to purchase:

- a. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- b. Telecommunications or video surveillance services provided by such entities or using such equipment.
- c. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Consistent with 2 CFR 200.471, costs incurred for telecommunications and video surveillance services or equipment such as phones, internet, video surveillance, and cloud servers are allowable except for the following circumstances:

- a. Obligating or expending EPA funds for covered telecommunications and video surveillance services or equipment or services as described in 2 CFR 200.216 to:
 - (1) Procure or obtain, extend or renew a contract to procure or obtain;
 - (2) Enter into a contract (or extend or renew a contract) to procure; or
 - (3) Obtain the equipment, services, or systems.

Certain prohibited equipment, systems, or services, including equipment, systems, or services produced or provided by entities identified in section 889, are recorded in the System for Award Management exclusion list.

BUILD AMERICA, BUY AMERICA (BABA) REQUIREMENTS

The Contractor acknowledges that it understands the goods and services under this Agreement are being funded with federal monies and have statutory requirements commonly known as “Build America, Buy America;” that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States (“Build America, Buy America Requirements”) including iron and steel, manufactured products, and construction materials provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner and Funding Authority (a) the Contractor has reviewed and understands the Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America Requirements, as may be requested by the Owner or the Funding Authority. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner or Funding Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Owner or Funding Authority resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the Funding Authority or any damages owed to the Funding Authority by the Owner). If the Contractor has no direct contractual privity with the Funding Authority, as a lender or awardee to the Owner for the funding of its project, the Owner and the Contractor agree that the Funding Authority is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the Funding Authority.

Sample Certification for BABA

The following information is provided as a sample letter of certification for BABA compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: Build America, Buy America Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the Build America, Buy America requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxx
2. Xxx
3. Xxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Sample Step Certification for BABA

The following information is provided as a sample letter of step certification for BABA compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: Build America, Buy America Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the Build America, Buy America requirements as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

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DIVISION 01 GENERAL REQUIREMENTS

SECTION 01 11 00

SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. Contract(s):

1. **Contract No. 2 - Electrical Construction (Lump Sum):** Work at the new tower generally consists of 1 - installation of utility service, grounding electrode systems, general power and lighting systems, panelboards and SCADA equipment. Offsite work generally consists of 2 – WTP, disconnecting the three (3) existing high service pumps and reconnection once the pump upgrades are completed and wiring and integration of the new Flowmeter and 3 – BS, disconnecting the existing four (4) booster pumps and reconnecting when pump upgrades are complete.

1.02 CONTRACTOR'S USE OF PREMISES

- A. The Contractor shall limit his use of the project site to those areas within the Owner's property.
- B. Contractor shall coordinate all Work with any adjacent construction projects.

1.03 OWNER'S ACCESS TO SITE

- A. The Contractor shall cooperate with the Owner in all construction operations to minimize conflict. The contractor shall at all times allow for access by the Engineer and Owner's personnel and equipment.

1.04 PROTECTION OF PROPERTY

- A. The Contractor shall protect, shore, brace, support and maintain all underground pipes, conduits, drains and other underground construction uncovered or otherwise affected by construction operations.
- B. The Contractor shall restore to their original condition roadways, utilities, fences, landscaping and other surface features affected by construction operations.
- C. The Contractor will be responsible for damage to roads or pavements which may be caused by transporting equipment or materials to or from the project site, or at the project site, whether by his own forces or by suppliers or subcontractors.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

SECTION 01 14 00

WORK RESTRICTIONS

PART 1 **GENERAL**

1.01 SECTION INCLUDES

- A. Access to Site.
- B. Contractor use of site and premises.
- C. Owner occupancy requirements.
- D. Road restrictions.
- E. Critical Work Sequences.

1.02 ACCESS TO SITE

- A. Coordinate with other contractors performing work on adjacent projects to avoid site access conflicts.
- B. During winter months, Contractor will be responsible for snow removal and management on the Site. Store removed snow in a location acceptable to Owner or haul away and dispose of in an appropriate off-site location.

1.03 CONTRACTOR USE OF SITE AND PREMISES

- A. Coordinate performance of all Work with Owner operations.
- B. Contractor shall confine construction equipment, storage of materials and equipment, and operations of workmen to areas permitted by law, ordinances, permits, or requirements of Contract Documents, and shall not unreasonably encumber premises with construction equipment or other materials or equipment.
- C. Contractor shall assume full responsibility for the protection and safekeeping of products under this Contract that are stored on the site.
- D. Move any stored materials or equipment which interfere with operations of the Owner.
- E. Construction personnel may park only in areas designated by Owner.
- F. Contractor shall, as required by Owner, ensure that the Police Department, Fire Department, and Hospital are notified in advance of street closures.
- G. Notify private property owners and businesses prior to beginning any construction work on adjacent driveway accesses or sidewalks.
- H. Contractor shall maintain access to adjacent properties at all times, including access for large vehicle traffic.

- I. Contractor shall provide Engineer and Owner with the name, address, and telephone number of person who has access to equipment and is authorized to make emergency repairs to Contractor's work, such as to correct trench cave-ins, move excavated material, and correct other problems during weekends and off-work hours.
- J. The Contractor shall preserve all monuments, benchmarks, reference points, and stakes. In case of destruction thereof, Contractor shall employ the services of an independant surveyor that is licensed in the state of North Dakota to replace the destroyed monuments, benchmarks, refrence points, or stakes.
- K. Permanent monuments or benchmarks which must be removed or disturbed shall be protected until properly referenced for relocation. The Contractor shall employ an independant surveyor licensed in the state of North Dakota to replace removed ordisturbed monuments or benchmarks.
- L. Damaged Property:
 - 1. Repair to original condition all lawns, walks, driveways, roadways, curbs, pavements, structures, and utilities that are cut or damaged by construction operations and are not designated for removal, relocation, or replacement in the course of construction.
- M. Existing Facilities:
 - 1. The Contractor shall take all necessary field measurements to ensure proper fit between all Work under the Contract and existing structures, piping, and equipment.
 - 2. Dimensions given on the drawings related to existing structures are based upon existing construction record drawings. Contractor shall verify the accuracy of all dimensions shown for existing structures, piping, and equipment. Any discrepancies shall be brought to the attention of Engineer.
- N. Existing Utilities:
 - 1. Existing underground utilities, as shown on the Drawings, are located in accordance with available data, but locations shall be field verified by Contractor. A utility locate is required prior to any excavation.
 - 2. Contractor shall protect all existing utilities and provide temporary removal and replacement or relocation as required for completion of the Work in the contract documents.
 - 3. Existing utilities not shown on the Drawings and requiring relocation shall be exposed by the Contractor without damage. Contractor shall repair any utilities damaged during the course of construction.
- O. Environmental Resources:

1. Protect environmental resources within the project boundaries and those affected outside the limits of construction. Confine activities to areas defined by the Contract Documents.
2. Do not fasten or attach ropes, cables, or guys to trees for anchorage unless specifically authorized, or where special emergency use is permitted.
3. Protect any trees, shrubs, vines, grasses, landforms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using other approved techniques.
4. Implement and maintain adequate erosion and sedimentation control measures that comply with all applicable regulatory requirements and these Contract Documents.

1.04 OWNER OCCUPANCY REQUIREMENTS

- A. Cooperate with Owner to minimize conflict and to facilitate Owner's operations. Schedule all Work to accommodate this requirement. No interruption will be permitted which adversely affects the degree of service the Owner provides. Contractor shall provide temporary facilities and make temporary modifications as necessary to keep Owner's facilities in operation during construction.

1.05 ROAD RESTRICTIONS

- A. CONTRACTOR shall take road restrictions into consideration during construction planning and execution. Extensions of contract time shall not be granted for road restrictions except in extreme circumstances.

1.06 CRITICAL WORK SEQUENCES

- A. To continue to provide water to the existing ground storage tank and the new tower in the most efficient manner possible the Contract shall upgrade one (1) high service pump at a time starting with the Water Treatment Plant (WTP), then the single high service pump in the Clear Well, then the second high service pump in the WTP.
 1. With the completion of one (1) WTP High Service Pump and the single Clear Well High Service Pump the Contractor may bring the new Tower Online.
- B. To prevent damage to the new Booster Station pumps by operating them outside of their efficiency bands, the Contractor shall not replace and activate new booster pump station pumps until the new water tower is online.
- C. Existing tank cannot be taken out of service until the new tower is commissioned.

PART 2 PRODUCTS

NOT USED.

PART 3 **EXECUTION**

NOT USED.

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Contract Modification Forms.
- B. Field Orders.
- C. Change Orders.
- D. Work Change Directives.
- E. Correlation of Contractor Submittals.

1.02 RELATED REQUIREMENTS

- A. Section 01 29 00 – Progress Payment Procedures.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 60 00 – Common Product Requirements.
- D. Section 01 77 00 – Closeout Procedures.

1.03 CONTRACT MODIFICATION FORMS

- A. Contract modifications shall be performed using the Engineers Joint Contract Document Committee (EJCDC) standard forms for Field Order (C942), Change Order (C941), and Work Change Directive (C940).

1.04 FIELD ORDERS

- A. The Engineer will direct minor changes in the Work not involving an adjustment to Contract Price or Contract Time by issuing Field Orders.

1.05 CHANGE ORDERS

- A. The Engineer may issue a Change Order that includes a detailed description of a proposed change, along with any supplementary or revised Drawings and specifications. Modifications to Contract Price or Contract Times, as determined through the procedures of the General Conditions of the Contract, shall be included in the Change Order.
- B. The Contractor may submit a Change Proposal with supporting data for Engineer's review in accordance with the procedures outlined in the General Conditions. If the

Change Proposal relates to Contract Price, supporting data must include detailed accounts of materials, labor, and equipment used to perform the Work in question.

- C. Owner may propose a change without Engineer's recommendation only if the change does not involve technical or engineering matters as discussed in the General Conditions.
- D. In all cases, Owner and Contractor shall agree on any changes in Contract Price or Contract Times or else shall seek resolution through the procedures detailed in the General Conditions.

1.06 WORK CHANGE DIRECTIVES

- A. Engineer may issue a Work Change Directive instructing the Contractor to proceed with a change in the Work which may require subsequent inclusion in a Change Order if any change in Contract Price or Contract Time is required.
- B. The document will describe changes in the Work, and will designate the method of determining any change in Contract Price or Contract Time. A Work Change Directive will not include any change in Contract Price or Contract Time until a Change Order incorporating the changes has been executed in accordance with the General Conditions.
- C. After receiving a Work Change Directive, Contractor shall promptly comply with the Directive, whether by proceeding with altered construction incorporating the Changes, or by halting construction in the case of a deletion from the project.

1.07 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price.
- B. Promptly revise Progress schedule to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- C. Promptly record changes in project record documents, whether in the Drawings or Specifications.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

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SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Progress payment procedures.
- B. Supplemental data.
- C. Funding agency requirements.

1.02 PROGRESS PAYMENT PROCEDURES

- A. In accordance with the applicable provisions of the General Conditions of the Contract, the Contractor shall be responsible for the preparation and submittal of progress payment requests.
- B. Applications must be submitted electronically in PDF format using EJCDC form C-620. An electronic copy of the C-620 spreadsheet may be provided upon request.
- C. Complete all information, including Change Orders approved before the application date. Dollar summaries must agree with itemizations and continuation sheets. The application must be signed by an officer of the company.
- D. Itemize work in the exact sequence and numbering as established by the accepted Schedule of Values. Fill in dollar amounts of completed work. Payments will be made on a monthly basis for work completed during the previous period.
- E. Engineer will require a minimum of ten (10) days to evaluate a properly completed application before forwarding it to the Owner with a Certificate for Payment.
- F. Contractor is solely responsible for the timing of applications, and Engineer assumes no responsibility for processing delays. Improperly completed applications or incomplete submittals will be returned to Contractor and must be resubmitted until satisfactory.

1.03 SUPPLEMENTAL DATA

- A. Each partial payment request must include the following substantiating data:
 - 1. Quantity records and invoices from any materials for which payment is being requested.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 **GENERAL**

1.01 SECTION INCLUDES

- A. Preconstruction conference.
- B. Progress meetings.
- C. Preinstallation meetings.

1.02 RELATED REQUIREMENTS

- A. Section 01 11 00 – Summary of Work.
- B. Section 01 77 00 – Closeout Procedures.

1.03 PRECONSTRUCTION CONFERENCE

- A. Engineer will schedule a meeting at the Site prior to the beginning of any Work.
- B. Attendance required by:
 - 1. Contractor.
 - 2. Owner.
 - 3. Engineer.
- C. In addition to agenda items identified in Article 2.04 of the General Conditions, the following items will be discussed:
 - 1. Procedures for affecting Changes to the Contract.
 - 2. Use of premises by Owner and Contractor.
 - 3. Security and housekeeping procedures.
 - 4. Other issues deemed important by Engineer or raised by Contractor or Owner during the meeting.
- D. Engineer will record minutes and distribute copies to meeting participants within seven days.

1.04 PROGRESS MEETINGS

- A. Engineer will schedule weekly progress meetings at the Site throughout the duration of the Project or as deemed necessary by Engineer.
- B. Attendance required by:

1. Contractor.
2. Owner.
3. Engineer.

C. Agenda:

1. Review progress of the of Work.
2. Identification of current or anticipated problems.
3. Review of Schedule of Submittals.
4. Review of Progress Schedule.

- D. Engineer will record minutes and distribute copies to participants within seven days.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General requirements.
- B. Submittal requirements.
- C. Engineer's review.
- D. Or equals.
- E. Substitutes.

1.02 GENERAL REQUIREMENTS

- A. Contractor shall prepare and submit to Engineer a Schedule of Submittals as described in the General Conditions of the Contract.
- B. Contractor shall submit shop drawings, samples, product data, and other submittals in accordance with the accepted Schedule of Submittals.
- C. The Contractor shall review all shop drawings, samples, product data, and other submittals to verify that submittal conforms with the Contract Documents.
- D. All submittals shall be submitted, reviewed, and returned electronically in PDF format. Reference the Supplementary Conditions for additional requirements for electronic transmittals.
- E. Shop drawings, samples, product data, and other submittals shall be reviewed by Engineer in accordance with the accepted Schedule of Submittals.

1.03 SUBMITTAL REQUIREMENTS

- A. Shop Drawings:
 - 1. Shop drawings shall be submitted in sufficient detail to show the type, size, arrangement and function of all components.
 - 2. Provide field measurements where appropriate to verify equipment or structure will fit existing conditions.
- B. Samples:
 - 1. Submit samples in sufficient size or quantity to fully illustrate characteristics, color, texture, pattern and details of the product.
- C. Product Data:

1. Product data shall clearly show the manufacturer, model number, size, performance characteristics, connections, anchorages and other data necessary to evaluate compliance with the Contract Documents.
 2. Delete extraneous information not applicable to the Work and supplement with additional information where necessary.
- D. Each submittal shall contain the following:
1. Date of submission.
 2. Name of project.
 3. Name of Contractor.
 4. Supplier or manufacturer's name and address.
 5. Drawing sheet number or specification section to which submittal pertains.
 6. Reference to applicable standards (AWWA, ASTM, etc.).
 7. Identification of any deviation of submittal from the requirements of the Contract Documents as described in the General Conditions.
 8. Contractor's stamp or written certification confirming Contractor's review of submittal, certifying conformance of submittal with Contract Documents, and acknowledging Contractor's approval of submittal.
 9. Stamps and other markups applied to PDF shall be flattened before submitting.

1.04 ENGINEER'S REVIEW

- A. Engineer will review submittals and stamp with one of the following:
1. No Exceptions Taken.
 2. Make Corrections Noted.
 3. Revise and Resubmit.
 4. Rejected.
 5. For Information Only.
- B. Engineer will review at most two resubmittals. If a third resubmittal is required, Owner may impose a set-off against Contractor's progress payments as described in the General Conditions of the Contract.
- C. Resubmittals shall clearly indicate all changes from the previous submittal.
- D. Engineer will return without review any submittal not received directly from Contractor, such as from subcontractors or suppliers.
- E. Engineer's liability for submittal review shall be only as indicated in the General Conditions of the Contract.

- F. Submittals are not Contract Documents, and the approval of any submittal does not relieve Contractor of responsibility to perform the Work in conformance with the Contract Documents.

1.05 OR EQUALS

- A. An "Or Equal" item is one that is at least equal in terms of materials, quality, durability, appearance, strength, design characteristics, and function to an item specified in the Contract Documents.
- B. Review and approval of "Or Equal" items shall be as described in the General Conditions.
- C. Contractor may request that Engineer authorize the use of an "Or Equal" item unless the specification or description indicates that no such equivalent or "Or Equal" items are permitted.
- D. Engineer's decision to approve or deny an "Or Equal" request by Contractor shall be final.
- E. Neither approval nor denial of an "Or Equal" request will result in any change to Contract Price.

1.06 SUBSTITUTES

- A. A substitute is an item that will adequately perform the functions and achieve the same results as an item specified in the Contract Documents, but that may result in design changes to related Work, changes to provisions of the Contract Documents, or cause a change in Contract Price or Contract Time.
- B. Applications for, and review of, substitutes shall be made as described in the General Conditions.
- C. To the extent possible, Contractor shall make substitution requests prior to beginning work on related construction.
- D. Contractor shall reimburse Owner for the reasonable charges of Engineer's evaluation of each substitution request and any design changes resulting from acceptance of any substitution.
- E. Engineer's decision to approve or deny a substitution request shall be final.
- F. If an accepted substitute will result in no change in Contract Time or Contract Price, then Engineer shall incorporate such substitute into the Contract Documents by issuing a Field Order.
- G. If an accepted substitute will result in a change to Contract Time or Contract Price, then Engineer shall incorporate such substitute into the Contract Documents by issuing a Change Order.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 **GENERAL**

1.01 SECTION INCLUDES

- A. Control of Installation.
- B. References and Standards.
- C. Testing Responsibilities.
- D. Inspection and Testing Services.
- E. Mill Tests.
- F. Factory Tests.
- G. Manufacturer's Instructions.
- H. Manufacturer's Certificates.
- I. Manufacturers' Field Services.
- J. Qualification Tests.
- K. Laboratory Tests.
- L. Product Field Tests.
- M. Material Field Tests.
- N. Soil Compaction Requirements.

1.02 RELATED REQUIREMENTS

- A. Section 01 33 00 – Submittal Procedures.
- B. Section 03 30 00 - Cast-in-Place Concrete.
- C. Section 31 23 33 - Trenching and Backfilling.
- D. Section 32 12 16 - Asphalt Paving.

1.03 REFERENCES:

- A. ASTM D2950/D295M - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
- B. ASTM D 698 - Standard Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.

1.04 CONTROL OF INSTALLATION

- A. Comply with manufacturer's instructions, including each step in sequence.
- B. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Work shall be performed by qualified personell as necessary to produce the results specified in the Contract Documents.
- D. Verify that field measurements are as indicated on the construction Drawings and shop drawings. Perform all manufacturer indicated field measurements prior to installation.
- E. Secure machines, valves, and other products with anchoring devices designed and sized to withstand all anticipated stresses and vibrations.
- F. Completed Work shall be plumb, level, true to line or plane, and free from damage.
- G. Ensure that all Work is within specified tolerances with respect to manufacture and installation.
- H. Perform all equipment adjustments and startup in accordance with manufacturer's instructions.
- I. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work.
- J. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- K. Verify that utility services with the correct charactaristics are available in the correct locations.

1.05 REFERENCES AND STANDARDS

- A. Comply with requirements of specified reference standards except where such standards conflict with the Contract Documents, in which case the Contract Documents shall govern.
- B. Conform to most recent edition of reference standards, except where a specific edition is specified by the Contract Documents or established by code.
- C. Obtain copies of reference standards where required by product specification sections.

1.06 TESTING RESPONSIBILITIES

- A. Contractor shall be responsible for all quality control testing or inspections including mill tests, factory tests, qualification tests, laboratory tests, and field tests unless the Contract Documents specify otherwise.

- B. Contractor shall coordinate with each independent agency or testing firm to accommodate required services with minimum delay in progress of Work, and to avoid moving or replacing Work.
- C. In order to facilitate testing, Contractor shall:
 - 1. Providing access to the Work.
 - 2. Assist with sample collection as needed.
 - 3. Deliver samples to testing laboratories.
 - 4. Provide security for testing samples and equipment on Site.
- D. Any testing for which Owner is responsible shall be explicitly indicated in the Contract Documents.
- E. Failed tests shall be repeated at Contractor's expense until a passing result is obtained.

1.07 INSPECTION AND TESTING SERVICES

- A. Contractor shall employ the services of an independent testing firm for the following:
 - 1. Concrete testing.
 - 2. Asphalt testing.
 - 3. Soils testing.
 - 4. Bacteriological testing.
 - a. Bacteriological tests to be submitted to a State Certified Lab.
- B. The independent firms will perform tests and other services specified in individual specification sections.
- C. Contractor shall submit results of all tests to Engineer for review. Engineer shall determine conformance of test results with the Contract Documents.
- D. Comply with pertinent codes, regulations, and industry standards for testing except where such codes, regulations, and standards conflict with the Contract Documents. Such conflicts shall be resolved in favor of the Contract Documents except where such interpretation would result in the violation of any code or regulation.
- E. The results of any test shall not relieve Contractor from responsibility to perform the Work in accordance with the Contract Documents.

1.08 MILL TESTS

- A. Mill or shop tests, when specified, shall be performed at the place of manufacture and in accordance with the applicable ASTM standards.

1.09 FACTORY TESTS

- A. Factory tests of process, mechanical, and electrical equipment relative to performance, capacity, rating, efficiency, or other such requirements shall be conducted in the factory or shop for each item supplied when this type of test is specified.
- B. Factory testing shall be performed in accordance with applicable standards and codes.
- C. Where factory tests are required or specified, reports of the test results shall be submitted to Engineer for approval prior to shipment.
- D. Factory observation of fabrication procedures, materials used, and testing methods may be performed by a representative of the Owner or Engineer. Owner shall pay for any factory observation.

1.10 MANUFACTURERS' INSTRUCTIONS

- A. Comply with manufacturer's instructions in full detail for storage, installation, assembly, start-up, and adjustment. Contractor shall follow appropriate sequencing as recommended by manufacturer.
- B. Should manufacturer's instructions conflict with Contract Documents, seek clarification from Engineer before proceeding.
- C. If required by individual product or equipment specification sections, Contractor shall submit manufacturer's instructions to Engineer prior to assembly and installation.

1.11 MANUFACTURER'S CERTIFICATES

- A. Submit manufacturer's certificate indicating that equipment or products meet or exceed specified requirements where required in the individual specification sections.
- B. Certificates shall be submitted prior to shipment of equipment or products.

1.12 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified personnel to observe or assist with installation, start-up, testing, adjusting, and balancing of equipment where applicable.
- B. Submit qualifications of manufacturer's personnel to Engineer 30 days in advance of installation. Manufacturer's personnel are subject to approval of Engineer.
- C. Report instructions given by manufacturer's personnel that supplement or contradict manufacturers' written installation instructions.

1.13 QUALIFICATION TESTS

- A. Engineer may require additional testing as part of the evaluation of substitution requests made by Contractor. The results of such testing may be made a condition for acceptance or rejection of substitution requests.

1.14 LABORATORY TESTS

- A. All laboratory tests shall be made by an independent laboratory approved by Engineer. These tests shall be performed in accordance with applicable ASTM standards.
- B. Laboratory tests may be witnessed by representatives of the Owner or Engineer.

1.15 PRODUCT FIELD TESTS

- A. Product field tests shall be performed by Contractor. Contractor shall provide all tools, equipment, instruments, personnel, and other facilities required for the completion of each test.
- B. Product field tests relate to process equipment, mechanical systems, electrical systems, piping systems, and similar facilities.
- C. Product field tests include the determination of performance, capacity, efficiency, function, tightness, leakage, and other special requirements.
- D. Product field tests may be witnessed by representatives of Owner and Engineer. Where observation of test by Engineer or Owner is explicitly required in the Contract Documents, provide adequate notice of testing to allow such observation.

1.16 MATERIAL FIELD TESTS

- A. Tests of materials incorporated into the project will be performed by an independent testing laboratory. Reference individual specification sections for specific testing requirements.
- B. Results of material field testing shall be submitted to Engineer for approval.
- C. Material field tests may be witnessed by representatives of Owner and Engineer.

1.17 SOIL COMPACTION REQUIREMENTS

- A. Structural Fill
 - 1. 9-inch maximum loose lift thickness when self-propelled compaction equipment is used (such as rollers).
 - 2. 4 to 6-inch maximum loose lift thickness when hand-guided compaction equipment is used (such as jumping jack or plate compactor).
 - 3. Compact to 98% of max standard proctor below foundations.

4. Compact to 95% of max standard proctor above footings and foundations and below floor slabs.
5. Water content:
 - a. Granular soils: As required to achieve min. compaction requirements.
 - b. Low Plasticity cohesive soils: -3% to +3% of optimum.

B. General Fill

1. 9-inch maximum loose lift thickness when self-propelled compaction equipment is used (such as rollers).
2. 4 to 6-inch maximum loose lift thickness when hand-guided compaction equipment is used (such as jumping jack or plate compactor).
3. Compact to 90% of max standard proctor.
4.
 - a. Granular soils: As required to achieve min. compaction requirements.
 - b. Low Plasticity cohesive soils: -3% to +3% of optimum.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electricity and lighting.
- B. Potable water.
- C. Temporary heating.
- D. Sanitary facilities.
- E. Storage facilities.
- F. Temporary structures.
- G. Staging areas.
- H. Parking.
- I. Access roads.
- J. Removal of temporary facilities.

1.02 ELECTRICITY AND LIGHTING

- A. Contractor shall provide mobile electricity generating equipment and construction lighting as required to meet OSHA regulations and to properly execute the Work.

1.03 POTABLE WATER

- A. Contractor shall be responsible for providing temporary water to any areas of the distribution system that are impacted by construction activities. All costs related to providing temporary water shall be incidental to the Contract.
- B. Contractor shall be responsible for providing any potable drinking water required for construction personnel on the Site.

1.04 TEMPORARY HEATING

- A. Contractor shall provide temporary heat where required for work during cold weather periods.

1.05 SANITARY FACILITIES

- A. Contractor shall provide portable toilets for construction personnel and maintain such facilities in a sanitary condition as required by applicable regulations.

1.06 STORAGE FACILITIES

- A. Contractor shall provide satisfactory weathertight storage on-site as needed for protection of materials prior to their incorporation into the Work. Provide heat and ventilation as necessary for the materials stored.

1.07 TEMPORARY STRUCTURES

- A. The Contractor shall install and maintain all temporary utilities, structures, construction aids, fences, safety barriers, and similar items of a temporary nature necessary for the execution of the Work. Contractor shall remove all temporary facilities at the completion of the Work.

1.08 STAGING AREAS

- A. Contractor is responsible for providing material and equipment staging areas. Owner may provide space for construction staging at Owner's discretion. The Contractor is responsible for returning staging areas to original condition at project completion.

1.09 PARKING

- A. Contractor personnel shall park all personal vehicles in an area acceptable to Owner. Do not park on any private property without permission from property owner.

1.10 ACCESS ROADS

- A. Maintain access roads leading into the Site in a passible condition, free of standing water and potholes.
- B. Provide means of removing mud from vehicle wheels before entering public streets. Use tracking control pads or similar method as required.

1.11 REMOVAL OF TEMPORARY FACILITIES

- A. Remove all temporary construction facilities at completion of project. Restore all areas used for temporary facilities, construction staging, parking, or similar purposes to existing condition.

PART 2 **PRODUCTS**

NOT USED.

PART 3 **EXECUTION**

NOT USED.

END OF SECTION

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SECTION 01 57 13

TEMPORARY CONTROLS

PART 1 **GENERAL**

1.01 SECTION INCLUDES

- A. Erosion control.
- B. Sediment control.
- C. Dust control.
- D. Noise control.
- E. Waste removal.
- F. Protection of installed Work.
- G. Security.

1.02 RELATED REQUIREMENTS

- A. 31 11 00 - Clearing and Grubbing
- B. 31 14 13 - Soil Stripping and Stockpiling
- C. 31 23 33 - Trenching and Backfilling
- D. 32 91 19 - Landscape Grading
- E. 32 92 19 - Seeding
- F. 32 97 00 - Restoration of Disturbed Areas

1.03 REGULATORY REQUIREMENTS

- A. Contractor shall comply with all requirements of the North Dakota Department of Environmental Quality, Division of Water Quality along with all Federal, State, and Local permits and regulations for erosion and sediment control.
- B. Contractor shall not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.

PART 2 **PRODUCTS**

NOT USED.

PART 3 **EXECUTION**

3.01 EROSION CONTROL

- A. Contractor shall reduce wind, water, and vehicular erosion of soil on project site due to construction activities for this project, consistent with approved permits and following these requirements:
 - 1. Control erosion of temporary soil stockpiles.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. Provide good site housekeeping.
 - 4. Inspect, repair, maintain, and replace erosion control practices consistent with approved permits.

3.02 SEDIMENT CONTROL

- A. Contractor shall reduce sediment transport off-site due to construction activities for this project, consistent with approved permits and following these requirements:
 - 1. Do not allow sediment to enter any storm drain inlet, culvert, or drainageway.
 - 2. Control temporary soil stockpiles to prevent sediment transport.
 - 3. Control windblown soil from leaving the project site.
 - 4. Control vehicle tracking with rubber track pads, stone pads, steel wash racks, or similar measures.
 - 5. Prevent mud and sediment from flowing onto sidewalks and pavements.
 - 6. Inspect, repair, maintain, and replace sediment control practices consistent with approved permits.
 - 7. Remove sediment tracked onto streets as directed by Engineer using street cleaning machinery. Remove such sediment within 24 hours of notification.

3.03 DUST CONTROL

- A. Contractor shall be responsible for dust control throughout the duration of the Project.
- B. Provide appropriate dust control measures as required to prevent excessive dust from dispersing into the air.
- C. The use of any dust palliative other than water shall require prior approval from Engineer.

3.04 NOISE CONTROL

- A. Contractor shall be responsible for noise control throughout the duration of the Project.
- B. Do not operate loud equipment or machinery between the hours of 10:00 AM and 6:00 AM except in emergency situations or with prior approval from Owner.

3.05 WASTE REMOVAL

- A. Contractor shall remove and clean up all temporary erosion and sediment control practices.
- B. Site shall generally be maintained in a clean and orderly condition, free of waste materials, debris, and rubbish.
- C. Do not permit construction debris to block access to any private property or accumulate in the public right-of-way outside of closed streets.

3.06 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection as indicated in individual specification sections.

3.07 SECURITY

- A. Provide security measures as required to protect the Site from unauthorized entry, vandalism, or theft.

END OF SECTION

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SECTION 01 60 00

COMMON PRODUCT REQUIREMENTS

PART 1 **GENERAL**

1.01 SECTION INCLUDES

- A. Common product requirements.
- B. Transportation and Handling.
- C. Storage and Protection.

1.02 RELATED REQUIREMENTS

- A. Section 01 45 00 – Quality Control.

1.03 REFERENCES

- A. NSF/ANSI Stanard 60 - Health Effects for Drinking Water Treatment Chemicals
- B. NSF/ANSI Standard 61 - Health Effects for Drinking Water System Components
- C. NSF/ANSI Standard 372 - Lead Content for Drinking Water System Components

1.04 DEFINITIONS

- A. Product: New material, machinery, components, equipment, fixtures, and systems that are incorporated into the Work. Does not include machinery and equipment used for preparation, fabrication, conveying, and erection of the Work. May also include existing materials or components designated for re-use.

1.05 COMMON PRODUCT REQUIREMENTS

- A. MATERIAL SPECIFIED BELOW SHALL MEET ALL CURRENT BABA FUNDING REQUIREMENTS. NOT ALL EQUIPMENT SPECIFIED MAY MEET THESE REQUIREMENTS AND A SUITABLE "AS EQUAL" PIECE OF EQUIPMENT SHALL BE UTILIZED. SEE FRONT END SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- B. All products that will come into contact with water intended for use in a public water system shall meet the following standards, as applicable:
 - 1. NSF/ANSI Standard 60
 - 2. NSF/ANSI Standard 61
 - 3. NSF/ANSI Standard 372

- C. A product will be considered as meeting these standards if so certified by NSF, the Underwriters Laboratories, or other organization accredited by ANSI to test and certify each product.
- D. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- E. When replacing existing components, use new components from the same manufacturer as existing whenever possible, unless otherwise specified in the Contract Documents.
- F. For any equipment or equipment components requiring special tools, Contractor shall supply Owner with such tools to allow for the maintenance and removal/replacement of equipment components.
- G. Provide Owner with all consumable items that are required during start-up and initial operation (90 days minimum). Consumables may include coolant, fluids, oil, grease, other lubricants, filters, bulbs, batteries, etc.

1.06 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with specification requirements, are in the correct quantities, and are undamaged.
- C. Provide equipment and personnel as required to handle products in such a way as to prevent damage to products.
- D. Contractor shall arrange for, receive, inspect, and unload all shipments of materials or equipment. Contractor shall provide haul route information to shipping companies.

1.07 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store products with seals intact and labels legible.
- C. Store sensitive products in weatherproof, climate controlled enclosures as required.
- D. For exterior storage of fabricated products, place on supports such as pallets or bunkers. Do not store directly on ground.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to water damage with impervious sheet covering. Provide ventilation to protect against moisture damage from condensation.

- G. Store loose granular materials on solid surfaces in well-drained areas. Prevent mixing of granular materials with other soils or foreign matter.
- H. Store products in such a manner as to permit inspection. Periodically inspect products to verify that products are undamaged and are maintained in acceptable condition.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Substantial completion.
- B. Final completion.
- C. Record documents.
- D. Final cleaning
- E. Spare parts and maintenance products.
- F. Final adjustment of contract price.

1.02 RELATED REQUIREMENTS

- A. Section 01 50 00 – Temporary Facilities.

1.03 SUBSTANTIAL COMPLETION

- A. Provide written notice to Owner and Engineer when Contractor considers the Work to be substantially complete. Submit also a draft punchlist to Owner and Engineer at this time.
- B. Owner, Engineer, and Contractor shall promptly inspect the Work and assess status of completion. If Engineer agrees that Work is substantially complete, Engineer will issue certificate of substantial completion and a revised punchlist.
- C. The certificate of substantial completion shall fix the date on which the warranty period will begin.

1.04 FINAL COMPLETION

- A. After completing all punchlist items, notify Owner and Engineer in writing that Work is ready for final inspection.
- B. Owner, Engineer, and Contractor will promptly make a final inspection of the Work. Engineer will notify Contractor in writing of any deficiencies that require correction.
- C. If Engineer agrees that the Work is complete, that all correction items noted from the final inspection have been adequately addressed, and that all O&M manuals, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents, and other submittals have been received, then Contractor may make application for final payment.

D. Application for final payment shall be accompanied by the following:

1. All documentation called for in Contract Documents.
2. Consent of surety to final payment.
3. Satisfactory evidence that all title issues are resolved.
4. List of any pending Change Proposals and Claims.
5. Complete and legally effective lien release.

1.05 RECORD DOCUMENTS

A. Annotated record documents shall be delivered along with application for final payment. Record documents shall indicate all deviations from construction drawings and shall reflect the as-built configuration of the Work.

B. Record documents include the following:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders.
5. Work Change Directives.
6. Field Orders.
7. RFIs.
8. All approved submittals.

C. Ensure annotations are accurate and complete. Annotations may be completed by hand provided that they are neat and legible, otherwise use electronic PDF markups.

D. Annotate at minimum the following:

1. Depths of foundations.
2. Horizontal and vertical alignments of buried utilities.
3. Locations of utility appurtenances.
4. Locations of concealed Work such as pipes, electrical conduits, and communications cables.
5. Alterations to details on the Drawings.

E. Record documents shall be delivered to Engineer in PDF format.

1.06 FINAL CLEANING

A. Clean interior and exterior glass and surfaces exposed to view; Remove temporary labels, stains, and foreign substances, and clean all floors.

- B. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- C. Clean debris from roofs, gutters, downspouts, and drainage systems.
- D. Sweep and wash paved areas. Rake up debris from landscaped surfaces.
- E. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.07 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts and maintenance products as specified in individual specification sections.

1.08 FINAL ADJUSTMENT OF CONTRACT PRICE

- A. For unit price work, a change order shall be executed to adjust for any differences between the quantities of unit price items included in the Contract Documents and quantities actually installed.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

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SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 **GENERAL**

1.01 SUMMARY

- A. Section includes:
 - 1. Quality Assurance.
 - 2. Instruction of Owner's personnel.
- B. Related Sections include:
 - 1. Section 01 33 00 – Submittal Procedures.
 - 2. Section 01 45 00 – Quality Control.
 - 3. Section 01 77 00 – Closeout Procedures.

1.02 QUALITY ASSURANCE

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.03 FORMAT

- A. Prepare data in the form of an instructional manual. Arrange data in numerical format.
 - 1. Binders:
 - a. Commercial quality, 8-1/2 x 11 inch three-D side ring binders with durable plastic covers.
 - b. 2-inch maximum ring size.
 - c. When multiple binders are used, correlate data into related consistent groupings.
 - 2. Cover; identify:
 - a. Each binder with typed title OPERATION AND MAINTENANCE INSTRUCTIONS.
 - b. Title of Project.
 - c. Subject matter of contents.
 - d. Volume number.
 - e. Year of construction.
 - 3. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

- B. Text: Manufacturer's printed data, or typewritten data on 24-pound paper.
- C. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages. Folded paper should be unfoldable without removal from binder.
- D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, 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. Photocopies of warranties.
 - e. Bonds.
- E. Electronic Record
 - 1. Compact Discs (CD or DVD) or USB Flash Drives (Thumb Drive) shall be provided with all documents included with an index, tabs, and labels as previously required for the binders.

1.04 CONTENTS OF EACH VOLUME

- A. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Engineer, Subconsultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
- B. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

- D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- E. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- F. Warranties: Prepare and submit per Section 01 77 00 – Closeout Procedures.
- G. Bonds: Prepare and submit per Section 01 77 00 – Closeout Procedures.
- H. Electronic Record: Compact discs (CD or DVD) or USB Flash Drives (Thumb Drive) shall be provided with all volume contents in electronic format or scanned to a portable document file (.pdf). The documents shall be placed as required under the appropriate tabs and labels as previously required for the compact discs. Each file shall be adequately labeled to identify the contents without opening the document.

1.05 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. 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 any special operating instructions.
- B. 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.
- C. Provide servicing and lubrication schedule, and list of lubricants required.
- D. Include manufacturer's printed operation and maintenance instructions.
- E. Include sequence of operation by controls manufacturer.
- F. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- G. Provide control diagrams by controls manufacturer as installed.
- H. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- I. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- J. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage, and local sources of supply.
- K. Additional Requirements: As specified in individual Product specification sections.

- L. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.
- M. Compact Disc: Compact discs (CD or DVD) or USB Flash Drives (Thumb Drive) shall be provided with all manuals in electronic format or scanned to a portable document file (.pdf). The documents shall be placed as required under the appropriate tabs and labels as previously required for the compact disc. Each file shall be adequately labeled to identify the contents without opening the document.

1.06 INSTRUCTION OF OWNER PERSONNEL

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.
- B. For equipment requiring seasonal operation, perform instructions for other seasons within six months.

1.07 SUBMITTALS

- A. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- B. Submit electronic copies of completed volumes fifteen (15) working days prior to final inspection. One (1) copy will be returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
- C. Submit four (4) sets of revised final volumes in final form within ten (10) days after final inspection.
- D. Submit a minimum of two (2) complete copies of the CDs, DVDs or USB Flash Drives with final documents in electronic format within (10) days after final inspection.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

DIVISION 26

ELECTRICAL

SECTION 26 00 00

ELECTRICAL GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. The Electrical General Requirements outlined in this specification shall apply to Division 26 Electrical Specifications.
- B. The Contractor shall provide supervision, labor, material, equipment, machinery and any other items necessary to complete the electrical systems. Items of equipment are specified in the singular; however, the Contractor shall provide and install the number of items of equipment as indicated in the drawings, and as required for complete systems.

1.02 FUNDING REQUIREMENTS

- A. MATERIAL SPECIFIED BELOW SHALL MEET ALL CURRENT BABA FUNDING REQUIREMENTS. NOT ALL EQUIPMENT SPECIFIED MAY MEET THESE REQUIREMENTS AND A SUITABLE "AS EQUAL" PIECE OF EQUIPMENT SHALL BE UTILIZED. SEE FRONT END SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1.03 PERMITS AND FEES

- A. The Contractor shall give necessary notices, obtain permits and pay government and state sales taxes, fees, and other costs, including utility connections or extensions; file necessary plans, prepare documents and obtain necessary approvals of governmental departments having jurisdiction; obtain required certificates of inspection for the work and deliver same to the Engineer before request for acceptance and final payment of the work.

1.04 INTENT

- A. It is the intention of these specifications and drawings to call for finished work, tested, and ready for operation. Wherever the word "provide" is used, it shall mean "furnish and install complete and ready for use."

1.05 SURVEYS AND MEASUREMENTS

- A. The Contractor shall base measurements, both horizontal and vertical, from established benchmarks. All work shall agree with these established lines and levels. Verify measurements at site and check correctness of same as related to the work.

- B. Should the Contractor discover any discrepancy between actual measurements and those indicated, which prevents following good practice or the intent of the drawings and specifications, they shall notify the Engineer, through the General Contractor, and shall not proceed with the work until they have received instructions from the Engineer.

1.06 DRAWINGS

- A. Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. The engineering drawings and details shall be examined for exact locations of fixtures and equipment. Where they are not definitely located, this information shall be obtained from the Engineer.
- B. The Contractor shall follow drawings in laying out work, and check drawings of other trades to verify spaces in which work will be installed.

1.07 "OR EQUAL"

- A. Wherever the words "or equal" or "equal to" or "equivalent" are used in connection with any specified material, it is to be understood that such words mean any material or work of any kind claimed to be an equal in quality to the work or material specified but does not require prior written approval by the Engineer.
- B. Wherever the words "approved equal" or "prior approved equivalent" are used in connection with any specified material, it is to be understood that such words mean any material or work of any kind claimed to be an equal in quality to the work or material specified and shall be so approved in writing by the Engineer.
- C. It is further understood that no material or work shall be presented to the Engineer as work or material equal to that specified with the full understanding on the part of the manufacturers and agents for the so called "equal" material, and the full understanding on the part of the Contractor, that the Engineer is to use his own judgment in the matter, that his decision is final, and that in the event of an adverse condition, no claim of any sort shall be made against the Owner or Engineer.

1.08 SHOP DRAWINGS

- A. The Contractor shall submit for approval, detailed shop drawings of all equipment and material required to complete the project, and no material or equipment may be delivered to the job site or installed until the Contractor has in his possession the approved shop drawings for the material or equipment. The shop drawings shall be completed as described by Specification Section 01 33 00 - Submittal Procedures.

1.09 EQUIPMENT DEVIATIONS

- A. Where the Contractor proposes to use an item of equipment other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundations, piping, wiring, or any other part of the mechanical, electrical, or structural layout; such redesign, new drawings and detailing required therefore shall be prepared by the Contractor at his own expense and approved by the Engineer.
- B. Where such approved deviation requires a different quantity and arrangement of wiring, conduit, and equipment from that specified or indicated on the drawings, the Contractor shall furnish and install any such controllers, motors, starters, electrical wiring and conduit, and any other additional equipment required by the system at no additional cost to the Owner.

1.10 COOPERATION WITH OTHER TRADES

- A. This Contractor shall give full cooperation to other trades and shall furnish in writing to the Contractor, with copies to the Engineer, any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.
- B. Where the work of the Contractor will be installed in close proximity to, or will interfere with the work of other trades, they shall assist in working out space conditions to make a satisfactory adjustment. If the Contractor installs their work before coordinating with other trades or so as to cause any interference with work of other trades, they shall make the necessary changes in his work to correct the condition without extra charge.
- C. The Contractor shall furnish to other trades, as required, necessary shop details for the proper installation of work and for the purpose of coordinating adjacent work.
- D. Refer to other Divisions of the Specifications for equipment furnished by others and work required thereof by the Contractor.

1.11 PROTECTION

- A. The Contractor shall protect work and material from damage by their work or workmen and shall be liable for damage thus caused.
- B. The Contractor shall be responsible for work and equipment until finally inspected, tested, and accepted; contractor shall protect work against theft, injury or damage; and shall carefully store material and equipment received on site, which is not immediately installed. Contractor shall close open ends of work with temporary covers or plugs during storage and construction to prevent entry of obstructing material.

1.12 SCAFFOLDING, RIGGING, HOISTING

- A. The Contractor shall furnish scaffolding, rigging, hoisting, and services necessary for erection and delivery into the premises of any electrical equipment and electrical apparatus furnished. Remove scaffolding, rigging, hoisting, and services from premises when no longer required.

1.13 MATERIAL AND WORKMANSHIP

- A. All materials and apparatus required for the work, except as specifically specified otherwise, shall be new of first-class quality, and shall be furnished, delivered, erected, connected, and finished in every detail, and shall be so selected and arranged as to fit properly into the available spaces. Where no specific kind or quality of material is given, a first-class standard article as approved by the Engineer shall be furnished.
- B. The Contractor shall furnish the services of an experienced superintendent who shall be constantly in charge of the installation or work, together with skilled workmen, helpers, and labor required to unload, transfer, erect, connect, adjust, start, operate, and test each system. The job superintendent shall be a Master Electrician licensed in the State where the work is being performed.
- C. Unless otherwise specifically indicated on the plans or specifications, all equipment and materials shall be installed with the approval of the Engineer in accordance with the recommendations of the manufacturer. This includes the performance of such tests as the manufacturer recommends.

1.14 STANDARDS AND CODES

- A. Provide all material, equipment, and work in accordance with applicable rules, codes, ordinances and regulations of local, state, federal governments, local utility companies, and other authorities having lawful jurisdiction. Conform to the latest editions and supplements of codes, standards, and recommended practices in addition to the following:
 - 1. Safety Codes:
 - a. National Electrical Safety Code Handbook
 - b. Occupational Safety and Health Standard (OSHA)
 - 2. National Fire Codes:
 - a. NFPA 70 - National Electric Code (NEC)
 - 3. Underwriters Laboratories, inc.:
 - a. UL 508A Standard - Industrial Control Panels
 - b. All applicable UL standards as referenced in other sections.
 - c. All material and equipment for the electrical portion of the system shall bear the approval label, or shall be listed by Underwriter's Laboratories, Limited Liability company or another Nationally

Recognized Testing Laboratory (NRTL) approved by OSHA and the local electrical inspector.

4. Third Party Certifications:
 - a. All equipment not bearing a UL listing shall be provided with a third-party certification stamped by a registered Professional Engineer licensed in the state of which the work is being performed.
5. State Electrical Board:
 - a. Laws, Rules, Wiring Standards, and applicable local state standards.
- B. Drawings and specifications indicate minimum construction standards. Should any work indicated be substandard to any ordinances, lower codes, rules or regulations bearing on work, the Contractor shall promptly notify the Engineer in writing, through the General Contractor, of any necessary changes to be adjusted. However, if Contractor provides any work knowing it to be contrary to any ordinances, laws, rules and regulations, they shall thereby have assumed full responsibility and bear all costs involved for correction and compliance. In any instance where the specifications call for materials for construction of a better quality or larger size than required by codes, provisions of these specifications shall take precedence. Codes shall govern in case of direct conflict between codes, plans and specifications.

1.15 TESTS AND OPERATION RECORDS

- A. Test all equipment installed and demonstrate its proper operation to the Engineer. No equipment shall be tested or operated for any other purpose, such as checking motor rotation, until it has been fully lubricated in accordance with manufacturer's instructions and, if it is a centrifugal pump, until it has been connected to piping systems and supplied with sufficient water so that it will not run dry.
 1. Any defects in workmanship, material, equipment or any grounds or short circuits shall be corrected by the Contractor before final acceptance.
 2. Submit a searchable electronic copy or a minimum of three (3) copies of data noted below to the Engineer prior to final inspection.
 3. Maintain a marked set of drawings to record all deviations made from routes, locations, circuiting, etc. shown on contract drawings. Prior to final inspection submit one new set of project drawings with deviations and changes clearly indicated.
- B. The entire electrical system shall be tested by Contractor in presence of the Engineer. Every local switch, panelboard, service breaker, safety switch, and circuit breaker shall be operated under load conditions. Every fixture and equipment tested and operated. Tests shall include any tests specified in any part of this section.

1. The Contractor shall measure resistance of electrical system with a "Megger" from busses of main switch to ground with main breaker open, and bonding jumper between neutral and ground temporarily removed. Values are to be determined with all panelboards, motor controls and switch circuits open. If any value measured is less than 100,000 ohms, each feeder shall be measured and must exceed those set forth in Article 110 of National Electrical Code, before they shall be accepted. Typewritten test results shall be furnished to the Engineer.

C. Recording and Distribution

1. Record nameplate horsepower, amperes, volts, phase, efficiency, service factor and other necessary data on motors, and other electrical equipment furnished and/or connected under this contract.
2. Record motor starter catalog number, size and rating and/or catalog number of thermal overload units installed in all motor starters furnished and/or connected under this contract. See motor starter specifications for instructions for proper sizing of thermal overload units.
3. Record ampere per phase at normal or near normal loading of each item of equipment furnished and/or connected.
4. Record voltage and ampere per phase readings taken at service entrance equipment after completion of project with operation at normal electrical load.
5. Record all VFD settings, solid-state motor controller settings, electronic overload relay settings, relay settings, device settings, and related electronic equipment settings.
6. Record all instrumentation and device calibration settings.
7. Distribute copies of recorded information to the Engineer along with the project O&M manuals.

1.16 DEMONSTRATION OF COMPLETED ELECTRICAL SYSTEMS

- A. General: Upon completion of entire electrical systems, Contractor shall demonstrate to Engineer's satisfaction that all installed electrical systems are in perfect operating condition, that they perform all power and control functions intended and that they are installed in strict accordance with project drawings and specifications.
- B. Materials: Contractor shall provide necessary testing equipment, tools, materials, dummy loads, etc., required to properly demonstrate performance.

1.17 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. The Contractor shall submit O&M manuals for approval of all equipment and material required to complete the project per Specification Section 01 78 23 - Operation and Maintenance Data.

END OF SECTION

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SECTION 26 05 02

EXCAVATING, TRENCHING AND BACKFILLING

PART 1 GENERAL

1.01 SUMMARY

- A. Provide all trenching/backfill/compaction/surface restoration required to install all electrical as noted in drawings and specifications.

1.02 QUALITY ASSURANCE

- A. Engineer may have compaction tests taken by an independent testing laboratory. Cost will be paid by Owner unless tests indicate compaction does not meet Specifications in which case costs of initial test and any retesting will be paid by the Contractor and not charged to the Owner.
- B. Properly protect existing surfaces and items not included in this work and repair any damage to original condition.
- C. Take precautions to guard against movement, settlement, collapse, or other damage of existing construction and finish grade and repair any damage to original condition.
- D. Perform construction stakes, lines, and grades under direct supervision of a Registered Land Surveyor or Registered Civil Engineer.

1.03 EXISTING CONDITIONS

- A. Determine exact locations of existing utilities before commencing work. Contractor is responsible for damages incurred by his failure to locate and preserve underground utilities. It is Contractor's responsibility to contact "One Call Locators" prior to performing any excavation.

PART 2 PRODUCTS

2.01 GENERAL BACKFILL REQUIREMENTS

- A. Special Fill Gravel (Inside Building Line):
 - 1. Washed type with 100% passing 3/4" sieve and gradation to ensure compactibility with no more than 5% passing No. 200 sieve.
- B. Outside Building Line: Native backfill.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Clear trenching work area in accordance with Division 31 requirements.
- B. Excavate to depths as indicated on drawings or as required by NEC, whichever is greater.
- C. Provide electrical ribbon marker tape above conduits in each trench.
- D. Notify Engineer immediately if during progress of work, subsurface conditions are encountered which are different from those ordinarily encountered.
- E. Excavated material, free from foreign material, may be used for backfilling outside building and rough grading. Stockpile as directed by Engineer. Remove any excess from site.
- F. Fill excavation below required depth with compacted special gravel fill.
- G. Protect bottom of excavation from frost and do not place structures or conduit on frozen ground.
- H. FILL WITHIN BUILDING (Under Concrete Slabs on Grade):
 - 1. Place and compact fill in successive layers not to exceed eight (8) inches before compaction. Compact to minimum of 95% per ASTM D698.
- I. At contractor's option, accessible nonorganic material from building excavating may be used for fill within building.
- J. Place a six-inch layer of Special Fill Material immediately below the floor slab.
- K. BACKFILL OUTSIDE BUILDING:
 - 1. Do not start backfilling until the work which will be covered is completed, areas are free of foreign material and Engineer has approved.
 - 2. Place and compact fill in successive layers not to exceed eight (8) inches before compaction. Compact to minimum of 95% per ASTM D698.
- L. Nonorganic material excavated from foundation areas may be used as backfill in exterior areas.
- M. Special care shall be given to ensure that the backfill under and adjacent to the transformer/generator pad(s) is fully compacted so that the pad doesn't settle.

3.02 ROUGH GRADING

- A. Clean areas of foreign material. Using stockpile excavation materials or off site material of equal quality, bring grades to within 6 inches of finish grade elevations.

3.03 FINISH GRADING

- A. Using stockpile topsoil from stripping or off site topsoil of equal quality finish grade areas within construction limits to given minimum of 6 inches material depth. Bring to elevations indicated on Drawings or existing elevations.

END OF SECTION

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SECTION 26 05 08

ELECTRICAL SERVICE

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Furnish and install an electrical service from 1 connection point(s) to the new electrical services at the facility shown on engineer's drawings.
 - 2. Mountrail-Williams Electric Cooperative will provide a new 120/240V, 1PH , 3W Service.
- B. Associated Charges
 - 1. All charges payable to Mountrail-Williams Electric Cooperative shall be paid as part of this Contract.

1.02 QUALITY ASSURANCE

- A. NFPA 70 - National Electric Code.

1.03 EXISTING CONDITIONS

- A. Contact the Utility Company for verification of the exact connection point for each service required.

PART 3 EXECUTION

2.01 INSTALLATION

- A. Verify requirements and installation locations with Utility Company before installation.
- B. Coordinate all temporary power services required as noted on the drawings with Mountrail-Williams Electric Cooperative during construction. All work requiring a power outage to any facility shall be coordinated with the Engineer and Owner 10 business days in advance.
- C. The serving electric Utility Company is:
 - 1. Mountrail-Williams Electric Cooperative
 - a. Attn: Devin Dorval
 - b. Phone: 701-421-1490
 - c. Email:devind@mwec.com

- D. All work will be coordinated with Utility and Owner and scheduled for minimum of service interruption.
- E. Summary of Site Electrical Service Installation:
1. Contractor shall provide sweep and conduit segment (3ft sweep of 3in schedule 40PVC sweep expected and one (1) ten foot stick of 3in schedule 40PVC conduit, contractor to confirm) at base of electric utility pole per electric utility requirements.
 2. All primary trenching, trench reclamation, and conduit shall be provided by the Contractor in accordance with serving electric utility requirements. Provide pull tape in conduit in accordance with serving electric utility requirements. Primary cable shall be furnished and installed by serving electric utility.
 3. Contractor shall furnish and install three (3) concrete vaults in locations picked by the serving electric utility. One vault shall be set at base of pole, one vault shall be set in the area between the base of the pole and the transformer, and the final vault shall be set below the transformer. The equipment shall be installed in accordance with serving electric utility standards.
 4. All site preparation for placement of the electric utility transformer is by Contractor. Transformer is furnished and installed by serving electric utility. Transformer vault is furnished and installed by contractor.
 5. Contractor to provide secondary circuitry (cable and conduit), trenching, and trench reclamation from meter to service entrance.
 6. Secondary trenching, trench reclamation, and conduit shall be provided by the Contractor in accordance with serving electric utility requirements between the transformer and utility meter. Provide pull tape in conduit in accordance with serving electric utility requirements. Secondary cable between transformer and meter shall be furnished and installed by serving electric utility.
 7. Utility meter socket and base shall be provided and mounted in accordance with serving electric utility requirements. Utility meter socket shall be of a safety socket with manual bypass provisions in accordance with serving electric utility standards. Meter head shall be by serving electric utility.
 8. Terminations at transformer primary and secondary, and utility meter primary are by serving electric utility company. Terminations at utility meter secondary are by electrical contractor.

END OF SECTION

SECTION 26 05 19

POWER AND INSTRUMENTATION CABLE - LESS THAN 600V

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Furnish and install all conductors to accomplish the circuiting, control and power distribution as shown in the Drawings.

1.02 REFERENCE STANDARDS:

- A. UL 486A-486B - Wire connectors
- B. NEMA WC 70
- C. NEMA WC30-1976
- D. NFPA 70 - National Electrical Code
- E. NFPA 79 - Electrical Standard for Industrial Machinery

1.03 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver conductors to project on standard coils or reels and suitably protected from weather and damage during storage and handling.

1.04 SUBMITTALS

- A. Submit shop drawings in accordance with Specification Section 01 33 00 - Submittal Procedures.

PART 2 PRODUCTS

2.01 CONDUCTORS

A. Type P1 - 600V Rated General Purpose Single Conductor Cable

1. Construction:
 - a. No. 14 AWG and larger: Stranded Copper, (THHN/THWN-2). Solid Copper is acceptable for lighting and branch circuits.
 - b. All conductors shall contain factory color coded insulation in all standard colors to match the voltage level used.
 - c. Sequential footage markers shall be factory installed on the insulation jacket.
 - d. Provide Cable Tray (CT) rated cable where installed in cable tray.

- e. Aluminum conductors are not permitted.
- 2. Feeder Conductors:
 - a. 98 percent conductivity copper, 600-volt insulation.
- 3. Branch Circuit Conductors:
 - a. 98 percent conductivity copper, 600-volt insulation.
 - b. Conductors smaller than No. 14 AWG are not permitted except in control panel.
- 4. Project Use Areas:
 - a. All general use indoor building circuiting.
 - b. Not allowed for any VFD output circuitry
- 5. Manufacturer:
 - a. Service Wire Co.
 - b. Okonite Co.
 - c. Southwire
 - d. Belden
 - e. Alpha Wire

B. Type P2 - 600V Rated Special Purpose Single Conductor Cable

- 1. Construction:
 - a. XHHW-2 insulation which is moisture, heat, and flame-retardant cross-linked polyethylene covered with an overall flame retardant, moisture and sunlight resistant PVC jacket.
 - b. Stranded Copper
 - c. All conductors shall contain factory color coded insulation in all standard colors to match the voltage level used.
 - d. Sequential footage markers shall be factory installed on the insulation jacket.
 - e. Provide Cable Tray (CT) rated cable if installed in cable tray.
 - f. Aluminum conductors are not permitted.
- 2. Project Use Areas:
 - a. All 600V and less service entrance conductors and feeders routed underground from the exterior to the interior.
- 3. Manufacturer:
 - a. Service Wire Co.
 - b. Okonite Co.
 - c. Southwire
 - d. Belden
 - e. Alpha Wire

C. Type S1 - Signal Cable - Single Pair - Shielded/Twisted

1. Construction
 - a. Type CMP Single pair, twisted, 100% shield coverage, Class B, 16 AWG, stranded (19 x 29) tinned copper conductors (7 strand minimum).
 - b. 600V minimum insulation rating
 - c. 15 mil (nominal), 90 deg C PVC primary insulation with a flame retardant, low smoke PVC, plenum rated.
 - d. Conductors shall be shielded with a .35 x 5 mil (min.), 100% coverage, aluminum or copper mylar tape shield, or equal with an 18-gauge strand copper drain wire.
2. Ratings/Listings:
 - a. Flame Resistance: Comply with UL 1685 & NFPA 262
 - b. UL Temperature Rating: 75 deg C Dry, 90 deg C wet
 - c. ICEA S-73-532, S-61-402
3. Project Use Areas:
 - a. Use cable for all control circuiting requiring one shielded twisted pair from a control panel to a field instrument or similar application.
4. Manufacturer:
 - a. Service Wire Co.
 - b. Okonite Co.
 - c. Southwire
 - d. Belden
 - e. Alpha Wire

D. Type D4 - Cat 6 Ethernet Cable

1. EIA/TIA Category 6, 4-pair, 23 AWG, and the voltage rating is application dependent
2. FEP Teflon plenum rated premise wiring cable where required.
3. Category 6 cables shall all be terminated in eight-conductor TIA-568-B CAT6, RJ-45 compliant snagless modular connectors. Refer to Section 40 61 13 - Process Control System General Requirements for module type.
4. The cable jacket and RJ45 terminator color shall be as follows:
 - a. SCADA Network: Orange
5. Project Use Areas:
 - a. Network circuiting as defined on the cable and conduit schedule
6. Manufacturer:
 - a. Belden

- b. Mohawk/CDT
- c. Approved Equal

E. Type D7 - Cat 6 UTP Outdoor Rated Ethernet Cable

1. EIA/TIA Category 6, 4-pair, 23 AWG, and the voltage rating is application dependent
2. FEP Teflon plenum rated premise wiring cable where required.
3. Shall be jacketed with a black UV and oil resistant, and flame-retardant compound coated PVC for direct outdoor use in harsh conditions.
4. The cable jacket and RJ45 terminator color shall be as follows:
 - a. SCADA Network: Orange
5. Project Use Areas:
 - a. SCADA backhaul radio circuiting between Indoor and Outdoor Units as defined on the cable and conduit schedule found in the drawings.
6. Manufacturer:
 - a. Belden
 - b. Approved Equal

F. Type A1 - Antenna Cable

1. Cabling runs of more than 100'
 - a. Andrew AVA5-50FX
 - b. Prior-approved equal.
2. Cabling runs of 100 feet or less
 - a. Times Microwave Systems LMR-600.
 - b. Prior-approved equal.
3. Cabling runs of less than 50'
 - a. Times Microwave Systems LMR-400.
 - b. Prior-approved equal.
4. Connections are all to be N-Type except for connections to the Radio (TNC).
 - a. All connectors must be installed by qualified personnel with experience with radio telemetry equipment.
5. Antenna cable jumpers shall be manufactured cable set with factory installed ends. Cable for jumpers to be minimum of RG-59.
6. All connection points outside of buildings must be weather proofed using cold shrink kits as per manufacturer's instructions.
 - a. Weather proofing materials must be designed to resist water and UV light.

7. Project Use Areas:
 - a. SCADA radio antennae circuiting as defined on the cable Drawings.
8. **Antenna cable shall be provided by the hardware system integrator as indicated in Section 40 63 13 - Process Control Panels and Hardware .**

2.02 CORD CONNECTOR GRIPS

- A. Manufacturer: Killark "Z" series or equal
- B. Type: Aluminum cord connector, stainless steel mesh grips, straight or 90° as required in eliminating sharp cable bending radii.
- C. Use: To support all cables/cords from the enclosure at their point of use and/or wherever cables/cords enter or leave the bottom of conduit risers (above grade). Required for all cord connections to motors or enclosures.

2.03 BOLTED, PRESSURE TYPE CONNECTORS

- A. Manufacturer: Burndy or equal
- B. Use: Connecting conductors to busbars, suitable for copper and aluminum conductors.
- C. Size: As required for conductor.

2.04 SOLDERLESS CONNECTORS

- A. Manufacturer: 3M "Scotchlok" or equal
- B. Type: Twist-on, spring tension.
- C. Use: With copper conductors only.

PART 3 EXECUTION

3.01 INSTALLATION

- A. All conductors shall be installed within conduit or approved raceway unless noted otherwise on drawings.
- B. Draw conductors into conduit only after conduit system is complete. Install in a manner so as not to injure insulation.
- C. Use stranded, copper conductors only. Solid conductors are not acceptable.
- D. Make splices on branch circuit conductors with solderless stapleless, mechanical wire connectors.
- E. Tighten bolted, pressure type connectors to manufacturer's recommendations.

- F. No. 10 AWG and smaller shall be stranded copper for all motor and control circuits. Branch circuits for lighting and convenience outlets shall be solid copper.
- G. All branch circuit homeruns greater than 50 feet shall be #10 minimum.
- H. Make splices and terminations in control panel by using bolted, pressure type connections. Install according to manufacturer's recommendations.
- I. Provide strain relief cord connectors and stainless-steel mesh on all cords entering motor termination boxes, junction boxes or conduits.
- J. Use factory color coded conductors with separate color for each phase and neutral conductor by integral pigmentation for all conductor sizes.
- K. Use following codes:

CONDUCTOR SYSTEM VOLTAGE-120/240, SINGLE PHASE

Phase A	Black
Phase B	Red
Neutral	White
Equipment Ground	Green

- L. Lace or clip groups of feeder conductors in control panels, pull boxes, and wireways.
- M. Use wiring pulling lubricant for pulling No. 4 AWG and larger wire.
- N. Splice only in accessible junction or outlet boxes.

3.02 CABLE INSTALLATION CERTIFICATIONS

- A. Installations and terminations of Ethernet network cabling shall be performed by BICSI Installer 2 certified installers with INSTC certifications.
- B. Contractor shall submit installer certification to project engineer prior to installation of any network cabling.

3.03 CABLE TESTING

- A. Type D4 Cable - Telephone and LAN Category 6 Cable Testing
 - 1. Perform end to end tests of each voice and data cable installed as follows:
 - a. Pair/conductor for proper pinouts and continuity.
 - b. Ground fault.
 - c. Proper termination, shorts and crossed pairs.
 - d. Channel attenuation per ANSI/TIA/EIA-568-A-5 and TSB-95.
 - e. Channel bidirectional worst case near end cross talk (NEXT) at frequencies up to 100 MHZ, per the standards listed in Item 4.
 - f. Measured and documented effective cable run length for each circuit.

- g. Submit record of test results to Owner and Engineer.

END OF SECTION

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SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Furnish and install a complete grounding system for all electrical equipment at the facility and for each antenna mast. Also, provide equipotential ground loop around perimeter of building(s) where shown on the Drawings and bond to main service equipment. Furnish and install accessible ground bars and ground test wells throughout the facility at locations indicated on the Drawings.

1.02 DESCRIPTION OF SYSTEM

- ###### A.
- Bond electrical equipment, control panels, panelboards, etc. to the metallic conduit system through conduit connectors or bonding jumpers, as required, to provide effective electrical continuity.

1.03 QUALITY ASSURANCE

- ###### A.
- NFPA 70, Article 250 National Electrical Code (NEC), current adopted Edition

1.04 SUBMITTALS

- ###### A.
- Submit shop drawings in accordance with Specification Section 01 33 00 - Submittal Procedures.

PART 2 PRODUCTS

2.01 GROUNDING CONDUCTORS

- ###### A.
- Copper, with green identification as specified in Section 26 05 19 - Power and Instrumentation Cable - Less Than 600V.

2.02 GROUND RODS

- ###### A.
- Type: Copper clad steel, 5/8-inch diameter, 10 feet long.

2.03 GROUND CLAMPS (CONCEALED)

- ###### A.
- Compression type grounding which meets IEEE 837.
- ###### B.
- Manufacturer: Panduit StructuredGround

2.04 GROUND FITTINGS AND LUGS (EXPOSED)

- A. Manufacturer: Equal to Burndy Company

2.05 GROUND LUG

- A. Located in electrical equipment as indicated on the Drawings.

PART 3 EXECUTION

3.01 POWER SYSTEM GROUNDING

A. Main Service

1. Provide a grounding grid consisting of driven ground rods with bare stranded copper interconnecting conductor (see drawings for conductor size) and a connection to water service ground as indicated on the Drawings. From two points on the ground grid, provide ground conductor to the ground bars indicated on the Drawings. From the service ground bus, provide ground conductor to neutral of main service (main bonding jumper strap). Also bond all equipment to equipotential ground plane where noted on the Drawings.

B. Distribution System

1. Install grounding bars and grounding studs at locations indicated within the facility, distribution centers, pull boxes and panelboards. Bond all metallic conduit systems and metallic piping with metallic clamps and bonding conductor for ground continuity.

C. Provide a properly sized copper grounding conductor in all branch circuit and feeder conduits. Size the conductor according to Table 250-122 of the National Electric Code. Connect the grounding conductor to grounding points (grounding bars, ground studs, etc.) in all electrical enclosures, electrical equipment, junction boxes and outlet boxes.

D. Ground and bond in accordance with National Electric Code, Article 250.

END OF SECTION

SECTION 26 05 34

CONDUIT

PART 1 GENERAL

1.01 SUMMARY

- A. Furnish and install a complete conduit system for all conductors. Low voltage control conductors and fiber optic cabling shall be installed within conduit as well.

1.02 REFERENCE STANDARDS

- A. U.L. 6 - Rigid metal conduit.
- B. U.L. 360 - Liquid-tight flexible steel conduit.
- C. U.L. 651 - Rigid non-metallic conduit.
- D. U.L. 1203 - Explosion-Proof Electrical Equipment for use in Hazardous Locations
- E. U.L. 1684 - Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
- F. UL 2515 - Above Ground Thermosetting Resin Conduit (RTRC) and fittings.
- G. UL 2420 - Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings
- H. NEMA Standard Publication TC-2 - Rigid PVC for underground installations.
- I. NEMA Standard Publication RN 1-2005 – PVC coated rigid steel conduit.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Store in a dry area, protected from the weather.

1.04 SUBMITTALS

- A. Submit product data and shop drawings in accordance with Specification Section 01 33 00 - Submittal Procedures.

PART 2 PRODUCTS

2.01 RIGID METAL CONDUIT (STEEL)

- A. Manufacturer: Equal to the Wheatland Steel Company
- B. Type: Steel heavy wall; galvanized unless noted otherwise on Drawings.

2.02 PVC COATED RIGID CONDUIT

- A. Manufacturer: Equal to Plasti-Bond
- B. Type:
 - 1. PVC externally coated, galvanized steel.
- C. The PVC coated galvanized rigid conduit must be ETL Verified to the Intertek ETL SEMKO High Temperature H2O PVC Coating Adhesion Test Procedure for 200 hours. The PVC coated galvanized rigid conduit must bear the ETL Verified PVC-001 label to signify compliance to the adhesion performance standard.

2.03 NON-METALLIC CONDUIT - PVC (HEAVY WALL)

- A. Manufacturer: Equal to Carlon.
- B. Type: Schedule 80 polyvinyl chloride, except where Schedule 40 is specifically called for on Drawings.

2.04 EXPANSION FITTINGS

- A. Manufacturer: Equal to OZ Electrical Manufacturing Company.
- B. Material type to match conduit.

2.05 HANGERS AND SUPPORTS

- A. Manufacturer: Equal to B-Line Products.

2.06 NON-METALLIC EXPANSION FITTINGS

- A. Manufacturer: Equal to Carlon.
- B. Type: Suitable for use with nonmetallic conduit.

PART 3 EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

- A. Size conduits as shown on the Drawings or as required by National Electrical Code (whichever is larger) for number and size of conductors installed. Minimum trade size is 3/4-inch; other sizes as required by NEC based on quantity of conductors.
- B. Contractor shall not exceed 270 degrees of bend in any single conduit run without an additional pull point unless otherwise noted in drawings.
- C. All raceways shall have an equipment ground conductor installed. The raceway shall not be utilized as an EGC.
- D. Support all conduits from structural system, independent of ductwork, ceiling system supports and main runners. Do not support conduit from conduit. Tie wires to hang or strap conduits are not permitted.

- E. Cut conduit joints square and ream smooth. Make bends with an approved bender or utilize standard conduit elbows.
- F. For buildings where walls are concrete or concrete blocks, Contractor shall core drill walls or coordinate reinforced, boxed out areas as required to install all conduit in a neat and workmanlike manner. Contractor shall also patch all wall penetrations and prepare the surface for final paint by General Contractor. Coordinate routing of larger conduits (3" and larger) with other trades and with Field Engineer prior to installation.
- G. Contractor shall provide sleeves or reinforced concrete boxed out openings through footings for all underground conduits. Coordinate with General Contractor.
- H. Securely fasten conduit and raceways with malleable iron clamps (hot dipped galvanized, with clamp backs), or galvanized unistrut and hangers with suitable fastenings for all indoor dry applications. Utilize stainless steel unistrut and clamps for all exterior applications, indoor damp/corrosive areas, and all areas as noted on the Drawings. The intent is to keep an air gap between conduit and finished wall surfaces to reduce the potential of moisture induced corrosion. All anchors shall be lead, expansion type with stainless steel hardware. Route all conduits parallel to and at right angles to building lines. Conduits mounted directly in contact with wall surface will not be acceptable.
- I. Route conduit continuous from outlet to outlet, outlet to cabinets, outlet to pull or junction boxes. Secure conduit to all boxes with locknuts and bushings in such a manner that each system is electrically continuous throughout.
- J. Surface mount conduit in all areas, unless noted otherwise. All conduits and outlet boxes on the building exterior shall be flush mounted where possible. If not, install conduits within the building and then penetrate the wall directly into the back of light/outlet/etc. Intent is to eliminate/minimize the usage of surface mounted conduit on the exterior face of the building.
- K. Cap ends of conduit to prevent entrance of foreign materials during construction.
- L. Locate conduits poured in concrete entirely in the middle 1/3 of the concrete member.
- M. Provide a 4-inch-high watertight barrier for conduits that pass vertically through a floor with a metal sleeve or concrete curb.
- N. Provide "link seal" around all conduits penetrating exterior walls/foundations and wet wells. Nuts on the link seal shall remain accessible from inside the building once link seal is installed. Non shrinking grout is acceptable for penetrations above finished grade.
- O. Below grade non-metallic conduit shall be transitioned to PVC Coated Rigid Steel before exposing above grade. Transition shall be made via below grade transition couplings to PVC Coated Rigid Steel elbows/sweeps.

- P. Provide watertight installation where conduits pass through roof, wall or waterproofing membranes.
- Q. Conduit systems must be installed completely before conductors are pulled in.
- R. Repair any damage done to insulation or interior vapor barrier where any conduit enters air plenums.
- S. Fill conduits which can admit air to or release air from air plenums through the connecting conduit system with sealing compound.
- T. Provide firestopping around all conduits penetrating fire rated walls as determined by the Architect and Engineer.

3.02 RIGID METAL CONDUIT (STEEL)

- A. Rigid Metal Conduit is required for all exposed conduits unless otherwise noted on the Drawings.
- B. Paint rigid metal conduit that is in contact with earth with heavy coat of bitumastic paint. Paint couplings after assembly. Where bitumastic paint is applied the paint must be thoroughly dried before backfilling.
- C. Fittings type to be threaded. Use threaded hubs (equal to Myers hub) where rigid conduit is connected to a thread less box or enclosure for indoor and outdoor applications. Lock nut with O-Ring is not an acceptable alternative.

3.03 PVC EXTERNALLY COATED RIGID CONDUIT

- A. All clamping, cutting, threading, bending, and assembly instructions listed in the manufacturer's installation guide should be vigorously followed.

3.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Use rain tight flexible metal conduit with rain tight fittings for final connections to motors (non-hazardous areas), and field instrumentation (non-hazardous areas) that do not come with factory installed cords. Minimum trade size is 1/2-inch.
- B. Length shall be limited to trade size: 3/4" or less = 36"; 1" or larger = 48". Minimum 12". Use permitted only to avoid transmission of vibration or noise and where flexibility to entry is required. All other uses shall be approved by the Engineer.
- C. Engineer reserves the right to request re-work of all flexible metal conduit exceeding lengths exceeding specified or installed where not permitted as noted above.
- D. Flexible Metal Conduit shall not be used to transition through walls under any circumstance.

3.05 NON-METALLIC CONDUIT - PVC (HEAVY WALL)

- A. Use rigid non-metallic, Schedule 80 PVC conduit for all direct burial and exposed wet, caustic or corrosive installations unless specifically noted otherwise on Drawings.
- B. Cut conduit square with round edges removed from ends to protect the wires from abrasion. Make connections by solvent welding. Install fittings in accordance with the manufacturer's recommended procedures. All elbows 2" and larger shall be rigid metal conduit. Provide expansion joints wherever there are long runs of conduit, and a wide temperature differential exists. Use PVC coated RMC sweeps whenever penetrating through concrete floors.
- C. Provide grounding conductor in all control circuits, branch circuits and feeder conduits.
- D. Typical applications included underground and in chemical or caustic areas.

3.06 CAST IN PLACE CONDUIT INSTALLATION REQUIREMENTS

- A. Conduits installed under the concrete floor within the extents of the building footprint will not be acceptable unless specifically called out on drawings.
- B. Structures with deep basements and foundation systems consisting of piles/screwed piers with grade beams and void forms shall have no conduits under the concrete floor under any circumstances.
- C. Where conduits transition from below the concrete floor to above, any vertically oriented couplings installed below slab shall be with threaded PVC coated rigid type. All other conduit types shall have no vertical couplings and be seamless and continuous from horizontal coupling to above concrete floor.
 - 1. Do not route conduits through wet wells, clearwells, underground tanks, etc. unless required to feed equipment located within the same. Use PVC coated RMC sweeps whenever penetrating concrete floors or through below grade footings, etc. Schedule 80 PVC conduits shall be used under or cast into concrete floor slabs.
- D. Signal Circuits shall be installed in PVC conduit as noted above and utilize shielded signal cable respectively.
- E. Contractor shall submit a cast-in-place conduit routing plan showing conduit routes, sizes and quantity to Structural Engineer prior to any cast-in-place installation taking place.

END OF SECTION

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SECTION 26 05 37

BOXES

PART 1 GENERAL

1.01 SUMMARY

- A. Furnish and install all outlet boxes, junction boxes and pull boxes required to accomplish device and equipment installation, wire pulling shown on the Drawings and to comply with National Electric Code requirements for conduit and conductor installation.

1.02 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Specification Section 01 33 00 - Submittal Procedures.

1.03 WORK INSTALLED BUT FURNISHED BY OTHERS:

- A. Back boxes for selected items of equipment are furnished by the equipment supplier. Refer to individual Specification Sections for mounting, size, etc.

1.04 DELIVERY, STORAGE AND HANDLING:

- A. Store materials in a dry area, protected from the weather.

PART 2 PRODUCTS

2.01 PULL BOXES

- A. Manufacturer: Hoffman or Equal
- B. Type: Metal construction, conforming to National Electrical Code, with screw on or hinged cover, unless specifically noted otherwise on drawings.
- C. NEMA 12, 4, 4X, 7 as noted in the drawings.
- D. Overlapping covers with flush head cover retaining screws, prime coated for flush mounted pull boxes.

2.02 SURFACE MOUNTED OUTLETS

- A. Manufacturer: Crouse Hinds, Appleton, or equal.
- B. Type: FS or FD Condulet Cast Device Boxes (# gangs as required).
- C. Matching iron alloy (Feraloy) covers as required for device(s) used.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Coordinate work with other trades to avoid potential obstructions within dedicated equipment spaces and work clearances as defined in the NEC.
- B. Clean interior of boxes to remove dirt, debris, and other foreign materials.
- C. Do not use sectional or handy boxes.
- D. Protect outlet boxes from entrance of foreign materials, including paint, during the construction period.
- E. Surface mount all interior outlet boxes.
- F. Install outlets at the heights and approximate designated positions as shown on the Drawings or indicated in Specifications, unless specifically noted otherwise.
- G. Locate outlets to clear piping, access hatches, and other obstructions.
- H. Install switch outlets on latch side of door except where type of construction dictates otherwise.
- I. Mounting heights indicated on Drawings are to center line of outlet unless indicated otherwise.
- J. Pull boxes and junction boxes are not indicated on Drawings except for special requirements. Install pull boxes or junction boxes as required to facilitate pulling wire. Size pull boxes and junction boxes as required by the National Electrical Code.
- K. Mount receptacles in the equipment rooms and in other unfinished areas at 48 inches unless noted otherwise on drawings. Match mounting heights of similar existing devices in the immediate area if present.
- L. All conduits entering pull boxes shall have the conduit ID as shown on the cable and conduit schedule clearly labeled on the inside of the pull box using permanent marker.
- M. Provide ventilated skirt under junction boxes where indicated on the drawings.

END OF SECTION

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Equipment to be identified includes panelboards, disconnects, transformers, relays, contactors, system control panels, variable frequency drives, separately mounted control stations, pilot lights, control switches and all wires and terminations.

1.02 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code (NEC), current adopted Edition.
- B. OSHA

PART 2 PRODUCTS

2.01 INSTRUCTION SIGNS

- A. Plastic sandwich-type acrylic based construction of contrasting colors equal to Rowmark. Engraving through the top layer exposes inner layer.
- B. Color: Black with white letters.
- C. Letters: 1/8-inch height, standard block type.
- D. Punched or drilled for mechanical fasteners. Fasteners shall be self-tapping stainless-steel screws with nuts and flat lock washers.

2.02 EQUIPMENT IDENTIFICATION LABELS

- A. Self-adhered, engraved, laminated acrylic or melamine label.
- B. Color: Black with white letters.
- C. Letters: 3/8-inch minimum height, standard block type.
- D. Punched or drilled for mechanical fasteners. Fasteners shall be self-tapping stainless-steel screws with nuts and flat lock washers.

2.03 WIRE MARKERS

- A. All wires requiring circuit indication shall be permanently fastened type written. No handwritten labels shall be acceptable.

- B. Wire markers shall be Shrink Tube or Self Laminating type as specified below.
- C. Shrink Tubing type wire markers:
 - 1. All shrink tube type markers shall be type written with circuit indication.
 - 2. 3:1 heat-shrinking type
 - 3. Resistant to chemicals, grease, oil and cleaning agents.
 - 4. Material shall be Polyolefin with smudge-proof finish.
 - 5. Material shall be cold resistant and flame-retardant
 - 6. Temperature range: -67 to 275 degrees Fahrenheit.
 - 7. Manufacturer: Brady or equal
- D. Self-laminating type wire markers:
 - 1. All self-laminating type markers shall be type written with circuit indication
 - 2. Vinyl label with acrylic adhesive
 - 3. Label shall have overlamine included sized appropriately to wrap cable one and a half times or completely cover printed area, whichever is greater.
 - 4. Label shall be rated for indoor and outdoor use.
 - 5. Temperature range: -94 to 140 degrees Fahrenheit.
 - 6. Material shall be flame-retardant.
 - 7. Resistant to chemicals, humidity, oil, water and weather.
 - 8. Manufacturer: Brady or equal

2.04 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and OSHA 29 CFR 1910.145.
- B. Self-adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated. Weather resistant, non-fading, metal backed or baked enamel signs to be used for outdoor installations.

2.05 POWER SOURCE LABELS FOR EQUIPMENT AND DEVICES

- A. Self-adhered label, installed on the front cover, door, or other access to equipment and devices unless otherwise indicated. Weather resistant, non-fading, metal backed or baked enamel signs to be used for outdoor installations.
- B. Self-adhesive labels shall be Brady or equal.
- C. Apply to all panels, junction boxes, receptacle faceplates, switch faceplates, front covers, doors, or other access to equipment unless otherwise indicated. See Part 3 for Execution.

2.06 CABLE AND CONDUIT IDENTIFICATION

- A. Each cable or conduit shall be identified using a permanent identification system consisting of a round 304 stainless steel engraved tag secured to the cable or conduit 6" from entry at both ends. Install tag in suitable location readable from normally accessed side.
- B. The following information shall be provided on each conduit label:
 - 1. Line #1 - Conduit ID found on the Cable and Conduit Schedule (where applicable)

PART 3 EXECUTION

3.01 INSTALLATION

- A. Clean surface before installation of any self-adhered labels.
- B. Identify with black acrylic based placard with white engraved letters mounted with drive pins or other approved fasteners.

3.02 DISCONNECTS AND STARTER ENCLOSURES

- A. Use the following for identifying disconnects or starter enclosures per NEC 110.22 (A).
 - 1. EXAMPLE: Raw Wastewater Pump #1
480 volt, 3 phase, 300 H.P.
Fed from: DP-X, Pole Position XX

3.03 SWITCHBOARDS, MCC & PANELBOARD LABELING

- A. Label per NEC Article 408.4 (A) & (B) and with the following information: Panel name, voltage, phase and amperage/type of main.
 - 1. EXAMPLE:
Panel L: Fed From: DP-X
120/208 volt
Three phase
225 amp Main Circuit Breaker
- B. Provide each panelboard with a neatly typed directory, with clear plastic cover, of circuits describing loads served.
- C. All markings are to be plainly visible, fit over the insulation of the conductor and begin 1/8" from where the insulation begins.
- D. Wire markers shall be provided by the Contractor and placed on both ends of all wires prior to termination.

- E. All wiring shall be checked for circuit completeness to verify correct circuiting, identification and labeling at the terminals. Terminal markings and wire markings shall match "record schematics" as provided by Hardware System Integrator.
- F. Hand lettering of identification not permitted. Completely remove temporary labels used during construction and repaint surfaces if required.

3.04 POWER SOURCE LABELS FOR EQUIPMENT AND DEVICES

- A. Provide a mechanically fastened power source label at all equipment and devices with the following information:
 - 1. EXAMPLE: LPA-11 or LPA-13,15 or DPA-1,3,5.
- B. All equipment and devices such as panels, junction boxes, receptacle faceplates, switch faceplates, front covers, doors, or other access to equipment shall include an adhesive backed label that indicates the power source for said equipment.

3.05 CONDUIT AND CIRCUIT LABELING AT POINT OF ENTRY TO LARGE ENCLOSURES

- A. Use a black permanent marker and hand label all conduits and circuits at the point of entry to large enclosures (control panels, pullboxes, junction boxes, motor control centers, etc.) with the conduit/circuit number from the Cable and Conduit Schedule.
- B. Labeling shall be done on the interior of the enclosure or on the floor near each conduit/circuit, or on the conduit itself in some cases. All conduits/circuits that enter enclosures shall be labeled.
- C. Labeling with a permanent marker shall be in addition to any circuit tags installed around the cables themselves.

3.06 GROUNDED (NEUTRAL) CONDUCTOR IDENTIFICATION

- A. Follow NEC 200.6. In addition to the part (D) identification requirements for the grounded conductor when different systems are in close proximity - Example: Non-Emergency UPS and Utility power sharing a common junction box or multi-channel raceway. Where broken, to prevent crossing of grounded/neutral conductors, the non-utility system's neutral wires shall all have wire markers identifying it as the system to which it belongs.

3.07 DRY TYPE TRANSFORMER

- A. Label per NEC Article 450.11 and with the following information: Transformer name, power source and circuit number, and loads served.
 - 1. Example: XFMR-1
Fed from: DP-X-12,14,16

Feeds LP-X

END OF SECTION

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SECTION 26 24 16

PANELBOARDS

PART 1 GENERAL

1.01 SUMMARY

- A. Furnish and install circuit breaker type panelboards for branch circuit distribution to lighting, general receptacle and small motor loads.

1.02 QUALITY ASSURANCE

- A. NEMA PB-1
- B. U.L. listed

1.03 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Specification Section 01 33 00 - Submittal Procedures.
- B. Clearly indicate (for each panelboard) amperage and phase of main bus, amperage of main circuit breaker, wire size and quantity of main lugs, grounding bar location, neutral bar location, quantity, arrangement and amperage of branch circuit breakers, quantity of spaces, physical dimension of enclosure, weight, directory card location and type, type of lock, flush or surface cover, short circuit withstand rating in R.M.S. amperes.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Box, crate, or otherwise completely enclose and protect all equipment during shipment, handling, and storage.
- B. Protect equipment from exposure to elements and keep all items thoroughly dry at all times.
- C. Store in a dry area, protected from the weather.
- D. Painted Surfaces: Protect against impact, abrasion, discoloration, and other damage.

1.05 OPERATION AND MAINTENANCE DATA

- A. Include manufacturer's instructions in accordance with Specification Section 01 78 23 - Operation and Maintenance Data for maintenance, including cleaning, tightening conductor connections, testing, and addition or replacement of circuit breakers.

PART 2 PRODUCTS

2.01 LIGHTING AND APPLIANCE PANELS (UL 67)

A. Ratings

1. Utilize lighting and appliance panels (denoted by L prefix) for 120/208 volt 3 phase operation, or 120/240V for single phase operation as indicated on the drawings. Install bolt-on, thermal magnetic circuit breakers with a minimum interrupting rating of 22,000 amperes R.M.S. unless noted otherwise on drawings.
2. Voltage rating to be as indicated on the drawings

B. Construction

1. Panelboards shall be fully rated, series rated is not acceptable. Each breaker within shall meet or exceed the full interrupting rating of the panelboard
2. Install in a NEMA 1 surface mount enclosure, unless indicated otherwise on the drawings. Provide a hinged-front breaker access door and a separate hinged front cover (two separate hinges) for personnel/contractor access without completely removing front panelboard cover.
3. Install common trip multipole circuit breakers. Handle ties are not permitted.
4. Circuit breakers shall have a trip indication different from the "off" or "on" position.
5. Full cabinet height bussing includes active, spare and blank breaker locations with sizes, branches, mounting, main circuit breakers, etc., as shown in Schedule on the Drawings.
6. Provide adequate wiring space according to the National Electrical Code.
7. Provide wall mount panels with a hinged door with lock. Key locks alike. Covers shall be square with surface not extending past edges of panelboard where wall mounted.
8. Isolated neutral bar and ground bar in all panelboards. Provide 200% rated neutrals where indicated on the Drawings.
9. Provide distributed phase bussing.
10. Metal framed circuit directory and card with plastic covering located on the inside.
11. Silver-plated copper bussing, SPD protection and additional requirements as noted on Panelboard Schedule on Drawings.

- C. Provide a integral SPD per Section 26 43 00 - Surge Protective Devices on all panelboards where defined on the drawings. SPD shall have disconnect sized per manufacturer recommendations.

2.02 MANUFACTURERS

- A. Lighting and Appliance Panels (L Prefix):
 - 1. Square D Type NQ
 - 2. General Electric equal
 - 3. Siemens equal
 - 4. ABB
 - 5. Cutler Hammer equal

2.03 CABLE TIES

- A. Equal to Thomas and Betts "TY-RAP"

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install all panelboards plumb with top at 72" above the finished floor.
- B. Type circuit directory with spare positions left blank. Hand lettering not acceptable.
- C. Carefully clean panelboard to remove all wire scraps, dirt and dust.
- D. Neatly dress conductors and bundle with nylon cable ties.
- E. Tighten all lugs and bolts to manufacturer's recommendations.
- F. Use touch up paint, as recommended by the manufacturer, to repair scratches and other surface defects.
- G. Install SPD as recommended by the manufacturer at each project panelboard. Install with leads as short as possible so that SPD indicating lights are visible.

END OF SECTION

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SECTION 26 27 26

WIRING DEVICES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Furnish and install all wiring devices and device plates where shown on the Drawings.

1.02 WORK INSTALLED BUT FURNISHED BY OTHERS

- A. Where indicated, install devices supplied by Division 1 through 40.

1.03 QUALITY ASSURANCE

- A. NEMA
- B. U.L. Listed
- C. NFPA 70 - National Electrical Code, current adopted Edition

1.04 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Specification Section 01 33 00 - Submittal Procedures. Clearly indicate device type, voltage, amperage, NEMA configuration, color.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Store in a dry area, protected from the weather.

1.06 OPERATION AND MAINTENANCE DATA

- A. Submit in accordance with Specification Section 01 78 23 - Operation and Maintenance Data, a list of all devices used, including manufacturer and type.

PART 2 PRODUCTS

2.01 DUPLEX RECEPTACLES: (SURFACE MOUNTED IN FINISHED AREAS)

- A. Manufacturer: Equal to Hubbell #5352 Series, Bryant #5352, Leviton #5352, P&S CR Series, or P&S #5362 Series duplex.
- B. Type:

1. Specification grade
2. Gray in color (normal applications); Blue for UPS applications.
3. 20 Ampere
4. 120 Volt
5. 3 Wire Grounding

2.02 GROUND FAULT RECEPTACLE

- A. Manufacturer: Equal to P&S 1597 Series, Eaton SGF15, Leviton:
 1. 15 A Capacity
 2. Gray
 3. 120 Volt with 5 milliampere trip
- B. Manufacturer: Equal to P&S 2097 Series, Eaton SGF20, Leviton:
 1. 20 A Capacity
 2. Gray
 3. 120 Volt with 5 milliampere trip
- C. Other Manufacturers and models must be approved by Engineer

2.03 TOGGLE SWITCHES

- A. Manufacturer: Equal to P & S #20AC, Eagle 2221
- B. Type:
 1. Specification grade
 2. Gray in color
 3. 20 Ampere
 4. 120/277 Volt
 5. Quiet operation, keyed switch where indicated, single pole unless noted otherwise.

2.04 DIMMER SWITCH

- A. Manufacturer: Equal to Hubbell AS203
- B. Type:
 1. 1500W rated or required by application
 2. 120 Volt
 3. Ivory in color or as specified on drawings

2.05 PILOT LIGHTED SWITCHES

- A. Manufacturer: Equal to P & S #20AC1-RPL, Eagle 2221PL
- B. Type:
 - 1. Red in color
 - 2. 20 Ampere
 - 3. 120/277 Volt
 - 4. Quiet operation
- C. Neon type that is illuminated when switch is in the "on" position
- D. Specification grade

2.06 PILOT LIGHTS

- A. Manufacturer: Equal to Arrow Hart
- B. Type:
 - 1. Neon with red jewel

2.07 DEVICE PLATES

- A. Provide device wall plates per Specification Section 26 05 37 - Boxes and as required by NEC.

2.08 WEATHERPROOF COVERS

- A. Provide weatherproof device covers on all exterior devices, wet area devices, chemical room devices and in other areas indicated on the Drawings and as required by the NEC.
- B. Unless indicated otherwise, covers shall be of the "weather protected while in use" variety and shall consist of the following:
 - 1. Exterior Applications: cast aluminum, lockable, sized as required for the application. Manufacturer/Model: Intermatic / Type #WP10, or equal.
 - 2. Wet, Chemical or Caustic Interior Areas: clear plastic or PVC construction, Carlon, Intermatic WP5100 Series, or equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install devices and device plates where shown on the Drawings.
- B. All receptacles and switches listed within this section shall be installed with the ground side down.

- C. Provide blank plates for unused openings.
- D. See Section 26 05 53 - Identification for Electrical Systems for engraving requirements for pilot lights and pilot lighted switches.

3.02 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, and other foreign material and restore to match original factory finish.

3.03 PROTECTION

- A. Protect installed products from subsequent construction operations.

END OF SECTION

SECTION 26 28 18

ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SUMMARY

- A. Furnish and install disconnects for motors and equipment as required by National Electrical Code, for personnel protection and for electrical isolation of equipment.

1.02 QUALITY ASSURANCE

- A. U.L. Listed, heavy duty type.

1.03 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Specification Section 01 33 00 - Submittal Procedures. Clearly indicate voltage, amperage, quantity of poles, dimensions, fuse clip type, horsepower rating, enclosure type, handle description, required clearances.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Store in a dry area, protected from the weather.

1.05 OPERATION AND MAINTENANCE DATA

- A. Submit manufacturer's instructions in accordance with Specification Section 01 78 23 - Operation and Maintenance Data for maintenance including cleaning, tightening conductor connections, fuse replacement data and renewal parts list.

PART 2 PRODUCTS

2.01 DISCONNECTS

- A. General Requirements
 - 1. Heavy duty type, horsepower rated
 - 2. Quick make, quick break operation
 - 3. Non fused, unless noted fused on the Drawings.
 - 4. 250 VAC or 600 VAC as required per the load they serve.
- B. Type
 - 1. NEMA 12 for disconnects located in controlled atmosphere, general areas of the facility, unless indicated otherwise on the Drawings. NEMA 12 shall

be considered the default enclosure rating for interior disconnects in non-caustic, wet or corrosive areas of the facility, unless indicated otherwise on the Drawings.

2. NEMA 4X for disconnects located in wet, caustic or corrosive areas, unless indicated otherwise on the Drawings. The disconnects shall be stainless steel or non-metallic as defined on the Drawings.
3. NEMA 3R for disconnects located outside building or subject to damp or wet areas, unless specifically noted otherwise on the Drawings.
4. Rotary Type Disconnects: Compact, heavy duty, NEMA 4X, metallic or non-metallic case, rotary type disconnect switches may be used for smaller HVAC and process loads (such as electric valve actuators, condensing units, fans, etc.) and shall be of the fused or non-fused type as indicated on the Drawings. These types of disconnects shall only be allowable where specifically indicated as acceptable on the Drawings.

C. Manufacturer

1. Square-D
2. Cutler Hammer
3. Siemens
4. General Electric

PART 3 EXECUTION

3.01 INSTALLATION

- A. Securely mount safety switches plumb and level.
- B. Comply with accessibility, clearance and mounting height requirements as listed in the National Electrical Code.
- C. Tighten all conductor connections according to manufacturer's recommendations.

3.02 CLEANING

- A. Clean dirt and debris from switch enclosure and components according to manufacturer's instruction.
- B. Repair scratched or damaged exterior surface to original factory finish.

END OF SECTION

SECTION 26 29 13

ENCLOSED CONTROLLERS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Motor starters for all motors shall be furnished and installed within the MCC or their respective control panel by Division 26, unless noted otherwise on the Schedules included with the Drawings.
 - a. Separately mounted motor starters shall be provided where indicated on the Schedules included with the Drawings.

1.02 QUALITY ASSURANCE

A. NEMA U.L. listed

1.03 WORK FURNISHED AND INSTALLED BY OTHERS

A. Motors are provided by other Specifications Sections.

1.04 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Specification Section 01 33 00 Submittal Procedures. Clearly indicate motor starter size, dimensions, schematic wiring diagrams, and accessories.

1.05 OPERATION AND MAINTENANCE DATA

- A. Submit manufacturer's data in accordance with Specification Section 01 78 23 - Operation and Maintenance Data for operation and maintenance data for repairing, cleaning, testing requirements and parts list.

PART 2 PRODUCTS

2.01 MOTOR STARTERS

A. Solid State Motor Controllers - SMC(Electronic Soft Starter)

1. Manufacturer/Model: Allen Bradley SMC Flex with internal bypass contactor and options specified or equivalent Cutler Hammer, General Electric, Siemens, or Square D product.
2. Features

- a. Solid state motor controller for starting and stopping motor by accelerating and decelerating from 0%-100% of rated speed over an adjustable period.
- b. Located within motor control center enclosure as indicated on the Drawings. Soft starter system shall be provided to permit continuous operation at rated current in an ambient temperature of 100 degrees F, while maintaining enclosure temperature below manufacturer's published operating temperature limit. Soft starter shall be provided with PFCC's and fuses to match size and rating.
- c. Assembly shall bear the U.L. label.
- d. Electronic soft starter shall have the following features:
 - 1) Adjustable starting ramp speed from 2 to 30 seconds. Adjustable stopping ramp speed from 2 to 120 seconds.
 - 2) Selectable ramp speed from 2 to 120 seconds.
 - 3) Rated for motor full load current, continuous duty at nominal voltage, +/-10%. Rated for 300% duty for 30 seconds, minimum.
 - 4) Adjustable startup torque from 5% to 90% of locked rotor torque.
 - 5) Monitor motor overload auxiliary contacts and shut down motor if overload circuit opens.
 - 6) Furnish with line side circuit breaker, internal automatic bypass contactor which bypasses the power electronics once the soft starter is up to speed and other components and features as indicated on the Drawings.
 - 7) Furnish control power transformer internal to the starter enclosure to supply control power to the soft starter and soft starter enclosure auxiliaries (fans, indicating lights, relays, etc.). Size the control power transformer to handle the connected load with 50% spare capacity, minimum.
 - 8) Furnish soft starter with auxiliary single pole, double throw, "Running" (up to speed) and "In Bypass" contacts rated 4 amps at 120VAC, minimum.
 - 9) Line side SCR protective fuses and metal-oxide varistor (MOV) surge protection on incoming line terminals. Surge protection rated 80 joules, minimum.
 - 10) Dielectric withstand:
 - (a) 2 kV continuous, line to ground
 - (b) 3 kV surge (10 seconds maximum) per IEEE Standard 472
 - 11) Programmable parameters (minimum):
 - (a) Starting mode
 - (b) Ramp time

- (c) Initial torque
- (d) Current limit level
- (e) Stall delay
- (f) Energy saver
- (g) Restart attempts
- (h) Overload protection (confirm motor full load rating with motor manufacturer and program accordingly)
- (i) Displays:
 - (1) Volts (A-B, B-C, C-A)
 - (2) Current (Phase A, B, C)
 - (3) Wattmeter
 - (4) Kilowatt hours
 - (5) Elapsed time'
 - (6) Power factor
- (j) Protective features:
 - (1) Power loss
 - (2) Line fault
 - (3) Voltage unbalance
 - (4) Phase reversal
 - (5) Undervoltage
 - (6) Overvoltage
 - (7) Overload
 - (8) Stall
 - (9) Jam
 - (10) Underload
 - (11) Open gate
 - (12) Excess starts per hour
 - (13) Controller temperature
 - (14) Communication fault
 - (15) System faults
 - (16) MPU fault
- 12) Furnish each soft starter provided for pump applications with manufacturer's "Pump Control Module" for enhanced hydraulic cushioning benefit.
- 13) Front Panel Components and Control Configuration:
 - (a) Six digit, non-resettable running time meter.
 - (b) Operator interface keypad/display unit.

- (c) SPDT auxiliary contacts for remote monitoring as follows:
 - (1) Running (at full speed)
 - (2) Alarm/fault (any alarm condition)
 - (3) In Bypass

PART 3 EXECUTION

3.01 INSTALLATION

- A. All starters shall be installed within the project MCC(s), unless noted otherwise on Drawings.
- B. Provide all starters with overload elements or overload relay setting ranges equal to or greater than the nameplate rating on the installed motor.
- C. Terminate all motor lead connections.
- D. Coordinate and provide all interconnects between MCC starters, and all control panels. Provide complete labeled wiring diagram showing all connections.

3.02 SUPPLIES AND SPARE PARTS

- A. At Final Completion, Contractor shall furnish the following expendable items:
 - 1. Twenty (20) percent spare fuses and lamps of each type furnished under this Section, but not less than six (6) of each type.
 - 2. Complete set of overload heater elements of each size installed, or if electronic overload relays are utilized, provide a spare electronic overload relay of each size installed.

END OF SECTION

SECTION 26 43 00

SURGE PROTECTIVE DEVICES

PART 1 GENERAL

1.01 SUMMARY

- A. This section describes the materials and installation requirements for Surge Protective Devices (SPDs) shown on the drawings and herein specified.

1.02 REFERENCES AND QUALITY ASSURANCE:

- A. IEEE C62.41, C62.45-2002, and C62.62-2018
- B. National Electrical Manufacturers Association (NEMA LS1)
- C. National Fire Protection Association (NFPA 70)
- D. Underwriters' Laboratories (UL 1449 3rd Ed. and 1283)

1.03 SUBMITTALS

- A. For each SPD device, Submit shop drawings and product data in accordance with Specification Section 01 33 00 - Submittal Procedures including the following:
 - 1. Product Data Sheets in NEMA LS-1 format - Publication for Low Voltage Surge Protection Devices (SPDs).
 - 2. Electrical/mechanical drawings showing unit dimensions, weights, installation instructions details, and wiring configuration.
 - 3. UL 1449 Edition 3 Listing Certificate.
 - 4. UL 1449 Edition 3 Suppressed Voltage Ratings.
 - 5. Independent let through voltage test results to ANSI IEEE C62.41 Cat C3 high energy impulse(20kV,10kA), B3 ring wave(6kV, 3kA).
 - 6. Copy of warranty statement clearly establishing the terms and conditions to the building/facility owner/operator.
 - 7. Copies of Noise Rejection testing as outlined in NEMA LS1-1992 (R2000) Section 3.11. Noise rejection is to be measured between 50kHz and 100MHz verifying the devices noise attenuation. Must show multiple attenuation levels over a range of frequencies.

1.04 MANUFACTURES QUALIFICATIONS

- A. Manufacturers shall be ISO9000 certified.

- B. Manufacturers shall have been engaged in the design and manufacturing of such devices for at least ten (10) years.
- C. SPD shall be UL 1449 current edition listed, 20kA In Type 1 or Type 2 for use in UL 896A systems.
- D. The following manufacturers will be approved, provided they meet all specifications:
 - 1. ERICO Inc.
 - 2. Eaton equivalent
 - 3. Square D equivalent
 - 4. ABB
 - 5. Or prior approved equal.

1.05 WARRANTY

- A. The manufacture shall warrant the SPD against defects in material and workmanship for period of 10 years.

PART 2 PRODUCTS

2.01 GENERAL ELECTRICAL REQUIREMENTS

- A. Unit operating voltage- Refer to drawings for operating system voltage.
- B. Maximum continuous operating voltage (MCOV)- the MCOV shall not be less than 115% of the nominal system operating voltage.
- C. The suppression system shall incorporate thermally protected metal-oxide varistors (MOVs) as the core surge suppression component for the service entrance and all other distribution levels. The system shall not utilize silicon avalanche diodes, selenium cells, air gaps, or other components that may crowbar the system voltage leading to system upset or create any environmental hazards. End of life mode to be open circuit. Unit with end of life short-circuit mode is not acceptable.
- D. SPD shall include L-G, L-N, and N-G modes of protection for wye systems at minimum. Delta power systems shall include L-L and L-G modes of protection at minimum.
- E. Nominal Discharge Current (In) - All SPDs applied to the distribution system shall have a 20kA In rating regardless of their SPD Type (includes Types 1 and 2) or operating voltage. SPDs having an In less than 20kA shall be rejected.
- F. Electrical Noise Filter - Each Type 2 unit shall include a high-performance EMI/RFI noise rejection filter. Noise attenuation for electric line noise shall be up to 50 dB

from 10 kHz to 100 MHz using the MIL-STD-220A insertion loss test method. Products unable able to meet this specification shall not be accepted.

1. Type 2 units with filtering shall conform to UL 1283 5th Edition
 2. Type 1 units shall not contain filtering or have a UL 1283 5th Edition Listing.
- G. Internal Connections - No plug-in single-mode modules or printed circuit boards shall be used as surge current conductors. All internal components shall be soldered and hardwired with connections utilizing low impedance conductors.
- H. Monitoring Diagnostics - Each SPD shall provide the following integral monitoring options:
- I. Remote Status Monitor- The SPD must include Form C dry contacts (one NO and one NC) for remote annunciation of its status. Both the NO and NC contacts shall change state under any fault condition. A reduction in capacity below the manufacturer's predetermined level shall operate an alarm contact.
 - J. Surge Counter- The SPD shall be equipped with an LCD display that indicates to the user how many surges have occurred at the location. The surge counter shall trigger each time a surge event with a peak current magnitude of a minimum of 50 $\pm$ 20A occurs.
 1. The ongoing surge count shall be stored in non-volatile memory. If power to the SPD is completely interrupted, the ongoing count indicated on the surge counter's display prior to the interruption shall be stored in non-volatile memory and displayed after power is restored. The surge counter's memory shall not require a backup battery in order to achieve this functionality.
- K. The SPD shall have a maximum continuous operating voltage (MCOV) of:

POWER SYSTEM	MCOV (L-N)
Single phase (3W+G) 120/240 WYE	150V
Three phase (4W+G) 120/208 WYE	150V
Three phase (4W+G) 220/380 WYE	320V
Three phase (4W+G) 277/480 WYE	320V
Three phase (4W+G) 347/600 WYE	485V
Three phase (3W +/-G) 240V Delta	270V L-L
Three phase (3W +/-G) 480V Delta	550V

- L. The following Voltage Protection Rating (VPR) L-N, L-L For Delta, shall not be exceeded by the SPD:

Impulse Standard	120/240V	120/208V	220/380V	277/480V	240V Delta
ANSI/IEEE C62.41	<650V	<650V	<1000V	<1000V	<1000V
Cat B3	6kV	6kV	6kV	6kV	6kV

ANSI/IEEE C62.41	<1400V	<1400V	<1800V	<1800V	<1800V
Cat C3	20kV	20kV	20kV	20kV	20kV

2.02 LIGHTING PANELS (UL TYPE 2)

- A. SPD shall be installed at additional specific locations as shown on drawings or indicated on the panelboard schedules.
- B. SPD shall provide 120kA 8/20 μ s surge rating per phase, min.
- C. SPD shall be capable of withstanding multiple temporary over voltage per UL 1449 Ed 3 without failure or need to reset or replace modules/fuses.
- D. Independent certification shall be provided proving that the SPD meets a single shot surge rating of at least 120kA per phase, without failure of the fuse, disconnect or surge module. Bypassing fusing/disconnects for purpose of this test is not acceptable.
- E. Each mode of the SPD shall be rated to exceed the life cycle testing of ANSI/IEEE C62.45 by withstanding at least 10,000 operations at 6kV and 500A B3 Ringwave without failure.
- F. SPD shall be internally line fused and be UL Listed for use on circuits with short circuit fault current rating (SCCR) of 200 kA. These fuses to be field replaceable with indication to warn if fuse has ruptured. Unit shall not require external fuses/breaker for connection.
- G. SPD shall be capable of withstanding multiple temporary over voltages per latest adopted UL 1449 edition without failure or need to reset or replace modules/fuses.

PART 3 EXECUTION

3.01 INSTALLATION

- A. SPDs shall be factory installed within the noted equipment.

END OF SECTION

DIVISION 40 PROCESS INTEGRATION

SECTION 40 61 13

PROCESS CONTROL SYSTEM GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Basic requirements for complete instrumentation system for process control.
2. Requirement for Contractor to subcontract the Process Control System portion of the work to a "Hardware System Integrator." See specifications contained within.
3. "Software System Integrator" services will be provided under a separate contract outside of the construction contract. See specifications contained within.
4. PLC and HMI programming and associated programming startup services are not required from the contractor as part of contractors bid. See specifications contained within.

1.02 QUALITY ASSURANCE

A. Referenced Standards:

1. The International Society of Automation (ISA):
 - a. 7.0.01 - Quality Standard for Instrument Air.
 - b. S5.1 - Instrumentation Symbols and Identification.
 - c. S5.3 - Graphic Symbols for Distributed Control/Shared Display Instrumentation, Logic and Computer Systems.
 - d. S20 - Standard Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves.
 - e. 62443-3-3 - Security for Industrial Automation and Control Systems, Part 3-3: System Security Requirements and Security Levels
2. National Electrical Manufacturers Association (NEMA):
 - a. 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
3. National Fire Protection Association (NFPA):
 - a. 70 - National Electrical Code (NEC).
4. Underwriters Laboratories, Inc. (UL):

- a. 913 - Standard for Safety, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations.
- 5. National Institute of Standards and Technology (NIST)
 - a. SP 800-82 - Guide to Industrial Control Systems (ICS) Security
- B. Qualifications:
 - 1. Hardware System Integrator (HSI):
 - a. A single manufacturer who is skilled and experienced in the production of control systems shall furnish the automatic control system equipment. The manufacturer shall have the following experience:
 - 1) Have satisfactorily provided control system integration for a minimum of five projects of similar magnitude and function.
 - 2) Level, flow, and pressure controls.
 - 3) Water treatment, pumping facilities, and distribution systems.
 - 4) Radio Telemetry systems.
 - 5) Ethernet/IP Network Telemetry systems.
 - b. Certification:
 - 1) UL508A Certification
 - 2) UL698A Certification
 - c. Qualification:
 - 1) Regularly engaged in the design and the installation of process control and instrumentation systems and their associated subsystems as they are applied to the municipal water industry.
 - 2) Maintains a permanent, fully staffed and equipped service facility with full time employees capable of designing, documenting, fabricating, installing, calibrating, providing training services, and testing the systems specified herein.
 - 3) Capable of responding to on-site problems within 24 hours of notice. Provide an on-site response within 12 hours of notification starting at two months before scheduled startup to two months after startup completion.
- C. Miscellaneous:
 - 1. Comply with electrical classifications and NEMA enclosure types shown on Drawings.

1.03 DEFINITIONS

- A. Calibrate: To standardize a device so that it provides a specified response to known inputs.
- B. Hazardous Areas: Class I, II or III areas as defined in NFPA 70.
- C. Highly Corrosive and Corrosive Areas: Rooms or areas identified on the Drawings where there is a varying degree of spillage or splashing of corrosive materials such as water, wastewater or chemical solutions; or chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes or chemical mixtures.
- D. Intrinsically Safe Circuit: A circuit in which any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under test conditions as prescribed in UL 913.

1.04 SYSTEM DESCRIPTION

A. Control System Requirements

- 1. This Specification Section provides the general requirements for the control system.
- 2. The control system consists of all primary elements, transmitters, switches, controllers, computers, communication devices, recorders, indicators, panels, signal converters, signal boosters, amplifiers, special power supplies, special or shielded cable, special grounding or isolation, auxiliaries, software, wiring, and other devices required to provide complete control of the plant as specified in the Contract Documents.
- 3. The control system shall be the result of the combined efforts of the Hardware System Integrator, Software System Integrator, and Electrical Contractor. Descriptions are provided as follows:
 - a. Hardware System Integrator (HSI)

NOTE, THE EQUIPMENT AND INSTRUMENTATION PROVIDED BY THE HARDWARE SYSTEM INTEGRATOR AS SPECIFIED HEREIN SHALL BE PROVIDED THROUGH THE DIVISION 26 ELECTRICAL CONTRACTOR .

The Hardware System Integrator shall be responsible for the following:

- 1) The design of all equipment required by these specifications and as indicated within the Engineer's drawings.
- 2) Testing of all equipment required by these specifications and as indicated within the Engineer's drawings.
- 3) All control panels, control panel components, network racks, network control panels, junction boxes, control stations and materials furnished in the control panels as identified by the following specifications and as indicated in the Engineer's drawings:

Section 40 63 13 - Process Control Panels and Hardware

Section 40 63 14 - Junction Boxes and Control Stations

Section 40 63 43 - Programmable Logic Controllers

Section 40 66 53 - Radio and Telemetry Equipment

Section 40 67 13 - Network Racks and Equipment

- 4) Each control panel component shall be factory mounted, wired, inspected, and factory tested as a complete system.
- 5) Purchasing all PLC panel materials and construction of PLC panels.
- 6) The Hardware System Integrator shall provide their own PLC programming software for use in testing the hardware and communications.
- 7) Overseeing and verifying the communications cabling, fiber optic cabling, and all communications terminations required for operation of the PLC control system including Process Equipment PLC panels supplied in other sections.
- 8) Furnish all Motor Control Centers and VFDs shown within the Engineer's Drawings unless noted otherwise.
- 9) Provide the following primary process measurement devices / instrumentation as defined by 40 70 01 - Instrumentation General Requirements:
 - Section 40 71 00 - Flow Measurement
 - Section 40 72 00 - Level Measurement
 - Section 40 73 00 - Pressure Measurement
 - Section 40 74 00 - Temperature Measurement
 - Section 40 77 00 - Position and Motion MeasurementThe hardware system integrator shall be responsible for overseeing the installation and field calibration of all items supplied. Refer to 40 61 21 - Process Control System Testing for additional testing requirements.
- 10) Work with Software System Integrator and Electrical Contractor to install an Ethernet Network as shown and indicated in the Engineering's drawings.
- 11) Overseeing and verifying the field connections and functionality of all sensors and devices provided in other sections of the specifications that are connected to the PLC system.
- 12) Installation of salvaged radio equipment and antennas as shown in Engineering's drawings. Configuration and testing for a complete and operational telemetry system.

- 13) Assisting the Software System Integrator in the start-up and field verification of the various control loops in the system.
 - 14) Generate the Hardware and Software O&M Manuals regarding all equipment supplied for the PLC control system. See specification section 01 78 23 - Operation and Maintenance Data.
 - 15) The Hardware System Integrator shall **NOT** be responsible for the following:
 - (a) PLC control panels supplied by process equipment vendors.
- b. Acceptable Hardware System Integrators are:
- 1) Integrated Process Solutions (IPS)
 - (a) Location: Fosston, MN
 - (b) Phone: (218) 435-1703
 - 2) Wunderlich-Malec
 - (a) Location: Minnetonka, MN
 - (b) Phone: (952) 933-3222
 - 3) Primex
 - (a) Location: Plymouth, MN
 - (b) Phone: (763) 559-0568
 - 4) Quality Control and Integration
 - (a) Location: Prague, MN
 - (b) Phone: (952) 758-9445
 - 5) Enetk PLC Automation & Integration
 - (a) Location: Dickinson, ND
 - (b) Phone: (701) 483-8330
 - 6) Or "Approved Equal"
- c. Software System Integrator (SSI) - The Software System Integrator shall be under a separate contract outside of the construction contract to provide programming and start-up services for the Programmable Logic Controllers (PLCs), Operator Interfaces (OITs), Human Machine Interfaces (HMIs), Network System Configuration, Server Setup and Configuration, and Computer Workstation Setup and Configuration. This does not include PLC and/or OIT programming by OEM vendors.
- 1) The Software System Integrator shall provide technical assistance to the Hardware System Integrator during the PLC panel hardware design.
 - 2) Coordinate with Process Equipment PLC panels supplied by equipment vendors on the project.

- 3) Define and refine the control loop requirements with the Engineer.
 - 4) Develop and test PLC programs for the PLC Control System.
 - 5) Develop HMI software interface screens and reports.
 - 6) Work with the Hardware System Integrator in the start-up phase for field verification of all control loops in the system. This shall exclude OEM based control loops.
 - 7) Generate the Software O&M Manuals for the HMI system
 - 8) Software System Integrator shall coordinate data communication between all OEM vendors.
- d. Electrical Contractor — The Electrical Contractor shall provide for the installation and wiring of the PLC Control System. All of the control wiring, signal wiring, and communication wiring and terminations will be provided by the Electrical Contractor.
- 1) Work with Hardware System Integrator to install an Ethernet Network as shown and indicated in the Engineering's drawings.
 - 2) Electrical Contractor shall be responsible for providing and installing all conduit and wire as shown on the Electrical Instrumentation and Control One Line Diagram series.
 - 3) It shall be the responsibility of the Electrical Contractor to provide a complete, fully operating and acceptable system. Drawings and Specification are intended to describe a complete installation for the purpose specified and to detail the scope of work for the Contractor.
 - 4) The Electrical Contractor shall be responsible for all detail that may be necessary to properly provide, and place in operation, the complete installation. The Contractor shall assume full responsibility for additional cost that may result from unauthorized deviation from the project documents.
- e. The Hardware System Integrator, Software System Integrator, and Electrical Contractor shall conduct a minimum of one meeting in person with the Engineer prior to the start of construction to go through the above responsibilities and submittal process for the project.

1.05 APPROVED EQUAL(S)

A. Hardware System Integrator

1. For full consideration of "Approved Equal" hardware system integrators, additional information must be provided no later than fourteen days prior to bid opening. The decision will be based on a pass/fail rating system and subjective to additional investigation by the Owner or Engineer. Additional information to be provided shall include the following:

2. The financial condition of the firm cannot be such that its financial ability to complete the Project is, in the opinion of the Owner, in doubt.
3. The hardware system integrator shall have in-house capability to handle complete system engineering, UL listed panel fabrication, instrument supply and calibration, commissioning, testing, and troubleshooting of the process control and instrumentation system.
4. The hardware system integrator shall be a firm specializing in the integration of control systems with documented experience in the detailed design, construction, configuration, and maintenance of PLC based control systems and variable frequency drive systems for the wastewater utility market.
5. Provide documentation to show the ability to complete NEMA Class IIS, Type B wiring diagrams for a Motor Control Center.
6. Provide a list of at least three successfully completed projects for a water system of similar scope and complexity in which the proposing firm used components the same as those intended for use on this Project. In addition, provide the following information for each project:
 - a. Name of plant or system owner, contact name, and current telephone number. Design engineer's name, address, and telephone number.
 - b. Manufacturer and model number(s) of the PLC based control system and the computer-based PCS system used for both hardware and software.
 - c. Brief description of the system.
 - d. Contracted cost of the system, including change orders for the completed projects.
 - e. Duration of the project and date of completion.
7. Provide a clear description of the proposed (minimum) scope of supply for the proposed hardware system integrator. This scope description shall be binding and shall be considered the minimum scope of work for the proposing firm. The intent is to verify that proposing firms can and will perform the complete, minimum scope described above.
8. It is the responsibility of the submitting hardware system integrator to deliver sufficient information of each of the previously listed items to document compliance with the minimum requirements. Failure to submit all requested information shall result in disqualification. If it is discovered at any time that any significant information submitted is incorrect, substantially misleading, or fraudulent, the submitting firm shall be subject to immediate disqualification from participation in the Project.

PART 2 PRODUCTS

2.01 FUNDING REQUIREMENTS

- A. MATERIAL SPECIFIED BELOW SHALL MEET ALL CURRENT BABA FUNDING REQUIREMENTS. NOT ALL EQUIPMENT SPECIFIED MAY MEET THESE REQUIREMENTS AND A SUITABLE "AS EQUAL" PIECE OF EQUIPMENT SHALL BE UTILIZED. SEE FRONT END SPECIFICATIONS FOR ADDITIONAL INFORMATION.

2.02 NEMA TYPE REQUIREMENTS

- A. Provide enclosures/housing for control system components in accordance with the area designations provided on the Drawings.
 - 1. Areas designated as wet: NEMA Type 4.
 - 2. Areas designated as wet and/or corrosive: NEMA Type 4X.
 - 3. Areas designated as Class I hazardous, Groups A, B, C, or D as defined in NFPA 70:
 - a. NEMA Type 7 unless all electrical components within enclosure utilize intrinsically safe circuitry.
 - 1) Utilize intrinsically safe circuits to the maximum extent practical and as depicted in the Contract Documents.
 - 4. Areas designated as Class II hazardous, Groups E, F, or G as defined in NFPA 70:
 - a. NEMA Type 9 unless all electrical components within enclosure utilize intrinsically safe circuitry.
 - 1) Utilize intrinsically safe circuits to the maximum extent practical and as depicted in the Contract Documents.
 - 5. Either architecturally or non-architecturally finished areas designated as dry, noncorrosive, and nonhazardous: NEMA Type 12.
 - 6. Areas designated to be subject to temporary submersion: NEMA 6P.

2.03 PERFORMANCE AND DESIGN REQUIREMENTS

- A. Unless stated otherwise, system operating criteria are as follows:
 - 1. Stability: After controls have taken corrective action, as result of a change in the controlled variable or a change in setpoint, oscillation of final control element shall not exceed two cycles per minute or a magnitude of movement of 0.5% full travel.
 - 2. Response: Any change in setpoint or change in controlled variable shall produce a corresponding corrective change in position of final control element and become stabilized within 30 seconds.

3. Agreement: Setpoint indication of controlled variable and measured indication of controlled variable shall agree within 3% of full scale over a 6:1 operating range.
4. Repeatability: For any repeated magnitude of control signal, from either an increasing or decreasing direction, the final control element shall take a repeated position within 0.5 % of full travel regardless of force required to position final element.
5. Sensitivity: Controls shall respond to setpoint deviations and measured variable deviations within 1.0% of full scale.
6. Performance: All instruments and control devices shall perform in accordance with manufacturer's specifications.

2.04 ACCESSORIES

- A. Provide identification devices for instrumentation system components in accordance with Specification Section 26 05 53 - Identification for Electrical Systems.
- B. Provide corrosion resistant spacers to maintain 1/4 IN separation between equipment and mounting surface in wet areas, on below grade walls and on walls of liquid containment or processing areas such as Clarifiers, Digesters, Reservoirs, etc.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

- A. Maintain accurate daily log of all startup activities, calibration functions, and final setpoint adjustments.
- B. Instrumentation Calibration:
 1. Verify and document that all instruments and control devices are calibrated to provide the performance required by the Contract Documents.
 - a. Utilize the Instrument Certification Sheet located at the end of this Specification Section (or Engineer approved equivalent) to document on-site calibration checks.
 2. Factory furnished calibration certifications are acceptable for the following:
 - a. Flow meters.
 - b. Pressure sensors utilized with annular sleeve.
 - c. Temperature sensors.
 3. On-site calibration verification is required for all other instruments, including "smart" transmitters that have been factory calibrated.

- a. Provide calibration checks at 0 PCT, 25 PCT, 50 PCT, 75 PCT and 100 PCT of span for pressure transmitters and gages.
 - 1) Check for both increasing and decreasing input signals to detect hysteresis.
 - b. In addition to factory calibration certification, temperature sensors and gages shall be checked at a single point for conformance to required accuracy.
 - c. Level transducers/transmitters shall be checked at two points in addition to zero.
 - d. Analytical sensors shall be calibrated in accordance with manufacturer's recommendations.
 - e. Check operation of all switches to verify actuation occurs in accordance with manufacturer's specified accuracy.
 - f. Replace any instrument which cannot be properly adjusted.
 - g. Stroke pneumatic control valves with clean dry air to verify control action, positioner settings, and solenoid functions.
- 4. Calibration equipment shall be certified by an independent agency with traceability to NIST.
 - a. Certification shall be up-to-date.
 - b. Use of equipment with expired certifications shall not be permitted.
 - 5. Calibration equipment shall be at least three times more accurate as the device being calibrated.
- C. Loop Check-Out Requirements are as Follows:
- 1. Work closely with the Owner to check control signal generation, transmission, reception and response for all control loops under simulated operating conditions by imposing a signal on the loop at the instrument connections. Loop check-out work shall verify proper operation of the installed equipment and the Owner's PLC and HMI programming.
 - a. Use actual signals where available.
 - b. Closely observe controllers, indicators, transmitters, HMI displays, recorders, alarm and trip units, remote setpoints, ratio systems, and other control components.
 - 1) Verify that readings at all loop components are in agreement.
 - 2) Make corrections as required.
 - (a) Following any corrections, retest the loop as before.
- D. Stroke all control valves, cylinders, drives and connecting linkages from the local control station and from the control room operator interface.
- 1. Check all interlocks to the maximum extent possible.

2. Utilize the Loop Check-Out Sheet located at the end of this Specification Section (or Engineer approved equivalent) to document on-site calibration checks.
3. In addition to any other As-Recorded Documents, record all setpoint and calibration changes on all affected Contract Documents and turn over to the Owner.

END OF SECTION

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SECTION 40 63 13

PROCESS CONTROL PANELS AND HARDWARE

PART 1 GENERAL

1.01 SUMMARY

NOTE, THE HARDWARE SYSTEM INTEGRATOR AS SPECIFIED WITHIN 40 61 13 SHALL PROVIDE THE EQUIPMENT LISTED IN THE 'PART 2' SECTIONS BELOW.

A. Description

1. Complete PLC based control system with Supervisory Control and Data Acquisition (SCADA) functions.
2. This section is intended to cover all work necessary for the procurement of the water system facility process control and instrumentation equipment. This includes all specified and required equipment installed and place into acceptable operation as herein described.

B. Responsibility and Coordination

1. It shall be the responsibility of the Contractor to provide a complete, fully operating and acceptable system. Drawings and Specification are intended to describe a complete installation for the purpose specified and to detail the scope of work for the Contractor.
2. The Contractor shall be responsible for all detail that may be necessary to properly provide, and place in operation, the complete installation. The Contractor shall assume full responsibility for additional cost that may result from unauthorized deviation from the project documents.

C. Approved Equal(s)

1. Hardware or Equipment
 - a. The naming of a manufacturer of equipment in this Specification is not intended to eliminate competition or prohibit qualified manufacturers from offering equipment. Rather, the intent is to establish a minimum standard of quality, and to indicate a principle of operation desired for this project. Other manufacturers of similar system controls are encouraged to submit for prior approval.
 - b. No hardware system integrator, or their agent or supplier, shall submit for approval without the full understanding on the part of that the hardware system integrator, Contractor, agent or supplier, may be rejected, and that the Engineer will use his own judgment; and that his decision is final. In the event of adverse decision, no claim of any sort or kind shall be made against the Owner or Engineer.

D. Testing Agency Certification

1. All new panels and control system junction boxes furnished under this Section shall be constructed in accordance with Underwriter's Laboratories (UL) Standard 508 - "Industrial Control Equipment" or Underwriter's Laboratories (UL) Standard 698 - "Industrial Control Equipment for Use in Hazardous (Classified) Locations".
2. Each panel shall be shop-inspected by UL or constructed in a UL-recognized facility. Each completed panel shall bear a serialized UL label indicating acceptance under Standard UL 508A or UL 698A.

E. Delivery, Storage, and Handling

1. Do not remove shipping blocks, plugs, caps, and desiccant dryers installed to protect the instrumentation during shipment until the instruments are installed and permanent connections are made.

F. Work Items Specified Under This Section

1. General Control System Scope.
2. System Control Panels.
3. Control Panel Components.
4. Hardware System Integrator Required Services.

1.02 SUBMITTALS

- A. Submit shop drawings in accordance with Specification Section 01 33 00 - Submittal Procedures. The following information shall be included within each submittal as required by the type of equipment or instrumentation that is being submitted on by the system manufacturer. The following information is not required to be in this order. All submittals are required to have the following information if applicable or will be subject to rejection.

1. PDF Bookmarks for Ease of Submittal Navigation
2. Equipment Cut Sheets
 - a. Cut sheets detailing all relevant information shall be provided for all equipment/components that will be used.
 - 1) Physical limitations of components including high and low temperature limits shall be identified.
 - b. All cut sheets shall be clearly highlighted indicating specific part number buildout for all equipment and components.
3. Bill of Materials
 - a. Bill of materials shall be provided for each enclosure provided detailing equipment and components being utilized.
4. Power Calculations

- a. Power calculations shall be provided for the following if they are present:
 - 1) Control Panel incoming power per phase
 - 2) 24VDC Power Supply
 - 3) UPS
 - 4) MCC CPT
- 5. Heat Calculations
 - a. Heat calculations shall be provided for the following if they are present:
 - 1) Outdoor Enclosures with Sensitive Electronics
 - 2) MCC buckets
 - 3) Indoor Enclosures with Heat Emitting Equipment in or Near the Enclosure
- 6. I/O Schedules
 - a. An I/O schedule shall be provided for each control panel.
- 7. Control Panel, Junction Box, Network Rack, and MCC Bucket Details and Layouts
 - a. NEMA ratings of all equipment shall be clearly identified.
 - b. Identify electrical power requirements of each assembled
 - c. Provide detailed layouts of all equipment. Identify overall dimensions and provide estimated weight of assembled equipment.
 - d. Nameplate layout drawings shall be provided.
- 8. Loop Control Drawings
 - a. Loop control drawings shall be provided that detail all electrical connections to/from and inside the CP, NWP, or MCC. This includes but is not limited to the following:
 - 1) Tag Names
 - 2) Terminal Block Numbering
 - 3) Conductor Type
 - 4) Conductor Quantity
 - 5) Conductor Jacket Color
 - 6) Hard Wired Logic (Relays, Switches, etc...)
- 9. Provide drawings and layouts in both PDF and AutoCAD electronic formats.

1.03 OPERATION AND MAINTENANCE DATA

- A. Submit manufacturer's data in accordance with Specification Section 01 78 23 - Operation and Maintenance Data.

PART 2 PRODUCTS

2.01 GENERAL

- A. The system controls, alarms, and telemetry shall be constructed as shown on drawings and herein described.

2.02 PROCESS CONTROL PANEL

A. Control Panel Enclosures

- 1. The control panels shall include the following
 - a. Enclosure with back panel and mounting provisions.
 - b. Interior light activated by door switch provided for each door of the enclosure.
 - c. Transient and surge suppression for power and control input/output.
 - d. Linear regulated DC power supplies. Power supplies shall be UL listed for use in type 508A or 698A Industrial Control Panels as required: AC power input fusing AC power transient protection current Limiting AC "power on" indication.
 - e. Separate terminal blocks for inputs and outputs.
 - f. GFCI receptacle outlet (120V).
 - g. Programmable logic controller with I/O modules as required.
 - h. Lockable door handle.
 - i. Inner door pocket for storing wiring diagrams.
 - j. 18"x18" fold up programming shelf on all free standing enclosures.
 - k. See E drawings for door mounted devices and associated labeling.
 - l. Enclosure size shall be selected based off of equipment as shown in the E Drawings and within this specification. Any enclosure sizing shown within the drawings are to be used as a minimum size. It is up to the hardware system integrator to increase the size of any enclosure to ensure all equipment fits with reasonable space remaining.
- 2. Enclosure Schedule:
 - a. Control Panel Enclosure(s) shall be furnished and installed for the following application(s):
 - 1) NEMA Type 12 Painted Steel
 - (a) Wall Mounted
 - (1) SHT-CP-001
- 3. Manufacturer/Model:
 - a. Hoffman

- b. SCE
- c. Prior Approved Equal

2.03 PROCESS CONTROL PANEL COMPONENTS

A. Miniature Circuit Breakers

1. General Specifications:

- a. UL489 Branch Protection
- b. Trip Curves
 - 1) C Trip Curve: Low/Medium Inrush Applications
 - 2) D Trip Curve: High Inrush Applications (Motors)
- c. SCCR (Minimum): 10kAIC
- d. Breaker Status Indicator
- e. Utilize 1-pole, 2-pole, and 3-pole breakers within the control panels as indicated below and as specifically indicated on the E Drawings
- f. Miniature Breaker Schedule:
 - 1) Shall be furnished and installed for the following applications:
 - (a) 1-Pole
 - (1) Incoming Power Feed
 - (2) Internal Panel Components
- g. Manufacturer/Model:
 - 1) Allen Bradley
 - 2) Phoenix Contact TMC 8 Series
 - 3) Eaton FAZ
 - 4) SquareD Multi 9
 - 5) Prior Approved Equal

B. Fused Terminals

1. General Specifications:

- a. DIN rail mounted, touch safe, modular type
- b. Minimum Rated Voltage: 250V RMS
- c. Rated Current: As required per application
- d. Physical Dimensions: 1/4" x 1 1/4" Standard Fuses
- e. Blown fuse indicator light
- f. Manufacturer/Model:
 - 1) Allen Bradley
 - 2) Phoenix Contact UT 6-HESILA

- 3) Weidmuller
- 4) Prior Approved Equal

C. Terminal Blocks

1. General Specifications:

- a. DIN rail mounted, touch safe, modular type.
- b. Minimum Rated Voltage: 600V RMS
- c. Minimum Rated Current: 24 amps or higher as required per application
- d. Connector metal body material: Copper alloy, min 85% copper with nickel or tin plating
- e. Terminal screw material: Bronze with tin plating
- f. Terminal Block Characteristics:
 - 1) It shall terminate wires without additional preparation: i.e. tinning of wire ends, application of ferrules, etc.
 - 2) All shall have a nominal conductor termination acceptance of 4mm². The one exception is that 2.5mm² shall be allowed for use within the MCC control circuitry as long as the required conductor and ampacity ratings are met.
 - 3) The insulation housing shall have primary entry funnels to facilitate insertion of wires.
 - 4) The insulation housing shall prevent stray strands from shorting to adjacent terminal blocks.
 - 5) Terminal screws shall be captive in the metal body or via the insulation housing.
 - 6) Once tightened the terminal screws shall be locked in place to prevent loosening due to shock and vibration.
 - 7) The terminal block shall be useable with accessories such as center or insertion bridges, test sockets, separating plates, end covers, etc. The accessories used shall also be touch safe.
 - 8) For wire identification, the terminal block shall provide space for marking with pre-marked labels. Handwritten labels shall not be allowed.
- g. Manufacturer/Model:
 - 1) Allen Bradley 1492-J4
 - 2) Phoenix Contact UT 4
 - 3) Weidmuller WDU 4
 - 4) ABB
 - 5) Prior Approved Equal
 - 6) No Exceptions

D. Control Relays

1. General Specifications:

- a. Blade plug-in type with dust cover and socket.
- b. Coil (Continuous Operation):
 - 1) Voltage (Unless Noted Otherwise): 120VAC $\pm$ 10%
- c. Contacts:
 - 1) DPDT Minimum
 - 2) Voltage: 240VAC
 - 3) Current: 10A
 - (a) Lower current rated contacts shall be allowed as long as the circuit passing through the contacts has adequate overcurrent protection.
- d. Operating Time:
 - 1) Energization (Nominal): 35 milliseconds
 - 2) De-energization (Nominal): 100 milliseconds
- e. Mechanical Life: 10⁶ operations
- f. Operating Temperature: 0°C to 70°C
- g. Relay clip shall be provided and installed for all control relays.

2. Manufacturer/Model:

- a. Allen-Bradley
- b. Phoenix Contact RIF-4-RSC-LV-120AC/3x21
- c. Idec
- d. Prior Approved Equal

E. Current Sensing Switches

1. General Specifications

- a. Contacts: N.O. or N.C. solid-state dry contacts for output to PLC
- b. Din-rail Mounting: Hardware Provided as Required
- c. Construction: Split Core for ease of installing conductors
- d. Trip Setpoint: Adjustable from 1.75-150A
- e. Operating Temperature: -4°F to 122°F
- f. LED Indication: Contact Status
- g. UL/cUL Listed
- h. Self-Powered

2. Manufacturer/Model:

- a. NK Technologies AS1 Series
- b. Prior Approved Equal

F. Surge Suppressor

1. 120VAC Control Power

a. General Specifications:

- 1) 120 VAC In-Line Device
- 2) Max Continuous Voltage: 150 V
- 3) Max Continuous Current: 25 A
- 4) Measured Limiting Voltage: 760 V
- 5) Nominal Discharge Current: 3 kA
- 6) Response Time: < 25ns
- 7) Connection Type: Screw
- 8) Mounting: DIN Rail
- 9) Style: Plug w/ Base
- 10) Dry Contact Status Indicator

b. Surge Suppressor Schedule:

- 1) Shall be furnished and installed for the following applications:
 - (a) On any control panel being supplied with 120VAC as power.

c. Manufacturer/Model:

- 1) Phoenix Contact - 2910356
- 2) Citel DS72US-120S/G
- 3) Critec Equal
- 4) Prior Approved Equal

2. Surge Suppressor - Cat 6 PoE

a. General Specifications:

- 1) Max Continuous Voltage: 3.3 V
- 2) Max Continuous Current: 1.5 A
- 3) Nominal Discharge Current: 10 kA
- 4) Response Time (core-core): < 1ns
- 5) Connection Type: RJ45
- 6) Mounting: DIN Rail

b. Shall be furnish and installed for the following applications:

- 1) On any CAT6 copper Ethernet that goes outside of a building underground or to a radio/antenna.
- 2) On all outdoor Wireless Access Points

c. Manufacturer/Model:

- 1) Phoenix Contact - Datatrab DT-LAN-CAT.6+

- 2) Prior approved equal.

G. Uninterruptible Power Supply (UPS)

1. General Specifications:

- a. UPS shall be wired as the first device receiving power.
- b. Provide a UPS bypass relay for maintenance purposes.
- c. UPS shall be sized appropriately to handle the full load connected to them including the control panel and any other required external devices, instrumentation, analytical devices.
 - 1) Provide an additional 50% spare operating capacity
 - 2) Power calculations showing the required load with additional spare capacity shall be provided during the submittal phase
- d. Reliable, true online, high frequency, double conversion type with batteries for critical type applications in high harmonic and/or noisy electrical installations.
- e. Input / Output Voltage: 120 VAC
- f. True sine wave AC output.
- g. Outlets (Minimum): Five (5)
- h. Battery:
 - 1) Type: Sealed Lead Acid Battery
 - 2) Voltage: 12VDC
 - 3) Capacity (Minimum): 5.5Ah
 - 4) Operating Temperature: 32°F to 122°F
 - 5) Provide Extended Battery Modules (EBM) as Indicated in the E Drawings
 - 6) Manufacturer/Model:
 - (a) Eaton P/N: 9SXEBM48
 - (b) Prior Approved Equal

2. Uninterruptible Power Supply (UPS) Schedule:

- a. Shall be furnished and installed for the following application(s):
 - 1) SHT-CP-001

3. Manufacturer/Model:

- a. Eaton 9SX
- b. Prior Approved Equal

H. DC Power Supply

1. Linear regulated DC power supplies.
2. Power supplies shall be U.L. listed for the use in type 508 or 698 Industrial Control Panels as required and abide to the following requirements:

- a. 120 VAC power input.
 - b. Fusing (circuit protection) on AC power.
 - c. Transient protection.
 - d. Current Limiting.
 - e. AC “power on” indication.
 - f. DIN rail mountable.
- 3. Power supplies shall be sized appropriately to handle the full load connected to them.
 - a. Provide an additional 50% spare capacity.
 - b. Power calculations showing the required load with additional spare capacity shall be provided during the submittal phase.
- 4. DC Power Redundancy Modules:
 - a. Where required within the electrical drawings and as indicated within these specifications.
 - b. Power supplies with built in power redundancy shall be allowed. Two or more power supplies of this type shall be paralleled for this configuration depending on the power requirements of the system.
- 5. Manufacturer/Model:
 - a. Allen-Bradley
 - 1) 1606-XLE Essential Series (24VDC)
 - b. Phoenix Contact
 - 1) QUINT4-PS Series (24VDC)
 - c. Prior Approved Equal
- I. Programmable Logic Controllers (PLC)
 - 1. See 40 63 43 - Programmable Logic Controllers.
- J. Operator Interface Terminals (OIT)
 - 1. General Specifications:
 - a. Screen:
 - 1) Size: As Indicated Below
 - 2) Type: Color TFT
 - 3) Input Type: Touch
 - b. Communications: Ethernet TCP/IP – 10/100
 - c. Memory:
 - 1) On board memory
 - 2) USB Port for Data storage and application backup
 - d. Power: 24VDC
 - 2. Operator Interface Terminals (OIT) Schedule:

- a. Shall be furnished and installed in the following application(s):
 - 1) Size: 6.0-inch
 - (a) SHT-CP-001
 - b. Manufacturer/Model:
 - 1) Allen Bradley Panel View Plus 7
 - (a) Standard
 - 2) Prior Approved Equal
- K. Control Switches
- 1. Electronic Circuits:
 - a. General Specifications:
 - 1) Type (As Required):
 - (a) Selector
 - (b) Momentary Selector
 - (c) Momentary Pushbutton
 - 2) Contacts (As Required):
 - (a) Heavy Duty
 - (b) Oil Tight
 - 3) Contacts:
 - (a) Gold Flashed
 - (b) Resistance: 0.01 Ohms
 - (c) Rated Voltage: 120VAC
 - (d) Rated Current: 0.5A
 - 2. Control Circuits:
 - a. General Specifications:
 - 1) Type (As Required):
 - (a) Selector
 - (b) Momentary Selector
 - (c) Momentary Pushbutton
 - 2) Contacts (As Required):
 - (a) Heavy Duty
 - (b) Oil Tight
 - 3) Contact Rating: NEMA A-600
 - 3. Manufacturer/Model:
 - a. Allen-Bradley Bulletin 800T/H
 - b. Prior Approved Equal

L. Indicator Lights

1. General Specifications:
 - a. Nominal Package Diameter: 30mm
 - b. Lamp Type: LED
 - 1) Lamp shall be easily replaceable
 - c. Type: Push to Test
 - d. Lens Color: As Shown on Drawings
 - e. Contacts (As Required):
 - 1) Heavy Duty
 - 2) Oil Tight
 - f. Ratings: NEMA 4
2. Manufacturer/Model:
 - a. Allen-Bradley Bulletin 800T/H
 - b. Prior Approved Equal

M. Managed Ethernet Switches

1. General Specifications:
 - a. Performance:
 - 1) Managed
 - 2) Store & Forward
 - 3) Wire Speed Switching
 - 4) All IEEE 802.3 Ethernet protocols supported
 - b. Input Power Voltage: 12-48VDC
 - c. Environmental Conditions:
 - 1) Operating Temperature: -40°C to 60°C
 - 2) Storage Temperature: -40°C to 85°C
 - 3) Humidity (non-condensing): 5% to 95% RH
 - d. Mounting: Din Rail
 - e. Software: Full Version, Layer 2 Firmware
 - f. Ports: (2 SFP Ports Maximum)
 - 1) 8 Copper - 2 Combo:
 - (a) 8 RJ45 ports - 100/1000 BaseTX Copper
 - (b) 2 Combo ports - 100/1000 BaseTX Copper or Fiber Optic Uplink SFP
2. Managed Ethernet Switch Schedule:
 - a. Shall be furnished and installed for the following applications:
 - 1) 8 RJ45 Port Model:
 - (a) SHT-NWP-001

3. Manufacturer/Model:
 - a. Allen Bradley Stratix 5200
 - 1) SFP Modules required only as needed
 - b. Prior Approved Equal
- N. Copper Patch Panels
1. General Specifications:
 - a. Modules:
 - 1) Mini-Com Copper Jack Module: CJ688TG
 - 2) Jack Module Color: Refer to Section 40 67 13 - Network Racks and Equipment
 - b. Physical:
 - 1) Mounting: DIN Rail
 - 2) Cable Entry: Cable Entry Grommet
 - c. Accessories:
 - 1) Blank Modules: CMBIG-X
 - 2) Install blank modules in any blank ports
 2. Copper Patch Panel Schedule:
 - a. Shall be furnished and installed in the following application(s):
 - 1) SHT-CP-001
 3. Manufacturer/Model:
 - a. Panduit CDPP8RG
 - b. OCC
 - c. Prior Approved Equal

PART 3 EXECUTION

3.01 FACTORY WITNESS TEST

- A. Complete factory witness testing including (but not limited to) the following equipment:
 1. Control Panels as specified in Section 40 63 13.
 2. Networking Equipment as specified in Section 40 67 13
- B. The Owners representative will provide all necessary network equipment as indicated in the Construction Documents as being Owner furnished to complete a fully functional witness test of the Ethernet I/P protocol control scheme.
- C. The Systems Integrator shall provide all required cabling and patch cords to fully connect all equipment to the network switches so as to provide a complete and functional system during the factory witness test.

- D. The Hardware System Integrator shall provide their own PLC programming software used for testing the hardware and communication between equipment.

3.02 INSTALLATION

- A. Wherever feasible, use bottom entry for all conduit entry to instruments and junction boxes.
- B. Install electrical components per the requirements of the Electrical design.

3.03 INSTALLATION/WORKMANSHIP

- A. The workmanship and design of this equipment shall conform to all national, state and local electrical codes and ordinances that apply.
- B. The control system manufacturer shall provide complete electrical schematic wiring (factory and field) diagrams showing all components together with a description of system operation. Complete information to adjust and service this equipment shall be included.
- C. Wire Labels: All wires both those factory terminated by the Systems Integrator as well as field wiring terminated by the Electrical Contractor to the Control Panel shall be provided with printable heat shrink labels installed on the wire prior to termination. All markers shall be positioned such that they can be clearly read by anyone looking at them without having to adjust the wire positioning.

3.04 HARDWARE SYSTEM INTEGRATOR SERVICES

- A. The hardware system integrator shall provide a PLC based control system that incorporates a personal computer to provide a higher level of control, monitoring and reporting required for this project.
- B. The hardware system integrator shall provide information to the Contractor on the proper installation of Category 6 Ethernet communications cable.
- C. The services of a factory trained qualified service representative that is part of the permanent staff of the hardware system integrator shall be provided to inspect the complete equipment installation to insure that it is installed in accordance with the manufacturers recommendations and for commissioning the project.
- D. Provide final calibration of all instrumentation before shipping. Provide coordination necessary for the correction of interface deficiencies between instrumentation, control panels, control equipment, and final control devices. Provide written documentation on the problems found detailing device names and tags, tests conducted, diagnosis, and corrective action to be taken.
- E. Perform all control panel wiring terminations and all field device wiring terminations.

- F. Configure all instrumentation and control devices supplied, modified, or relocated as part of this project. Configuration shall include:
 - 1. Configuration of transmitters to work with measuring elements.
 - 2. Scaling of transmitters to transmit appropriate analog (4-20 mA) signal based on minimum and maximum operating range of process value being measured. Operating ranges for each device will be provided during construction.
- G. Verify that each instrumentation and control device is wired and operating correctly by going “online” with each PLC, testing each field device, and witnessing correct action in the PLC through the programming software.
- H. Provide Engineer with a signed certificate for each control panel stating that each device wired to it has been checked out and has been verified to be operating correctly.
- I. Assign and configure a temporary IP address to each PLC Ethernet module and touch panel computer and verify that each device can be “pinged” from the corresponding Ethernet switch. Provide verification in writing to the Engineer. IP addresses will be provided by Engineer upon approval of the shop drawings.

3.05 PROGRAMMABLE LOGIC CONTROLLER (PLC) INSTALLATION

- A. Refer to Section 40 63 43 for details.

3.06 SUPPLIES AND SPARE PARTS

- A. Contractor shall provide all expendable items such as lamps, fuses, etc. for system startup, checkout, and during the acceptance test.
- B. At Final Completion, Contractor shall furnish the following expendable items:
 - 1. Twenty (20) percent spare fuses and lamps of each type furnished, but not less than six (6) of each type.

END OF SECTION

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SECTION 40 63 14

JUNCTION BOXES AND CONTROL STATIONS

PART 1 GENERAL

1.01 SUMMARY

- A. Refer to section 40 63 13 - Process Control Panels and Hardware.

PART 2 PRODUCTS

2.01 CONTROL STATIONS AND JUNCTION BOXES

- A. Enclosures for control stations and junction boxes shall meet the following minimum requirements:
 - 1. Steel or Stainless steel and NEMA Ratings as noted on drawings.
 - 2. Minimum dimensions as indicated on the Drawings. Increase the size of each panel or junction box to fit equipment as required at no additional cost. Confirm size of each panel and junction box with the submittals.
 - 3. Control stations and junction boxes shall be flanged, corners welded and ground smooth.
 - 4. All non-stainless steel enclosure interior and exterior surfaces treated to prevent oxidation and painted. White on interior, manufacturer's standard color on exterior.
 - 5. Stainless Steel enclosures shall not be painted although the surface shall be treated as it normally would to prevent oxidation.
- B. All components and terminals labeled per shop drawings.
 - 1. Engraved labels attached with screws or rivets.
- C. All wiring terminated on terminal strips per Section 40 63 13. Terminal strips shall be labeled with engraved plastic labels.
 - 1. Labels shall be attached with two-part epoxy adhesive.
 - 2. 600 volt terminal strips.
 - 3. Ring or spade type crimp connectors.
 - 4. Wiring laced using plastic wire ties and plastic wiring troughs.
 - 5. Wiring held down with straps attached to enclosure with screws.
 - 6. Separate power, control, and signal conductors.
 - 7. Control wiring: #16 AWG, stranded, 600V copper minimum.
 - 8. Signal wiring: shielded, 600V, copper minimum.

9. Provide 15 amp, 10000 AIC breaker on power circuits using #14 wire.
 10. Connections to instruments via terminal strip or connectors. Soldering wires to terminal strips is not acceptable.
- D. Schedule
1. Control stations and junction boxes shall be furnished and installed for the following application(s):
 - a. SHT-JBOX-001
 - b. SHT-ACK-001
- E. The control panel drawings as furnished by the Hardware System Integrator specified in section 40 61 13 - Process Control System General Requirements shall fully incorporate all control stations and junction boxes including exact terminal numbers such that the entire circuit from the control panel to the load including the junction box is fully captured within the control panel drawings.
- F. Manufacturer/Model:
1. NEMA 12
 - a. Hoffman
 - b. SCE
 - c. Prior Approved Equal

PART 3 EXECUTION

3.01 SUMMARY

- A. Refer to section 40 63 13 - Process Control Panels and Hardware.

END OF SECTION

SECTION 40 63 43

PROGRAMMABLE LOGIC CONTROLLERS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes
 - 1. Programmable logic controllers (PLC).
 - 2. Input and Output (I/O) modules.
 - 3. I/O connections and configurations.
 - 4. Spares.

1.02 REFERENCES

- A. Reference sections include, but are not limited to:
 - 1. NEMA ICS 1 - General Standards for Industrial Control and Systems.
 - 2. NEMA ICS 2 - Standards for Industrial Control Devices, Controllers and Assemblies.
 - 3. NEMA ICS 3 - Industrial Systems.
 - 4. NEMA ICS 6 - Enclosures for Industrial Controls and Systems.

1.03 SUBMITTALS - FOR REVIEW / APPROVAL

- A. Submit manufacturer's data in accordance with Specification Section 01 33 00 - Submittal Procedures.

1.04 OPERATION AND MAINTENANCE DATA

- A. Submit manufacturer's data in accordance with Specification Section 01 78 23 - Operation and Maintenance Data including the following:
- B. Include bound copies of operating instructions.
- C. Include card replacement, adjustments, and preventative maintenance procedures and materials.
- D. Accurately record actual locations of controller cabinets and input and output devices connected to system. Include interconnection wiring and cabling information, and terminal block layouts in controller cabinets.

1.05 QUALIFICATIONS

- A. The Software System Integrator (SSI) will be providing all programming. See Section 40 61 13 - Process Control System General Requirements for approved software system integrators.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 61 00.
- B. Store and protect products under provisions of Section 01 61 00.
- C. Accept products on site in factory containers and verify damage.
- D. Store products in clean, dry area; maintain temperature to NEMA ICS 1.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Maintain temperature above 32 degrees F and below 104 degrees F during and after installation of products.
- B. Maintain area free of dirt and dust during and after installation of products.

1.08 MAINTENANCE SERVICE

- A. Provide a one (1) year warranty to correct equipment defects from the Date of Substantial Completion.

1.09 FURNISHING PARTY

- A. Programmable Logic Controller(s) may only be noted here to provide a reference for OEM control panels being furnished as part of Division 46 in an effort to set a standard of quality throughout the entire project. Other than the spare parts listed in Part 2 of this specification, the Systems Integrator as specified in Section 40 63 13 shall not be providing control panels utilizing PLC's other than listed within the control panel schedules noted within this specification and within the engineer's drawings.

PART 2 PRODUCTS

2.01 PROGRAMMABLE LOGIC CONTROLLER(S)

- A. CompactLogix 5380 Platform (L3)
 - 1. The PLC system for each control panel shall be based on the Allen-Bradley (A-B) CompactLogix platform. Provide equipment as indicated on the Electrical Drawings and/or specifications and as required by the manufacturer.
 - 2. Each PLC system shall consist of a power supply, processor, communications modules, and I/O modules, as specified on the Electrical Drawings. In the occasion that the specified item is not available,

Contractor must submit intent to use an alternate module to Engineer and receive approval from Engineer prior to installation of the alternate module.

<u>CompactLogix Item:</u>	<u>Mfg.</u>	<u>Part Number</u>
Power Supply (24VDC)	Allen-Bradley	1606-XLE240E
Processor	Allen-Bradley	5069-L306ER
Compact Flash Card	Allen-Bradley	1784-SDHC8

a. See I/O Schedule for further details

3. Control Panel Schedule:

a. SHT-CP-001

2.02 CHASSIS-BASED I/O MODULE(S)

A. ControlLogix I/O

- Each PLC system shall use the following I/O modules. In the occasion that the specified module is not available, Contractor must submit intent to use an alternate module to Engineer.

<u>ControlLogix Item:</u>	<u>Mfg.</u>	<u>Part Number</u>
Digital Input	Allen-Bradley	1756-IA16

a. To be installed in existing control panel at Water Treatment Facility. See "E" drawings for further information.

B. CompactLogix 5380 I/O

- Each PLC system shall use the following I/O modules. In the occasion that the specified module is not available, Contractor must submit intent to use an alternate module to Engineer.

<u>1769 CompactLogix Item:</u>	<u>Mfg.</u>	<u>Part Number</u>
Analog Input	Allen-Bradley	5069-IF4IH
Digital Input (24VDC)	Allen-Bradley	5069-IB16
Relay/Contact Output	Allen-Bradley	5069-OB8
Terminal Block	Allen-Bradley	Screw Type

2.03 I/O CONNECTION & CONFIGURATION

- All I/O points, including spares, must be factory wired to terminals as indicated in the typical wiring diagrams in the Electrical Plans. No field terminations may be made directly to the PLC Modules, with the exception of Flex I/O modules.
- All I/O points shall be wired to the points indicated in the I/O schedule found in the Electrical Plans.
- Programmable Controllers shall be manufactured to NEMA ICS 3 standards, with component circuit boards manufactured to NEMA ICS 2 standards.

- D. Service Conditions:
 - 1. Temperature: 0-60C
 - 2. Humidity: 5-95% without condensation
 - 3. Altitude: 5000 feet above sea level
- E. Configuration:
 - 1. Processor Unit: Include processor, power supply, and battery backup
 - 2. I/O: Provide by separate expansion units or by modular hardware units
 - 3. I/O Capacity: As required, plus 25% or 4 points for each type whichever is greater
- F. Ratings:
 - 1. Scan Rate: 1 milliseconds per KByte

2.04 SPARES

- A. The Systems Integrator as specified in Section 40 63 13 shall provide the following spare PLC equipment. All equipment shall match that specified earlier in this section.
 - 1. CompactLogix Platform:
 - a. One (1) – CompactLogix Power Supply
 - b. One (1) – CompactLogix Processor
 - c. One (1) – Each CompactLogix IO module type

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Verify field measurements are as shown on Drawings.
- C. Verify that required utilities are available, in proper location, and ready for use.
- D. Beginning of installation means installer accepts conditions.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Do not install products until major construction is complete and building interior is enclosed and heated.
- C. Connect input and output devices as shown on Drawings.

- D. The PLC processor shall be installed in the control panel and all I/O terminations shall be to screw terminals unless otherwise noted.
- E. Four (4) copies of all material shall be provided with final shipment. These copies shall be in addition to any required by other sections of these specifications.
- F. Provide the necessary time required for field installation and verification of all I/O devices with Electrical Contractor.

3.03 MANUFACTURER'S FIELD SERVICES

- A. Prepare and start systems under provisions of Section 01 75 00
- B. Provide in writing to Engineer that installation and verification of all I/O devices has been performed.
- C. Provide the necessary time required for field I/O testing with Engineer.

3.04 DEMONSTRATION

- A. Provide systems demonstration under provisions of Section 01 75 00
- B. Demonstrate operation of controller.

3.05 PLC PROGRAMMING

- A. All required PLC programming for Control Panels furnished by the Hardware System Integrator as specified in section 40 61 13 - Process Control System General Requirements shall be by the Software System Integrator.

END OF SECTION

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SECTION 40 66 53

RADIO AND TELEMETRY EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Feed-lines, Jumpers, and Connectors
 - 2. Antenna lightning protection
 - 3. Grounding

1.02 PRIOR APPROVAL REQUIREMENTS FOR EQUIPMENT OR MATERIAL

- A. The Contractor, Supplier, or Manufacturer's Representative must submit any proposed alternate substitute or substitute system manufacturers, specific alternate equipment and proposed alternate material for consideration prior to quotation submittal.
- B. Approval by Engineer applies to quality and general arrangement only. The Contractor is responsible for quantities, sizes, and space requirements.
- C. Equipment and material that are approved will be indicated by addendum in time for all bidders to fully consider such prior approvals. Bidders shall include all changes necessary to meet Specifications.

1.03 SUBMITTALS

- A. Submit technical data, shop drawings, and product data for all equipment and components indicated on the Drawings and specified in Part 2 of this Section in conformance with Section 01 33 00 Submittal Procedures including the following:
- B. Shop Drawings
 - 1. Control panel and junction box drawings including system schematic drawings, terminal numbering, component schematic drawings, dimension drawings, layout drawing and nameplate schedule. Where panels, junction boxes and new Owner-furnished equipment is being utilized, the submittal shall include complete schematics showing all proposed equipment, terminals, terminal numbering, wiring, elevations, and details. It shall be the supplier's responsibility to visit the Site and inspect existing and Owner-furnished equipment to prepare complete system drawings for the Project.
 - 2. Overall system diagram showing all components, converters, cables, and connectors.

- C. Manufacturer's Instructions: Furnish under provisions of Section 01 33 00 - Submittal Procedures.
- D. Manufacturer's Field Service Reports: Reports should cover start up, demonstration and operational instructions, minimum.
- E. Operation and Maintenance data in conformance with Section 01 78 23 - Operation and Maintenance Data. and including:
 - 1. Panel equipment, junction boxes, field devices and instruments, including "as-built" system schematics. All items requested under Part 2 of this section should be included in their "as-built" form.
- F. Spare Equipment Lists - Provide a list of recommended spare parts and equipment that is considered essential to the operation of the system. Include list of current prices for each item. These lists may be included with the Operation and Maintenance data submittals.

1.04 MANUFACTURER'S DATA AND DRAWINGS

- A. The selected supplier shall submit "As Built" shop drawings, four (4) complete sets of the following information for the Engineer's approval:
 - 1. Dimensioned drawings, wiring and piping drawings for all field mounted equipment. Include locations for all pipe mounted equipment.
 - 2. Complete system schematic drawings illustrating all components being supplied, complete with electrical interconnections.
 - 3. Detail of each device with manufacturer and complete model or part number. Provide reference list in Bill of Material form. Any devices without listing of manufacturer and part/model numbers will not be acceptable if determined to be proprietary or lacking manufacturer's service and product support.
 - 4. All other information that the supplier feels will assist the Engineer and the Owner for operation and maintenance.
 - 5. The Engineer expects no more than one initial review, and one re-review of the radio and telemetry systems shop drawings. The cost for subsequent resubmittal reviews will be charged to the Contractor at the Engineer's hourly rate.

1.05 MANUFACTURER'S DATA AND DRAWINGS

- A. The selected supplier shall submit shop drawings under Section 01 33 00 - Submittal Procedures. Emailed electronic copies (pdf) shall be submitted which includes the following information for the Engineer's approval:
 - 1. Comprehensive list of proposed suppliers and sub-contractors.
 - 2. Dimensioned Drawings.

3. Descriptive Data.
 4. Installation Instructions.
 5. All other information that the supplier/manufacturee feels will assist the Engineer and the Owner for operation and maintenance.
 6. The Engineer expects no more than one initial review and one re-review of the shop drawings. The cost for subsequent re-submittal reviews will be charged to the Contractor at the Engineer's hourly rate.
- B. Engineer will review and return submittals as soon as possible upon receipt. Partial submittals for distinct tasks/portions of this specification section shall be permissible.
 - C. Engineer will provide site plans and location staking for soils analysis and pole construction upon request. Please advise of any on-site staking needs as soon as possible.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver equipment in manufacturer's original, unopened cartons.
- B. Cover and store equipment to prevent damage.
- C. Handle so as to prevent damage during installation.

PART 2 PRODUCTS

2.01 FEED-LINES, JUMPERS, AND CONNECTORS

- A. All cable specifications are the minimum required cable types. Installer shall use their experience and judgement to select correct cable per application.
- B. See drawings and Section 26 05 19 - Power And Instrumentation Cable - Less Than 600V cable 'Type A1 and Type D7' for additional details and information.

2.02 ANTENNA LIGHTNING PROTECTION

- A. 450 MHz applications
 1. General Specifications:
 - a. Power Dissipation (Max): 2500W
 - b. Throughput Energy (Max): <7.5nJ
 - c. Insertion Loss: 0.1 dB
 - d. Let Through Voltage (Max Peak): <±500mV
 2. Antenna Lightning Protection shall be furnished and installed for the following application(s):
 - a. SHT-JBOX-001

3. Manufacturer/Model:
 - a. Polyphaser TUSX-NFF
 - b. No Exceptions
- B. 698 MHz - 2.7 GHz applications
 1. General Specifications:
 - a. Power Dissipation (Max): 500W
 - b. Throughput Energy (Max): <5nJ
 - c. Insertion Loss: 0.1 dB
 - d. Let Through Voltage (Max Peak): <±200mV
 2. Antenna Lightning Protection shall be furnished and installed for the following application(s):
 - a. SHT-JBOX-001
 3. Manufacturer/Model:
 - a. Polyphaser TSX-NFF
 - b. No Exceptions
- C. Both models have been listed above for antenna lightning protection. Appropriate polyphaser shall be chosen based on frequency of salvaged antenna that is to be relocated to new elevated storage tank.

2.03 GROUNDING

- A. Antenna cable to be grounded per manufacturer specifications but no less than immediately outside structure entrances and every 100' of cable thereafter.
- B. Grounding kits manufactured by the cable manufacturer produced specifically for the cable in use must be used. No third party ground kits will be acceptable.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Installation, calibration, testing and initial startup of telemetry equipment stated herein shall be provided by the Hardware Systems Integrator (HSI).

3.02 WORKMANSHIP

- A. The workmanship and design of this equipment shall conform to all national, state and local codes and ordinances that apply. Complete information to this equipment shall be included.

END OF SECTION

SECTION 40 67 13

NETWORK RACKS AND EQUIPMENT

ASDFPART 1 GENERAL

1.01 SUMMARY

- A. Section includes
 - 1. Network Racks
 - 2. Patch Panels
 - 3. Networking Equipment
 - 4. Network Connections

1.02 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Specification Section 01 33 00 - Submittal Procedures.

1.03 OPERATION AND MAINTENANCE DATA

- A. Submit Operation and Maintenance data under provisions of Section 01 78 23 - Operation and Maintenance Data.
- B. Include bound copies of operating instructions.
- C. Include card replacement, adjustments, and preventative maintenance procedures and materials.

1.04 QUALIFICATIONS

- A. The Project Engineer will be providing all programming. See Section 40 63 13 - Process Control Panels and Hardware for approved control system manufacturers.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept products on site in factory containers and verify damage.
- B. Store products in clean, dry area; maintain temperature to NEMA ICS 1.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Maintain temperature above 32 degrees F and below 104 degrees F during and after installation of products.
- B. Maintain area free of dirt and dust during and after installation of products.

1.07 MAINTENANCE SERVICE

- A. Provide a one (1) year warranty to correct equipment defects from the Date of Substantial Completion.

PART 2 PRODUCTS

2.01 NETWORK RACKS AND RACK COMPONENTS

- A. Wall mount Network Rack and Accessories (NEMA 1)
 - 1. General Specifications
 - a. EIA Compliant 19" Wall mount
 - b. Rack Spaces (Min): 18
 - c. UL weight capacity (Min): 200 lbs.
 - d. Depth (Usable): 24"
 - e. Height (Usable): 31.5"
 - f. Dimensions (Max): 26"W x 26.67"D x 35.38"H
 - g. Frame Construction
 - 1) Material Thickness (Min): 16 Gauge
 - 2) Material Coating: Black Textured Powder Coat
 - h. Rack Rail Construction
 - 1) Material Thickness (Min): 11 Gauge
 - 2) Material Coating: Black Ecoat Finish
 - 3) There shall be cage nut style square mounting holes in universal EIA spacing
 - 4) All rack spaces shall be marked
 - i. Contractor is responsible for verification of compatibility for all rack accessories with vendor. It is intended that all components of rack system be purchased from a single distributor as a single complete package.
 - j. All unused spaces shall be filled with blank plates.
 - k. Network Rack Nuts and Screws Furnished (Min): 50 Each
 - 2. Schedule
 - a. Wall mount network rack(s) shall be furnished and installed for the following application(s):
 - 1) SHT-NWP-001
 - b. See the Network Rack Layouts and Schedules within the Engineers Drawing Set.
 - 3. Manufacturer/Model
 - a. Rack:

- 1) Middle Atlantic Products: CWR-18-26PD
- 2) Hoffman: Equal
- b. Accessories (Same Manufacturer - Middle Atlantic Products):
 - 1) Rear Rack Rail (1 Pair): CWR-RR18
 - 2) Integrated Fan Kit: CWR-FKIT
 - 3) Power Distribution (QTY. 2 per NWP): PDT-2X320
 - 4) Front Cable Management: HHCM-1
 - 5) Storage Drawer: D2
 - 6) Blank Plates: 1U
 - 7) Rackount din rail kit

B. Rackmount Modular Patch Panel

1. General Specifications:
 - a. Provide patch panels in the Network Panel as indicated in the network panel layouts and schedules of the Engineers Drawings.
 - b. Shall have rear mounted faceplates to allow modules to be flush with front of patch panel.
 - c. Shall accept Panduit Mini-Com Modules for UTP, which snap in and out. Mini-Com Modules shall be provided as the following colors as needed.
 - 1) SCADA: Green
 - d. Provide shielded Panduit Mini-Com Modules for the required Circuits per the Cable and Conduit Schedule and the Network Switch Schedule within the Engineers Drawings. Only one side of the shielded circuit shall be grounded to prevent ground loops and additional interference.
 - e. Shall have write-on areas for port and/or panel identification.
 - f. Shall mount to a standard EIA 19" rack.
2. Schedule:
 - a. Rackmount Modular Patch Panel(s) shall be furnished and installed for the following application(s):
 - 1) SHT-NWP-001
 - b. See the Network Rack Layouts within the Engineers Drawing Set.
3. Manufacturer/Model:
 - a. Mini-Com Module(s):
 - 1) Non-Shielded:
 - (a) Panduit:
 - (1) CJ688TGGR
 - b. Patch Panel(s):
 - 1) Non-Shielded

- (a) Panduit
 - (1) CP24WSBLY
- (b) OCC
 - (1) DCC-2488/110SIX

C. CAT 6 Patch Cables

1. General Specifications:
 - a. Provide quantity needed for a complete system.
 - b. Length of each patch cables shall be as needed for each individual application. Excess length of any patch cables shall be minimal.
 - c. Color of each patch cable shall match network specific colors for jacks as noted within this section.
 - d. Cat6 Copper Patch Cables:
 - 1) Provide snagless type patch cords.
 - 2) Provide an additional 5 spare patch cable of each color for future use.

D. DC Power Supply

1. Linear regulated DC power supplies.
2. Power supplies shall be U.L. listed for the use in type 508 or 698 Industrial Control Panels as required and abide to the following requirements:
 - a. 120 VAC power input.
 - b. Fusing (circuit protection) on AC power.
 - c. Transient protection.
 - d. Current Limiting.
 - e. AC "power on" indication.
 - f. DIN rail mountable.
3. Power supplies shall be sized appropriately to handle the full load connected to them.
 - a. Provide an additional 50% spare capacity.
 - b. Power calculations showing the required load with additional spare capacity shall be provided during the submittal phase.
4. DC Power Redundancy Modules:
 - a. Where required within the electrical drawings and as indicated within these specifications.
 - b. Power supplies with built in power redundancy shall be allowed. Two or more power supplies of this type shall be paralleled for this configuration depending on the power requirements of the system.
5. Manufacturer/Model:

- a. Allen-Bradley
 - 1) 1606-XLE Essential Series (24VDC)
- b. Phoenix Contact
 - 1) QUINT4-PS Series (24VDC)
- c. Prior Approved Equal

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Verify field measurements are as shown on Drawings.
- C. Verify that required utilities are available, in proper location, and ready for use.
- D. Beginning of installation means installer accepts conditions.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Do not install products until major construction is complete and building interior is enclosed and heated.
- C. Make connections to devices as shown on Drawings.
- D. Four (4) copies of all material shall be provided with final shipment. These copies shall be in addition to any required by other sections of these specifications.
- E. Provide the necessary time required for field installation and verification of all connections with Electrical Contractor.

3.03 DEMONSTRATION

- A. Provide systems demonstration under provisions of Section 01 75 00
- B. Demonstrate operation of networking equipment.

END OF SECTION

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SECTION 40 70 01

INSTRUMENTATION GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 REFERENCES

- A. Reference Standards:
 - 1. NFPA) 70 - National Electrical Code (NEC)
 - 2. National Electrical Manufacturers Association (NEMA)
 - a. NEMA ICS-2 - Industrial Control Devices, Controllers and Assemblies
 - b. NEMA 250 - Enclosures for Electrical Equipment
 - 3. Underwriters Laboratories (UL) - 508 Industrial Control Equipment

1.02 SCOPE

- A. It is the intent of the Contract Documents that all equipment specified in this Section of the specification be supplied by the same single-source supplier ("Hardware Systems Integrator") specified in Section 40 61 13 - Process Control System General Requirements unless noted otherwise herein or on engineer's drawings. The supplier shall assume full responsibility along with the Contractor for furnishing, installing and start-up procedures so as to make the system operate per the intent of the Contract Documents.
- B. The Work specified in this Section includes furnishing, installing, start-up, testing and adjusting of all required equipment, including instruments, equipment, hardware, software, wiring, accessory equipment, and training to provide a completely operational process instrumentation and control system.
- C. It shall be the responsibility of the Contractor to furnish a complete and fully operating system. The Contractor shall be responsible for all details that may be necessary to properly install, adjust and place in operation the complete installation. The Contractor shall assume full responsibility for additional costs that may result from unauthorized deviations from the Contract Documents.
- D. It shall be the responsibility of the Contractor and supplier to examine all new equipment that is transmitting a signal to, or receiving a signal from, equipment specified in this Section and the associated instrumentation Sections. The Contractor shall be responsible for providing signal converters, buffer amplifiers, and isolation devices to make signal levels, reference to ground, etc. compatible between devices specified in this Section and existing equipment.

1.03 SUBMITTALS

- A. All submittal requirements stated herein shall be in addition to those outlines section 01 33 00 - Submittal Procedures.
- B. Shop Drawings:
 - 1. Product technical data including:
 - a. Acknowledgement that products submitted meet requirements of standards referenced.
 - b. Equipment catalog cut sheets.
 - c. Instrument data sheets:
 - 1) ISA S20 or approved equal.
 - 2) Separate data sheet for each instrument type.
 - d. Materials of construction.
 - e. Minimum and maximum flow ranges.
 - f. Pressure loss curves.
 - g. Physical limits of components including temperature and pressure limits.
 - h. Control panel and junction box drawings including system schematic drawings, terminal numbering, component schematic drawings, dimension drawings, layout drawing and nameplate schedule. Where panels, junction boxes and new Owner-furnished equipment is being utilized, the submittal shall include complete schematics showing all proposed equipment, terminals, terminal numbering, wiring, elevations, and details. It shall be the supplier's responsibility to visit the Site and inspect existing and Owner-furnished equipment to prepare complete system drawings for the Project.
 - i. Overall system diagram showing all components, converters, cables, and connectors.
 - 2. Provide a parameter setting summary sheet for each field configurable device.
 - 3. Certifications:
 - a. Documentation verifying that calibration equipment is certified with NIST traceability.
 - b. Approvals from independent testing laboratories or approval agencies, such as UL, FM or CSA.
 - 1) Certification documentation is required for all equipment for which the specifications require independent agency approval.
- C. Technical data in conformance with Section 00 55 00 - Notice to Proceed and including:
 - 1. All equipment and components indicated on the Drawings and specified in Part 2 of this Section

- 2. Junction Box Enclosures
- D. Manufacturer's Instructions
 - 1. Furnish under provisions of Section 01 78 23 - Operation and Maintenance Data.
- E. Manufacturer's Field Service Reports
 - 1. Furnish under provisions of Section 01 78 23 - Operation and Maintenance Data. Reports should cover a minimum of startup, demonstration, and operational instructions.
- F. Operation and Maintenance data in conformance with Section 01 78 23 - Operation and Maintenance Data and including:
 - 1. Panel equipment, junction boxes, field devices and instruments, including "as-built" system schematics. All items requested under Part 2 below should be included in their "as-built" form.
- G. Spare Equipment Lists - Provide a list of recommended spare parts and equipment that is considered essential to the operation of the system. Include list of current prices for each item. These lists may be included with the Operation and Maintenance data submittals.
- H. All submittals shall be searchable documents in PDF file type. They shall be electronically delivered through the platform/method all parties mutually agreed upon. The submittal shall be broken up into sections and bookmarked to allow for easier navigation throughout the submittal.

1.04 CIRCUIT IDENTIFICATION

- A. Each power, control, and signal conductor shall be identified by plastic tags permanently attached to the cable. The tags shall be attached to each cable at each termination and wherever the cable is accessible in junction or pull boxes. Tags shall be marked with printing showing:
 - 1. The circuit number from the cable and conduit schedules.
 - 2. The terminal number as assigned by the equipment manufacturer.
- B. The cable marking system shall use transparent tape with a white area where the numbering shall be typed using a typewriter or computer, as manufactured by:
 - 1. Raychem
 - 2. Thomas & Betts
 - 3. Brady
- C. Contractor supplied "as-built" schematics and wiring diagrams should reflect this described wire identification.

1.05 REGULATORY REQUIREMENTS

- A. All Products that may come into contact with water intended for use in a public water system shall meet American National Standards Institute (ANSI)/National Sanitation Foundation (NSF) International Standards 60 and 61, as appropriate. A Product will be considered as meeting these standards if so certified by NSF, the Underwriters Laboratories, or other organization accredited by ANSI to test and certify each Product.

PART 2 PRODUCTS

2.01 FUNDING REQUIREMENTS

- A. MATERIAL SPECIFIED BELOW SHALL MEET ALL CURRENT BABA FUNDING REQUIREMENTS. NOT ALL EQUIPMENT SPECIFIED MAY MEET THESE REQUIREMENTS AND A SUITABLE "AS EQUAL" PIECE OF EQUIPMENT SHALL BE UTILIZED. SEE FRONT END SPECIFICATIONS FOR ADDITIONAL INFORMATION.

2.02 REFER TO THE FOLLOWING PRODUCT SECTIONS

- A. Flow Measurement - See Section 40 71 00
- B. Level Measurement - See Section 40 72 00
- C. Pressure, Strain, and Force Measurement - See Section 40 73 00
- D. Temperature Measurement - See Section 40 74 00
- E. Position and Motion Measurement - See Section 40 77 00

PART 3 EXECUTION

3.01 LABELING

- A. Label all field mounted control devices, instrumentation, switches, etc., with tag number (if applicable) and item description.
- B. Labels shall be engraved laminated plastic with 1/4" high lettering. Labels shall be attached with stainless steel screws to the device or nearby wall.

3.02 CALIBRATION, ADJUSTING AND TESTING

- A. Devices requiring field calibration shall be calibrated in the presence of the Engineer's representative and documented.

3.03 PROJECT MANAGEMENT

- A. Supplier shall provide engineering and administrative services necessary to fulfill the requirements of this Specification.
- B. Supplier shall provide the services of an experienced project manager as the overall coordinator during the course of the project.

3.04 FIELD QUALITY CONTROL

- A. Maintain accurate daily log of all startup activities, calibration functions, and final setpoint adjustments.
- B. Install all instrumentation and equipment as per manufacturer's requirements. Coordinate with Engineer in Field on final instrument locations per manufacturer requirements.
- C. Instrumentation Calibration:
 - 1. Verify and document that all instruments and control devices are calibrated to provide the performance required by the Contract Documents.
 - a. Utilize the Instrument Certification Sheet located at the end of this Specification Section (or Engineer approved equivalent) to document on-site calibration checks.
 - 2. Factory furnished calibration certifications are acceptable for the following:
 - a. Flow meters.
 - b. Pressure sensors utilized with annular sleeve.
 - c. Temperature sensors.
 - 3. On-site calibration verification is required for all other instruments, including "smart" transmitters that have been factory calibrated.
 - a. Provide calibration checks at 0 PCT, 25 PCT, 50 PCT, 75 PCT and 100 PCT of span for pressure transmitters and gages.
 - 1) Check for both increasing and decreasing input signals to detect hysteresis.
 - b. In addition to factory calibration certification, temperature sensors and gages shall be checked at a single point for conformance to required accuracy.
 - c. Level transducers/transmitters shall be checked at two points in addition to zero.
 - d. Analytical sensors shall be calibrated in accordance with manufacturer's recommendations.
 - e. Check operation of all switches to verify actuation occurs in accordance with manufacturer's specified accuracy.
 - f. Replace any instrument which cannot be properly adjusted.
 - g. Stroke pneumatic control valves with clean dry air to verify control action, positioner settings, and solenoid functions.

4. Calibration equipment shall be certified by an independent agency with traceability to NIST.
 - a. Certification shall be up-to-date.
 - b. Use of equipment with expired certifications shall not be permitted.
 5. Calibration equipment shall be at least three times more accurate as the device being calibrated.
- D. Loop Check-Out Requirements are as Follows:
1. Work closely with the Owner to check control signal generation, transmission, reception and response for all control loops under simulated operating conditions by imposing a signal on the loop at the instrument connections. Loop check-out work shall verify proper operation of the installed equipment and the Owner's PLC and HMI programming.
 - a. Use actual signals where available.
 - b. Closely observe controllers, indicators, transmitters, HMI displays, recorders, alarm and trip units, remote setpoints, ratio systems, and other control components.
 - 1) Verify that readings at all loop components are in agreement.
 - 2) Make corrections as required.
 - (a) Following any corrections, retest the loop as before.
 2. Check all interlocks to the maximum extent possible.
 3. Utilize the Loop Check-Out Sheet located at the end of this Specification Section (or Engineer approved equivalent) to document on-site calibration checks.
 4. In addition to any other As-Recorded Documents, record all setpoint and calibration changes on all affected Contract Documents and turn over to the Owner.

3.05 FIELD QUALITY CONTROL - INSTALL, START-UP AND WITNESS TESTING

- A. Contractor shall furnish and install raceway and wiring systems for the instrumentation and control system in accordance with manufacturer's requirements and in accordance with Sections 26 05 34 - Conduit. All instrumentation and control system raceways shall be galvanized rigid steel conduit unless specifically indicated otherwise.
- B. Supplier shall provide a skilled programmer/instrumentation engineer or technician who shall complete troubleshooting and start-up to place the entire system into satisfactory operation. The engineer or technician shall make the necessary inspection of the completed installation, make the necessary final field adjustments, and make program revisions as required for start-up.

- C. Coordinate installation, start-up and testing scheduling with Owner and Engineer.
- D. Instruct Owner's personnel at the Site on the operation and maintenance of equipment furnished in this Section.
- E. Furnish Owner and Engineer with a written report prepared by Supplier certifying that equipment:
 - 1. Has been properly installed.
 - 2. Is in accurate alignment and calibration and is free from undue stress imposed by interconnecting cable/conduit, etc.
 - 3. Has been operated and witness demonstrated to the Owner under expected conditions and that it operates satisfactorily.

3.06 ON-SITE SERVICES

- A. In addition to other services specified, provide a competent instrumentation engineer or technician to perform the following services:
 - 1. Training – one (1), eight (8) hour day on-Site to train Owner's personnel on operation and maintenance of all equipment furnished under this Section.
- B. All on-Site service shall be at times approved by the Owner.

END OF SECTION

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SECTION 40 71 00

FLOW MEASUREMENT

PART 1 GENERAL

- 1.01 REFER TO PART 1 GENERAL OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS.

PART 2 PRODUCTS

2.01 ELECTROMAGNETIC FLOWMETER

A. General Specifications

1. The flow meter shall be a flanged sensor (by application and instrument schedule) and transmitter which may be mounted integral (compact) to the sensor or remotely.
2. The flow metering system shall be three-stage microprocessor controller and possess a non-volatile memory to store the sensor calibration and transmitter setup information.
3. The electronics shall be interchangeable for meters sizes 1" - 90".
4. The sensor shall be the proper size to measure the design flow rate of the piping and measure bi-directional flow as a standard
5. The sensor shall consist of a stainless steel flow tube with ANSI B16.5, AWWA C207 carbon steel, or stainless steel flanges.
6. The flanges shall be Class 150 for diameters less than 24" and AWWA Class D for diameters larger than 28" (listed by the application and instrument schedule).
7. Flow Meter Specifications by size
 - a. Diameter: 8" - 12"
 - 1) Fixed or rotating lap joint flanges
 - 2) Hard rubber or Polyurethane liner
 - 3) 0.25% min reference accuracy
8. The sensor tube shall be in accordance with NSF-61 based upon the size of the flow meter and the process media conditions.
9. The sensor shall house minimum of two (2) measuring electrodes and a grounding ring. The electrodes shall be bullet-nosed shaped and Alloy C22 unless otherwise noted on instrument schedule.

10. The sensor liner and electrode material shall be validated to be compatible with the process fluid. All fluids require a minimum conductivity of 5µS/cm (20µS/cm for deionized water).
11. In the event of industrial treatment or corrosive/brackish environments, the flow sensor shall be painted and certified according to ISO-12944 corrosion class. Third party modification or sensor preparations will not be accepted without type test documentation to support the exposure conditions, depth, and duration of resistance.
12. Stainless Steel Tag
13. Grounding rings required on all Flow Meters
14. Transmitter Specifications
 - a. The transmitter shall have a local operating interface to allow local programming that can be operated through the enclosure window without opening the electrical enclosure
 - b. The transmitter shall allow local programming that can be operated through the enclosure window without opening the electrical enclosure
 - c. Diameter: 1"- 90"
 - 1) Input Voltage: 100-240 VAC
 - 2) Signal Output: Two (2) Wire 4-20 mA HART
 - 3) Display shall indicate simultaneous flow rate and total flow with 3 totalizers (forward, reverse and net total) and user-selectable engineering units, readout of diagnostic error messages, and support 12 standard languages.
 - 4) Transmitter shall safeguard against entering of invalid data for the particular meter size and all programming parameters shall be access-code protected with a minimum requirement of dual passwords according to data sensitivity.
 - 5) Transmitter output(s) shall be integral to the magnetic flowmeter transmitter electronics; using an external third party signal converter is unacceptable.
 - 6) There shall be no limitation of transmitter operational capability or diagnostic dependency between integral and compact mounting orientation.
 - 7) Transmitter shall retain all setup parameters and accumulated measurements internally in non-volatile memory in the event of power failure. The memory unit shall be transferrable from a damaged unit or used for a duplicate device with no loss of device parameters or data stored.
 - 8) Transmitter shall be protected against voltage spikes from the power source with internal transient protection. Power

consumption shall be no more than 16 VA, independent of meter size.

B. Cable Specifications

1. Cable requirements for the remote transmitters shall be coordinated with the electrical specifications and drawings. Cable requirements for all flow meters shall be the responsibility of the Contractor and manufacturer. Contractor shall verify lengths for manufacturer prior to ordering flow meters.
2. Cable runs shall be no longer than 650 ft between the transmitter and the point of signal interception within the controls system.
3. Cables for flowtubes and transmitters separated by distances greater than 100 feet shall be of Beldon 8762 twisted shielded pair and coil shall be of beldon 8720 twisted shielded pair.

C. Approvals

1. NSF Drinking Water

D. Schedule

1. See "E" drawings for size and location of flowmeter and flow transmitter.

E. Manufacturer/Model

1. Rosemount 8750W
2. Prior Approved Equal

F. Warranty

1. Provide a one (1) year full replacement warranty to correct equipment defects of all equipment from the Date of Substantial Completion.

PART 3 EXECUTION

- 3.01 REFER TO PART 3 EXECUTION OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS.

END OF SECTION

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SECTION 40 72 00

LEVEL MEASUREMENT

PART 1 GENERAL

- 1.01 REFER TO PART 1 GENERAL OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS .

PART 2 PRODUCTS

2.01 FLOOD SWITCH

- A. General Specifications
 - 1. Electrical
 - a. Two wire termination
 - b. SPST contacts
 - c. 120VAC 20VA rated
 - 2. Nominal Operating Differential: 1-3/8"
 - 3. Manufacturer supplied extra flexible cord of sufficient length to reach junction box as indicated on plans with waterproof connection to sensor
- B. Schedule
 - 1. Flood Float Switches shall be furnished and installed for the following application(s):
 - a. SHT-FLS-071
- C. Manufacturer/Model
 - 1. Gem Sensors LS-270 Series – P/N: 43760
 - 2. Prior Approved Equal

PART 3 EXECUTION

- 3.01 REFER TO PART 3 EXECUTION OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS.

END OF SECTION

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SECTION 40 73 00

PRESSURE MEASUREMENT

PART 1 GENERAL

- 1.01 REFER TO PART 1 GENERAL OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS .

PART 2 PRODUCTS

2.01 PRESSURE TRANSDUCER - STANDARD

A. General Specifications

1. Housing Material: Aluminum
2. Input Voltage: 10.5-42.5 VDC Loop Powered
3. Output Signal: Two (2) Wire 4-20mA HART
4. Display/Interface: LCD Display with full Local Operator Interface
5. Configuration Buttons: Analog Zero and Span
6. Diaphragm Type: Isolated
7. Diaphragm Fill Fluid: Silicone
8. Diaphragm Material: 316L SS
9. Accuracy (Min): +/- 0.075% of Calibrated Span
10. Long term stability (Min): +/-0.15% of URL or better
11. Turndown: 10:1 or better
12. Sensing Range: Refer to IO Schedule
13. Temperature Ratings: -40-190°F
14. Process Connection (Application Dependent): 1/2" NPT

B. Approvals

1. NSF Drinking Water

C. Schedule

1. Pressure Transducers shall be furnished and installed for the following application(s):
 - a. SHT-PIT-101

D. Manufacturer/Model

1. Endress+Hauser Cerabar S PMP71
2. Rosemount 2088G

3. Prior Approved Equal
- E. Warranty
 1. Provide a one (1) year full replacement warranty to correct equipment defects of all equipment from the Date of Substantial Completion.

PART 3 EXECUTION

- 3.01 REFER TO PART 3 EXECUTION OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS.

END OF SECTION

SECTION 40 74 00

TEMPERATURE MEASUREMENT

PART 1 GENERAL

- 1.01 REFER TO PART 1 GENERAL OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS.

PART 2 PRODUCTS

2.01 AMBIENT AIR TEMPERATURE SENSOR/TRANSMITTER

A. Transmitter General Specifications

1. Continuous averaging, 1000 ohm, suitable for wall mounting platinum RTD type temperature sensor
2. Shall be of same manufacturer as the sensor and calibrated for use
3. Electrical Connection: M20 Cable Gland, 2 Wire
4. Power Requirements: 4-20 mA Loop Powered
5. Output Signal: 4-20 mA
6. Operating Range: -40 to 185°F
7. Stainless Steel Tag

B. Sensor General Specifications

1. Accuracy: $\pm 0.1^{\circ}\text{C}$, $\pm 0.05\%$ of reading
2. Thermal Drift: 0.0025% / $^{\circ}\text{C}$
3. Response Time: 1 Second (90% Response)
4. Internal Resistance: 1000 Ohms

C. Schedule

1. Temperature sensor and transmitter shall be furnished and installed for the following application(s):
 - a. SHT-TT-301 (Located on SHT-CP-001)

D. Spares

1. Provide one (1) complete spare temperature sensor/transmitter.

E. Manufacturer/Model

1. Omega-EWSA-PT100-TX
2. Endress+Hauser TST434
3. Prior Approved Equal

2.02 AMBIENT AIR TEMPERATURE SWITCH

A. Temperature Switch General Specifications

1. Enclosure Rating: NEMA Type 4X. IP66 and IP68
2. Electrical: 120VAC, Suitable for 24VAC @100mA minimum
3. Switch Action: SPDT
4. Stability: ± 2.5 °F
5. Stainless Steel Tag

B. Schedule

1. Ambient air temperature switch shall be furnished and installed for the following application(s):
 - a. SHT-HTS-311

C. Spares

1. Provide one (1) complete spare temperature switches.

D. Manufacturer/Model

1. Chromalox WCRT-100
2. Prior Approved Equal

PART 3 EXECUTION

3.01 REFER TO PART 3 EXECUTION OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS.

END OF SECTION

SECTION 40 77 00

POSITION AND MOTION MEASUREMENT

PART 1 GENERAL

- 1.01 REFER TO PART 1 GENERAL OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS.

PART 2 PRODUCTS

2.01 MAGNETIC DOOR INTRUSION SWITCH

A. General Specifications

1. Switch Type: SPST Reed Switch
2. Protection: Polyurethane Encapsulated for Corrosion Resistance
3. Sensing Range (Min): 1.2"
4. Power Rating: 100VA
5. Current Rating (@120VAC): 0.8A
6. Contact Leads (Min): 3ft Armored Cable

B. Schedule

1. Magnetic Door Intrusion Switch(s) shall be furnished and installed for the following application(s):
 - a. SHT-DS-901
 - b. SHT-DS-902
 - c. SHT-DS-903

C. Manufacturer/Model

1. Sentrol Industrial 151 GuardSwitch
 - a. 151-7Z-03A
2. Prior Approved Equal

PART 3 EXECUTION

- 3.01 REFER TO PART 3 EXECUTION OF SECTION 40 70 01 - INSTRUMENTATION GENERAL REQUIREMENTS.

END OF SECTION

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APPENDIX A

FLowsERVE Pump Division

SERIAL NO. 0308NCC18225-3
MODEL 10ENH-1 HEAD 120 FT
SPEED 1175 RPM GPM 2900 FT. 20

ROTATION- CCW

- WARNING -

SERIOUS PERSONAL INJURY AND PROPERTY DAMAGE MAY RESULT IF THIS EQUIPMENT IS INSTALLED, OPERATED OR SERVICED OTHER THAN AS PRESCRIBED IN INSTRUCTION MANUALS. ADDITIONAL COPIES OF SAME MAY BE PURCHASED FROM THE MANUFACTURER AT NOMINAL COST. CLOSE ALL ISOLATION VALVES, OPEN ELECTRICAL DISCONNECTS AND REDUCE PRESSURES TO ATMOSPHERIC BEFORE SERVICING THIS EQUIPMENT.

PARTS INFORMATION: 1 - 800 - 43 - PUMP1
82001215 HASTINGS, NEBRASKA U.S.A. 68901

CATALOG # 405172816
LOWER END BRG 5211-1
MODEL # BE50A
UPPER END BRG 7220-BEP
TYPE RUSI ENCL HP-1
PH 3 30 °C ID# 807-BE50A-N B3
DUTY CONT WT 700 LBS BAL
HP 50 RPM 1780
VOLTS 230/450 SF 1.15 HZ 60
AMPS 118/57 MAX KVAR
OIL CAPACITY 1.0 LBS PF
GREASE QTS. UPPER END BRG 3
TORQUE 1700 LB FT
INVERTER DUTY
HZ RANGE 5-60 RPM 180-1800
AMPS 118/59
QTS.

MEXICO



U.S. ELECTRICAL MOTORS
DIVISION OF EMERSON ELECTRIC CO.
ST. LOUIS, MO



EMERSON

Premium Efficient
422689



CATALOG # 3050V28L6
MODEL # BF50A
7220-BEP
TYPE RUST ENCL WP-1
FR 325TP
PH 3 MAX 40 °C ID# 607-BF50A-H B9
DUTY CONT WT 700 LBS BAL
HP 50 RPM 1780 SF1.15 HZ 60
VOLTS 230/430 MAX KVAR
AMPS 114/57 NEMA NOM EFFICIENCY 94.5
OIL CAPACITY LOWER END BRG GREASE QTS. UPPER END BRG 3 CODE 6 DES 3
TORQUE 1118/57
HZ RANGE 5-50 RPM 180-1800 AMPS 118/57
U.S. ELECTRICAL MOTORS
DIVISION OF EMERSON ELECTRIC CO.
ST. LOUIS, MO
EMERSON

Premium Efficient